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POLICY FOR COMMERCIAL AGRICULTURE
ITS RELATION TO
ECONOMIC GROWTH AND STABILITY

PAPERS SUBMITTED BY PANELISTS APPEARING
BEFORE THE SUBCOMMITTEE ON
AGRICULTURAL POLICY

JOINT ECONOMIC COMMITTEE



NOVEMBER 22, 1957

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LETTERS OF TRANSMITTAL

NOVEMBER 22, 1957.

HON. WRIGHT PATMAN,
*Chairman, Joint Economic Committee,
House of Representatives, Washington, D. C.*

DEAR MR. PATMAN: Transmitted herewith are the papers submitted by the panelists invited to appear before the Subcommittee on Agricultural Policy. Pursuant to the instructions contained in the February 28, 1957 Joint Economic Report of the full committee, the subcommittee is conducting a study of policy for commercial agriculture. The study is focused upon family farmers whose income problems are largely traceable to levels of farm prices and costs rather than to severe underemployment. In connection with the underemployment problem, attention is called to earlier studies by our Subcommittee on Low-Income Families.

The papers are presented in advance of the subcommittee's hearings to be held December 16-20, to provide members of the subcommittee, the panelists, and the public an opportunity to examine the analysis of the problem and the alternatives for dealing with it as they will be developed in oral statements and discussion at the hearings.

JOHN SPARKMAN,
Chairman, Subcommittee on Agricultural Policy.

NOVEMBER 22, 1957.

HON. JOHN SPARKMAN,
*Chairman, Subcommittee on Agricultural Policy,
United States Senate, Washington, D. C.*

DEAR SENATOR SPARKMAN: Transmitted herewith are the papers submitted by the panelists invited to appear before the Subcommittee on Agricultural Policy at hearings to be held December 16-20. The papers are arranged by panel topics in the order in which they are scheduled for discussion at the hearings. Supplementary material is included in the appendix.

The papers are presented as submitted, without deletions.

JOHN W. LEHMAN,
Acting Executive Director.

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INTRODUCTION BY JOHN SPARKMAN, CHAIRMAN, SUBCOMMITTEE ON AGRICULTURAL POLICY

Agriculture has posed one of the most perplexing and intractable problems facing the economy during the past decade. While national income, employment, and output have advanced to new peaks, net farm income, except for a brief period during the Korean conflict, has fallen or barely held its own. Meanwhile, farm numbers and employment have persistently declined. Government programs have provided support for farm income but have encountered difficulties that are by no means resolved. The problem is not a new one; it has been a matter of public concern at least since the 1920's.

The Joint Economic Committee, whose responsibilities under the Employment Act of 1946 require it to make a continuing study of matters relating to economic growth and stability, necessarily has a keen interest in the causes of the farm problem, how it relates to developments elsewhere in the economy, and possible means of alleviating it. In its report on the January 1957 Economic Report of the President, the committee announced its intention to establish a Subcommittee on Agricultural Policy to inquire into current and prospective trends in agriculture and the factors responsible for them. The subcommittee was directed to concentrate its study upon problems of farmers who produce the great bulk of the farm products marketed. Studies by the Subcommittee on Low-Income Families in 1949 and 1955 supplement the current inquiry in describing economic problems faced by families living on farms.

The current study looks toward a better understanding of the complex farm problem and the implications of dealing with it rather than toward specific legislative proposals. The subcommittee has invited experts from universities, government, farm organizations, and elsewhere to prepare papers on assigned topics and to appear at hearings to be held in the form of panel discussions during the week of December 16-20, 1957. The papers are presented in this volume. The subcommittee is most appreciative of the time and effort that have gone into the preparation of the papers and is confident that their usefulness will extend beyond the purposes immediately at hand.

I. THE FARM PROBLEM AND ITS RELATION TO
ECONOMIC GROWTH AND DEVELOPMENT

(PAPERS FOR PANEL A)

THE FARM PROBLEM AND ITS RELATION TO ECONOMIC GROWTH AND DEVELOPMENT

THE UNITED STATES FARM PROBLEM IN RELATION TO THE GROWTH AND DEVELOPMENT OF THE UNITED STATES ECONOMY

Theodore W. Schultz,¹ University of Chicago

From a policy point of view, poor countries as a rule are up against what may best be called a food problem: people do not have enough food, although they use most of their income to acquire food; food prices are frequently deemed to be too high; and these countries find it hard to expand their output of food. On the other hand, rich countries as a rule are confronted by a farm problem: they have an abundance of food and of other farm products, increases in farm production come easily, farm prices are often deemed to be too low, farm surpluses are accumulated, but farm incomes stay low, and both the Government and the farm sector find themselves in difficulties. The United States is no exception to this rule; it is the richest of all countries, and it may also be said to have the biggest farm problem.

Is there, then, something in the very nature of economic growth and development that has made countries rich, that has given rise to this farm problem? This is, as I see it, one of the central questions put to panel A.

Before turning to this question, let me touch briefly on three other ways of looking at the farm problem. One view is that poor countries simply cannot afford large governmental appropriations to aid agriculture, whereas rich countries can do so. From this it may be inferred that rich countries provide all manner of aids to agriculture because they can afford it, and not because there are any basic economic differences between poor and rich countries. That poor countries cannot afford to be generous in the aids that they give agriculture is true enough but, as I shall show, there are basic differences underlying both consumption and production, when one compares the economy of poor and rich countries. Another view is that the farm problem is a consequence of Government policy and programs; poor countries are spared these particular policy mistakes because they cannot afford them. The farm problem in the United States and in other rich countries, according to this view, would not have arisen if the respective governments had only permitted prices to function. There is much to be said for this assessment, because there is no doubt that in the United States, existing farm programs do impair the functioning of "relative prices," and a good deal of the farm problem so visible in terms of surpluses is a consequence. Still another view is that the difficulties of agriculture are composed of many particular problems—a wheat prob-

¹ I am indebted to my colleagues, D. Gale Johnson and Zvi Griliches, for giving me their criticisms on an early draft of this paper.

lem, a cotton problem, a corn problem, and so on; and that there is no general farm problem as such. This is the kind of fragmentation that has come to characterize our Federal farm policies and programs in recent years. Not much, however, can be said in favor of this way of looking at the United States farm problem. We are, also, in danger on this score of trying to draw all too many fine distinctions between "highly commercial" and "less commercial" farms, and the various low income parts within agriculture.

But let me now turn to the central question. In my judgment, it is indeed appropriate for this committee to study agricultural policy, because the United States farm problem of the late fifties is fundamentally a consequence of the general growth and development of the United States economy. I shall present an analysis to support this statement by examining three basic characteristics of growth and development that lie at the root of the farm problem. They are as follows:

(1) Economic growth means that national per capita income rises. As this income rises, the per capita demand for farm products increases less than one-fifth as much as does the demand for nonfarm products.

(2) The economic growth of the United States for a long time has come as much from improvements in the quality of human and non-human resources as it has from the combined increases in the size of the labor forces and in the stock of physical capital.² These important improvements in the quality of human effort and of capital that increase output relative to (traditional) inputs are not confined to nonfarm products for which the demand is increasing rapidly, but they also are taking place in many parts of agriculture that produce products for which the demand is of slow growth.

(3) The economic growth of the United States has been increasing very substantially the price (value) of human effort relative to the price of nonhuman inputs, taken as a class: and, as a consequence, it has been necessary to substitute capital for labor at many points in the economy. This substitution in combination with economic growth characteristics (1) and (2) above has given rise to very difficult labor transfer problems for agriculture.

As I proceed, I call the first of these characteristics, the income effects, as a shorthand for the effects of rises in national income upon demand; the second, the quality effects, meaning by this the effects of the improvements in the quality of capital and labor upon production; and the third, the substitution effects, as representing the effects of the rises in the price of human effort relative to other inputs upon the combination of inputs employed in production.

I. INCOME EFFECTS UPON DEMAND

If the demand for farm products were to increase at the same rapid rate as does the demand for all nonfarm products taken together, the farm problem would soon disappear. Or, had the demand for farm

² See my paper *Agriculture and the Application of Knowledge. A Look to the Future*. W. K. Kellogg Foundation, Battle Creek, Mich., June 1956. Also, Moses Abramovitz, *Resources and Output Trends in the United States Since 1870*, Occasional Paper 52, National Bureau of Economic Research, New York, 1956. Professor Abramovitz finds that only one-half of the increases in net national product (income) can be explained by additions to the stock of physical capital and increases in total man-hours. I give his estimates in pt. II of this paper.

products increased as rapidly as has total consumer demand in recent decades, it is impossible to believe that the United States would now have too many resources committed to farming; there would be, instead, a concern about ways of increasing agricultural production to stay abreast of such a rapid increase in demand in order to avert a serious food problem.

For example, between 1940 and 1956, total consumer demand in the United States increased about 90 percent. If the demand for farm products had risen this much, the 37 percent increase in farm output would have been wholly inadequate; instead, it would have taken 2½ times as large an increase in farm output to have satisfied such an increase in demand. Even if the demand for farm products had increased at only one-half the rate of total consumer demand since 1940, the production adjustments in agriculture required because of quality effects and substitution effects, could have been taken in stride.

The following estimates of income, consumption, and of the income elasticity of the demand will help us gage these income effects upon demand.

1. *Rises in per capita income*

(a) Fabricant,³ in the 34th Annual Report of the National Bureau of Economic Research, states that the "average per capita volume of goods consumed or added to the tangible capital stock of the Nation" had multiplied over fourfold between 1869-73 and 1949-53; this rise in per capita (real) income averaged only slightly under 2 percent per annum. What is a fourfold increase like? Fabricant puts it thus, "The average family in the United States had an income of somewhat over \$5,000 in 1953. If we progress at as high and consistent a rate in the next 80 years as in the last, our grandchildren or great-grandchildren will have average family incomes of about \$25,000 of 1953 purchasing power—a level now attained only by the top 1 percent or so of the Nation's families."

(b) Abramovitz in Occasional Paper 52 of the National Bureau of Economic Research, already cited, presents a number of measures of United States economic growth between 1869-78 and 1944-53. With the period 1869-78 set to equal 100, his estimates for three of these measures for 1944-53 are as follows:

(1) Population.....	334
(2) Net national product (income).....	1, 325
(3) Net national product per capita (income).....	397

The average rate of growth of the net national product implied is 3.5 percent per annum, and the net product per capita grew by 1.9 percent per annum.

(c) Kuznets' pioneering studies in measuring national income and its components are well known. Fabricant and Abramovitz have

³ Solomon Fabricant, *Economic Progress and Economic Change*, 34th Annual Report, National Bureau of Economic Research, New York, May 1954.

built on his estimates. Kuznets also takes account of the leisure made possible by economic growth. From Kuznets⁴ we have:

Decade	Flow of goods to consumers (billion dollars, at 1929 prices)	Flow of goods to consumers and leisure (billion dollars, at 1929 prices)
1869-78.....	8.1	9.3
1939-48.....	100.3	154.3

The rise in leisure is impressive; we shall have more to say about its role in a growing economy when we discuss the rise in the value of human effort (relative to other inputs) used in production.

(d) Between 1940 and 1956: To bring the more recent rise in income into focus, we turn to the Economic Report of the President.⁵ The estimates are as follows:

Year	Disposable personal income at 1956 prices		Personal consumption expenditures at 1956 prices	
	Total	Per capita	Total	Per capita
1940.....	<i>Billion Dollars</i> 148	\$1,116	<i>Billion Dollars</i> 139	\$1,054
1956.....	287	\$1,705	266	\$1,581
Percent increase.....	<i>Percent</i> 94	<i>Percent</i> 53	<i>Percent</i> 90	<i>Percent</i> 50

The principal inference to be drawn from these income estimates (a) through (d) above, is that the economic growth of the United States has resulted in very substantial rises in per capita incomes. Leisure has also been increasing impressively as a consequence.

We now turn to one of the many effects of these rises in income, that is, their effect upon the demand for farm products. We thus leave aside their effects upon savings and upon other consumer goods, although we shall touch upon these by implication.

2. *Rises in per capita consumption of farm products*

The consumption of food does not increase at anywhere near the same rate as does the rise in income. Although this characteristic is now well known, and generally accepted as true for rich countries, we need to review the estimates. We shall use here the AMS estimates of United States civilian consumption of food.⁶

(a) Between 1909 and 1953: The AMS per capita food consumption index starts with 1909; accordingly, we cannot review develop-

⁴ Simon Kuznets, *Income and Wealth of the United States, Trends and Structures*. Cambridge: Bowes & Bowes, 1952. See especially tables 5 and 8.

⁵ Economic Report of the President. Transmitted to the Congress January 23, 1957. Table E-14.

⁶ It is important to distinguish among various conceptions of food: (1) Food in terms of "retail-weight equivalent" has been declining a little, per capita consumption declined from 1,612 pounds in 1909 to 1,531 pounds in 1954 (see USDA Agricultural Handbook 62, table 38); (2) at the other end of the scale, we have measures of food that include many or all of its related services (which have been increasing at a greater rate than have the purchases of so-called farm foods weighted by their prices); and (3) the retail-price weighted measures of food, for example, the old BAE estimates (now AMS estimates) which are closer to farm foods than those in (2). See ch. 5 of my *Economic Organization of Agriculture*, New York, McGraw-Hill, 1953.

ments back to 1870 as we did in the case of per capita income. Per capita food consumption⁷ was 13 percent larger in 1953 than it had been in 1909; whereas, the per capita flow of all goods to consumers fully doubled.

(b) Between 1940 and 1956: By using these two dates, we can compare the 53 percent rise in per capita disposable personal income, reported under 1 (d) above, with the rise in per capita consumption of food. The latter rose only 8 percent, however, from an index of 95 in 1940 to 103 in 1956. (The consumer price index of food, however, rose somewhat relative to the index of nonfood between these two dates.)

(c) Nonfood farm products: Daly⁸ reports estimates of the per capita nonfood uses of the following major farm products:

	1925-29	1955	Change in percent
Cotton.....	27.7 pounds.....	26.5 pounds.....	-4
Wool, apparel.....	2.1 pounds.....	1.7 pounds.....	-19
Tobacco.....	9 pounds.....	12.2 pounds.....	+36
Disposable personal income, 1956 prices (1929).....	\$1,081 per capita.....	\$1,660 per capita.....	+54

Sections (a), (b), and (c) above simply reaffirm what is well established; that is, that in the United States the per capita consumption of food and uses of nonfood farm products increase relatively little with rises in per capita income.

3. *The income elasticity of the demand*

Consumption is not the same thing as demand. Demand has two legs: one is income and the other is price (consisting of income effects and substitution effects), even when we leave changes in taste, the composition of the average family, and related factors, aside. A rise in the relative price of farm products may counteract the effects of a rise in income.

Between 1940 and 1947-49, the price of foods to consumers rose substantially more than did the price of nonfood (goods). The index of per capita food consumption rose, even so, from 95 to 100; it would have risen somewhat more than this, had food prices maintained their 1940 position in the scale of consumer prices. Between 1947-49 and 1954, it was the other way around; the nonfood consumer price index rose 16 percent and that of food 12 percent,⁹ but, despite the fall in the price of food (relatively), the per capita consumption of food rose only 1 percent, whereas per capita income rose 10 percent.

The concept of income elasticity will serve us at this point, for it is a way of separating out the income effects upon demand. Important advances have been made in estimating the income elasticity of the demand, especially for food.

As we entered the postwar years, I ventured the estimate that the income elasticity of the demand for farm products in the United

⁷ USDA, Agricultural Handbook 62, supplement for 1954 to Consumption of Food in the United States, 1909-52, October 1955, table 39.

⁸ Rex F. Daly, *The Long-Run Demand for Farm Products*, Agricultural Economics Research, USDA, July 1956, table 5.

⁹ See table 52 of USDA, Agricultural Handbook 62, already cited.

States, based on prewar experiences, was in the neighborhood of 0.25,¹⁰ meaning by this that a 10 percent rise in per capita income, other things unchanged, would increase the demand for farm products only 2.5 percent. Since then, however, per capita incomes have risen 53 percent (between 1940 and 1956, see above) and such a rise implies a somewhat lower income elasticity, because as we become richer the income elasticity of the demand for farm foods would be expected to decline.

Daly,¹¹ using 1947-49 price weights, gives the following estimates:

- (1) Food consumption per capita, as measured by ASM index..... 0.2-0.25
 (2) That part of food consumption per capita, produced on United States farms..... 0.15

A simple way of illustrating the demand implications of the estimates and analysis of part I is to take the period between 1940 and 1956, during which the United States population rose by 27 percent and per capita real income about 50 percent (I use 50 percent rather than 53 percent figure for convenience). Let us suppose that there were three producing sectors—A, B, and C; that A was as large as C in 1940; and, that the relative prices of product were unchanged. We could then have as follows:

Sector	Distribution of demand in 1940	Growth in population	Rise in per capita income	Income elasticity	Increase in demand from population and income between 1940 and 1956	Distribution of demand in 1956
	(1)	(2)	(3)	(4)	(5)	(6)
A. Agricultural products.....	Percent 10	Percent	Percent	0.15	Percent 36.5	Percent 7.2
B. Bulk of consumer products (nonfarm)	80			1.00	90.5	80.0
C. Vacation and entertainment services.....	10			1.85	144.5	13.8
Total.....	100	27	50	1.00	90.5	100.0

From these illustrative figures, we observe two things: (1) The demand for products of sector A increased only 36.5 percent, whereas that of sector C rose 144.5 percent (col. 5); and (2) that in the redistribution of the total demand among the sectors the share of sector A declined from 10 to 7.2 percent and the share of sector C went up from 10 to 13.8 percent (col. 6).

II. QUALITY EFFECTS UPON PRODUCTION

By quality effects, it will be recalled, we mean improvements in the quality of resources used in production, and the effects of these improvements upon production. The accumulation of useful knowledge

¹⁰ In my *Agriculture in an Unstable Economy*. New York: McGraw-Hill, 1945, ch. 3.

¹¹ From a recent paper by Rex F. Daly, already cited. He also gives estimates for each of the major farm products in this paper. It should be noted that the studies of Margaret Reid, Dorothy Brady, and Milton Friedman, separating changes in income into permanent and transitory components, implies that these above estimates are a bit on the low side. See Milton Friedman, *A Theory of the Consumption Function*. Princeton: Princeton University Press, 1957.

makes possible such improvements; for example, a bushel of hybrid seed corn is much better than a bushel of open pollinated corn in growing corn in most of our producing areas. So it is with many other plants. Animals, too, have been improved; so have insecticides, fertilizers, machinery, equipment. Nor are these improvements restricted to nonhuman inputs. Human effort also has risen greatly in quality whether one expresses it in terms of abilities, skills, training, or education. Then, too, and very important, the human agent is more prepared to do things in new ways; he is, thus, less tradition bound than formerly.

These improvements in the quality of resources are one of the basic characteristics of our kind of economic growth; they appear to account for most of the rise in output relative to traditional inputs and, therefore, for a large part of the impressive increases in income which we reviewed in the part I of this paper.

How is this characteristic of our economic growth related to the United States farm problem? Between 1940 and 1956, the United States demand for farm products increased about 37 percent; that is, United States consumers were prepared to buy this much more at the same relative price. Let us suppose that in farming there had been no improvements in the quality of inputs whatsoever, and that in order to have increased farm output enough to satisfy the increase in demand, 37 percent more inputs were required. With no change in the input mix, this means that it would have required 464 million instead of 339 million acres of crops harvested, and a farm labor force (family workers plus hired workers) of 15 millions, and similar increases in the other inputs. (Note, however, that in 1956 fewer crop acres were required than in 1940 and the farm labor force had declined from 11 to 8 million.) What these figures illustrate is that, had there been no improvements in the quality of the inputs used in farming, even with the slow rate of increase in the demand for farm products, it is hard to believe that the farm problem that is now upon us could possibly have arisen.

The following estimates may be helpful in taking our bearing on increases in output relative to inputs; these increases in output in excess of inputs are here represented as having risen from improvements in the quality of inputs.

(1) Between 1869-73 and 1944-53, the estimates of Abramovitz ¹² for the United States economy are as follows:

	<i>Rate of increase in percent per annum</i>
Output (net national product) up from 100 to 1.325.....	3.5
Input of resources (man-hours and capital) up from 100 to 381.....	1.7
Imputed to quality effects.....	1.8

(2) Between 1899 and 1953, Kendrick ¹³ estimates for the United States private domestic economy show:

	<i>Rate of increase in percent per annum</i>
Output (real product).....	3.3
Input (labor and capital).....	1.6
Imputed to quality effects.....	1.7

¹² Occasional Paper 52, already cited.

¹³ John W. Kendrick, *Productivity Trends: Capital and Labor*, Occasional Paper 53, National Bureau of Economic Research, New York, 1956.

Kendrick found, however, that the increase in output relative to inputs was larger between 1919 and 1953 than it had been between 1899 and 1919. Expressed in terms of quality effects, it was 2.2 and 1.1 percent per annum for the two periods, respectively.

(3) For United States agriculture between 1910-14 and 1945-49, we have as follows:¹⁴

	<i>Rate of increase in percent per annum</i>
Farm output up from 100 to 159-----	1.34
Farm inputs up from 100 to 108-----	.23
Imputed to quality effects-----	1.11

A further breakdown of these estimates indicates that between 1910-14 and 1920-24 virtually all increases in farm output were won by the application of more inputs (farm output rose 8 percent and inputs 7 percent). It is after 1920-24 that the quality effects of inputs begin to take place and at a remarkable rate even during the depression years of the thirties.

(4) United States agriculture between 1940 and 1955: Estimates for this period differ somewhat from those above in that the USDA has revised and improved its input series. The preliminary input estimates, however, are not complete; they include labor, land, buildings, machinery, fertilizer, and lime combined on the basis of average 1947-49 cost rates.¹⁵

	<i>Rate of increase in percent per annum</i>
Farm output up from 100 to 135-----	2.00
Farm inputs up from 100 to 104-----	.25
Imputed to quality effects-----	1.75

The inference to be drawn from part II is that only a small part of the increase in farm output during recent decades has come from increases in the traditional farm inputs; most of the increase in output appears to have come from what we have called quality effects—that is, from improvements in the quality of inputs. These improvements, have substantially increased the effective supply of farm inputs. Had there been none of these improvements, it would have required 35 percent more farm inputs in 1955 compared to 1940, whereas only 4 percent more farm inputs were in fact used.

III. SUBSTITUTION EFFECTS UPON THE COMBINATION OF INPUTS

Another basic characteristic of our economic growth has been the rise in the value of human effort: The price of it has gone up relative to the price of producer goods, and this change in two sets of prices has brought about much substitution. This substitution has been occurring in every nook and cranny of the economy; agriculture has not been spared.

But since this substitution is a general characteristic, why single out agriculture? The reason for doing so is that the combination of (1) a slowly increasing demand for farm products, (2) a rapid

¹⁴ These estimates are from my *Economic Organization of Agriculture*, New York: McGraw-Hill, 1953, table 7-5.

¹⁵ USDA, *Possible Methods of Improving the Parity Formula*, a mimeographed report required by sec. 602 of the *Agricultural Act of 1956*, January 31, 1957, table 4.

improvement in the quality of inputs in farming, and (3) these substitution effects has made agriculture a rapidly declining sector of the economy in terms of the labor force (here I include family as well as hired workers) who can earn a living from farming that is on a par with the earnings of comparable workers in other occupations.

Our view is that, since 1940, the improvements in the quality of inputs used in farming have increased farm output about as much as population growth and rises in per capita income have increased the demand for farm products. Accordingly, had there been no appreciable change in the combination of human effort and producer goods employed in farming, we might presume that a farm labor force of about 11 millions would now be required, as was the case in 1940. Had this been the pattern of development, the burden that would have been placed on farm people to leave farming would have been only to offset the effects of the high reproduction rates on the natural increase in the farm labor force. The burden, however, that has been placed on the "out movement of farm people from farming" has been much greater than this; from 1940 to 1956 the farm labor force fell from 11 to 8 millions, and the real economic rub is that it has not been nearly enough.¹⁶

We now turn to a brief review of changes in input prices and changes in the combination of inputs. As the price of human effort rose relative to the price of producer goods, we would expect the quantity of producer goods employed in production to rise relative to the labor force. We do not claim, however, that we are able in this way to separate out the substitution effects from all the quality effects and other developments that have occurred. All that can be said is that the direction of the observed substitution is not inconsistent with the hypotheses implied in our expectation.

1. Between 1929 and 1955: In both years the United States had approximated full employment. Prices of labor and producer goods in the United States rose as follows:

	<i>Index, with 1929=100</i>
Labor: Average hourly earnings in all manufacturing rose from \$0.57 in 1940 to \$1.88 in 1955-----	330
Producer goods: ¹	
New construction-----	245
Durable equipment-----	190
Commodities at wholesale-----	179
Metals and its products-----	204
Rubber and its products-----	172
Nonmetallic minerals-----	171
Chemicals and allied products-----	167
Fuel, power, and lighting materials-----	154
Lumber and wood products-----	387

¹ The first 2 items are from table E-5 of Economic Report of the President, already cited. The next 6 items are the BLS commodity prices at wholesale.

¹⁶ This paragraph is not inconsistent with pt. II (p. 9), at which point we reasoned that had there been no improvements in the quality of inputs and no change in the combination of inputs in farming, a farm labor force of 15 millions would have been required to satisfy the 37-percent increase in the demand for farm products. In the above statement we introduce and take into account the improvements in the quality of inputs and then point out that, had there been no substitution between human effort and producer goods in farming—that is, no change in the combination of inputs—a farm labor force of 11 millions would still have been required.

We now turn to some estimates of the quantity of labor and of capital to indicate the relative increases between 1929 and 1955.¹⁷

	<i>Index, with 1929 = 100</i>
Labor:	
Employment up from 47.6 to 63.2 millions.....	133
Man-hours.....	110
Capital: From 1929 to 1955.....	141

2. Between 1940 and 1955: We shall restrict this section to U. S. agriculture. Input prices rose as follows:

	<i>Index, with 1940 = 100</i>
Human effort: ¹	
Hired farm workers up from \$0.17 to \$0.68 per hour.....	400
All farm labor and management up from \$0.20 to \$0.65 per hour.....	325
Producer goods: ²	
All such goods.....	200
Building and fencing materials.....	249
Seed.....	243
Motor vehicles.....	225
Farm machinery.....	206
Farm supplies.....	184
Motor supplies.....	165
Fertilizer.....	155
Farm-produced feed.....	214
Farm-produced livestock.....	205

¹ USDA, Possible Methods of Improving Parity Formula, already cited. Table 8.

² USDA, The Farm Cost Situation, May 1957, p. 2.

The price of all producer goods in farming on the average doubled between 1940 and 1955. The "price" of human effort, however, fully tripled. We thus would expect widespread substitution of producer goods for human effort. Unfortunately, there are no precise estimates of the particular rates of substitution such as we have reviewed in the case of the income elasticity of the demand for farm products. The data, however, tell us something about the trends in quantity of inputs used and in the changes that have occurred in the input mix in farming.

	<i>Index, with 1940 = 100</i>
Human effort:	
Farm employment fell from 11 million in 1940 to 8.2 million in 1955 ¹	75
Man-hours for agricultural production fell from 20.4 billion to 14.5 billion ²	71
Producer goods:	
Physical assets—farm real estate, livestock, machinery, and motor vehicles at 1940 prices, rose from \$41.9 billion in 1940 to \$50.9 billion in 1955 ³	122
Physical assets used in farm production—real estate less dwellings, crops held for feed, livestock, machinery, and equipment less 60 percent of the value of automobiles, and demand deposits used for production, rose from \$83.3 billion in 1940 to \$104.7 billion in 1956 in 1947-49 dollars ⁴	126
Major farm inputs other than labor—land and buildings, fertilizer and lime, mechanical power and machinery (depreciation, interest on investment), and operation of motor vehicles totaled \$6.53 billion in 1940 and \$11.15 billion in 1955 in 1947-49 dollars ⁵	171

¹ USDA, 1957 Agricultural Outlook Charts, November 1956, table 6.

² ARS, Changes in Farm Production and Efficiency, 1956 summary, August, 1957, table 12.

³ ARS, The Balance Sheet of Agriculture, 1955, August 1955, table 2.

⁴ ARS, The Farm Situation, May 1957, based on estimates appearing in More Capital Goods Used in Farm Production, by R. P. Christensen and R. J. Muck, and supplementary figures.

⁵ USDA, Possible Methods of Improving Parity Formulas, already cited, table 4 and supplementary figures.

¹⁷ The difference in "employment" and "man-hours" is one measure of the effects of the increase in leisure. The capital figures are from Raymond Goldsmith, A Study of Savings in the United States, vol. III, Princeton University Press, 1956, and supplements by 37th Annual Report, National Bureau of Economic Research, New York, May 1957.

Before we consider any of the inferences to be drawn from these figures, it should be said that we are not unaware of other classes of input substitution that have been taking place. There are those that arise out of improvements in the quality of a particular producer durable, as a result of which it is worth more, and this brings on substitution: Hybrid seed corn replaces open-pollinated seed corn; tractors replace horses; grain combines replace grain binders and threshing machines, and so on, among producer goods within farming. Relatively cheap fertilizer acts as a substitute for farmland. There has also been some substitution between hired farmworkers and family farmworkers; the average hourly wage of hired farmworkers was 4 times as high in 1955 as in 1940, whereas the average hourly earnings of all farm labor (hired and family) and management rose only $3\frac{1}{4}$ times. Consistent with these changes in farm wages and earnings, the number of hired workers had declined one-third, and that of family workers only one-fourth, between 1940 and 1955.

In the estimates that we have reviewed in this section, we have concentrated on the prices and quantities of producer goods and of human effort employed in farming. Our economic growth has been increasing the price of human effort relative to that of producer goods. In agriculture, this change in the structure of prices has made it necessary to employ a smaller labor force and a larger quantity of producer goods. It has, since 1940, led to a 30-percent reduction in the farm-labor force, because the total demand for farm products has not increased enough to employ as many as formerly to advantage in farming and at the same time absorb the remarkable improvements in the quality of inputs that have taken place.

More specifically, we have observed that, from 1940 to 1955, the price of human effort in farming rose from an index of 100 to 325, whereas the major physical assets used in farming rose considerably less, namely, to an index of 236 (the price of human effort, therefore, rose 38 percent relative to these physical assets). Meanwhile, man-hours for agricultural production fell from an index of 100 to 71, and physical assets used in farm production rose from 100 to 126. (Accordingly, producer goods increased 77 percent relative to human effort in farming.)

The changes in major inputs used in farming give a more precise picture of what has been happening on this score. As before, the price of human effort stands at 325 in 1955 compared to 100 in 1940; the price of the input services of producer goods, however, appears to have only doubled; accordingly, in this comparison, the price of human effort rose 63 percent relative to the other inputs. For the

quantity of farm labor and of other major (selected) inputs, we have as follows:

[In billions of 1947-49 dollars]

Year	Farm labor	Other selected inputs ¹	Total inputs
	(1)	(2)	(1)+(2)
1940.....	13.6	6.5	20.1
1955.....	9.8	11.1	20.9
Change (percent).....	-28	+71	+4

¹ These inputs are the same as those referred to above as "major farm inputs other than farm labor." (See footnote 5, preceding table.) The study by a staff member of the ARS of farm inputs has not been completed. The "Total inputs" column does not, therefore, account for all inputs used in agricultural production. Those minor groups that are not included may represent upward of 15 percent of all inputs in 1955. There are some indications that these inputs have increased at a somewhat faster rate than have the "Other selected inputs."

Our conclusion is as follows: The hard core of the United States farm problem is a labor-transfer problem. Many farm people who have been accustomed to earning their living at farming are being compelled to leave farming and enter upon other occupations. This farm labor transfer problem has come upon us as a consequence of three basic characteristics of our general economic growth. With our kind of economic growth, the demand for farm products is of relatively slow growth; the improvements in the quality of inputs go on apace throughout the economy, including farming; and the price of human effort rises relative to the price of producer goods. There, thus, flows from these basic characteristics three classes of effects which we have called demand effects, quality effects, and substitution effects. These effects in combination explain, in large measure, the nature and severity of the United States farm problem that now confronts us.

TRENDS IN AGRICULTURAL PRODUCTIVITY

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During the last quarter century, farm production per unit of resources used increased substantially. The rise in output per man-hour in agriculture was greater than in manufacturing, for example. Greater efficiency of farm production has aided industrial expansion in two ways. It has provided relatively cheap sources of food and raw materials. Also, it has released manpower needed in expansion of industry. More efficient use of resources in both agriculture and the nonfarm segments of the economy have meant increases in our level of living in the United States. The rapid increase in farm production per unit of resources, especially since the start of World War II, also has had an important relation to the problem of adjusting farm production to market demand.

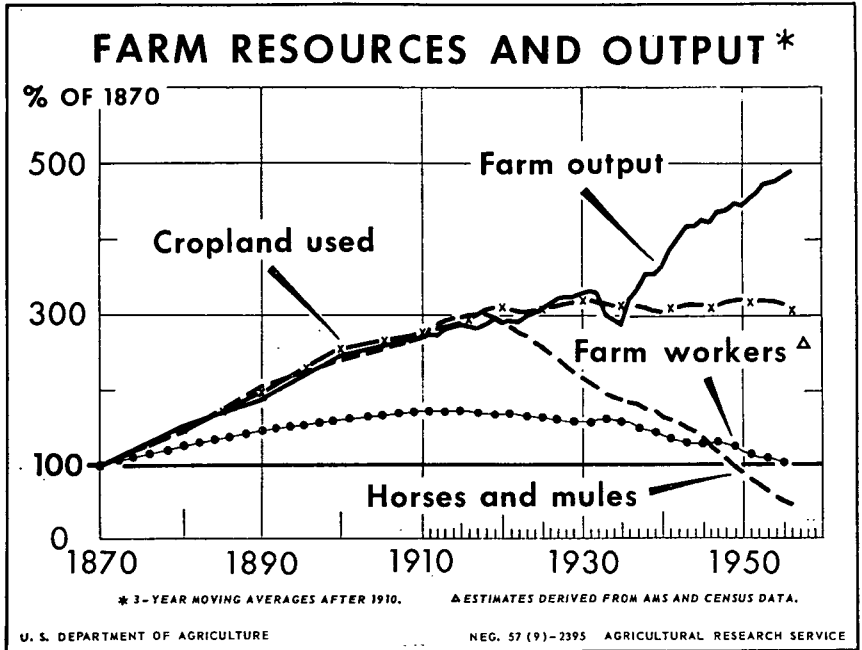
To measure trends in agricultural productivity, we can relate changes in total production to changes in use of a single resource, such as land or labor, to changes in a group of resources such as labor, fertilizer, and machinery, or to changes in the total of all production resources used.¹ Farm people and farmland have been the two most important production resources furnished directly by agriculture and major attention here will be given to trends in production per unit of these resources. Specifically, the purposes of this paper are to show some of the significant trends in agricultural productivity, to indicate the chief factors associated with these trends, and to point out some of the major consequences of greater productivity to both agriculture and the economy as a whole.

THE LONG-TERM PERSPECTIVE

Figure 1 shows the long-term trends in farm output and the use of three important agricultural resources—farmworkers, cropland, and work animals. Except for major interruptions during the drought and depression period of the 1930's, the volume of farm output for human use in the United States has trended upward since 1870. Output is now about five times as great as it was nearly a century ago. Farm employment, acreage of cropland, and number of horses and mules trended upward, along with farm output, from 1870 to about the time of World War I. Volume of farm output, acreage of cropland, and number of work stock were each about three times as great in 1920 as in 1870. Farm employment increased by two-thirds during this period.

¹ The term "productivity," as used in this paper, means the ratio of total output to the quantity of a single resource, such as labor, or to the quantity of a group of resources. Changes in this measure do not reflect changes in marginal productivity of resources.

FIGURE 1



Significant changes in these agricultural trends occurred following World War I. Total acreage of cropland for the Nation as a whole stabilized and has changed little since 1920. In general, increases in acreages of cropland in regions west of the Mississippi River have about offset decreases in regions east of the river. Numbers of work stock took a sharp downward trend after 1920. Today there are less than half as many horses and mules on farms as in 1870, and less than one-sixth as many as in 1920. Farm employment also started its downward trend following World War I. It is estimated that average farm employment now is about the same as in 1870, and only 60 percent of that in 1920.

As mechanical power in the form of tractors, trucks, and automobiles replaced work stock and farmers bought their power instead of raising it, millions of acres of cropland and large quantities of other resources were released for output of farm products for human use. This was a dominant factor in the continuation of the upward trend in farm output during the interwar period. Mechanical power and machinery also replaced farmworkers.

The upward trend in farm output and the downward trends in farm employment and horses and mules became more pronounced during and following World War II when farmers speeded up their rate of adoption of improved farming practices.

The trends shown in figure 1 indicate clearly that production per farmworker has risen almost constantly since 1870. The average farmworker today is associated with nearly five times as much farm output as in 1870. Output per farmworker has doubled in the last 20 years. Thus a given amount of output can now be obtained with half the number of farmworkers used just before World War II.

The effects of the longtime rise in output per farmworker are shown dramatically by the data on number of persons supported per farmworker (fig. 2). One farmworker today "supports" himself and about 20 others. In 1820, the average worker on farms supported himself and only three others. Advancing technology and increasing contribution of nonfarmworkers to farm production aided in this large increase in number of persons supported per farmworker. Nevertheless, a decreasing proportion of our total labor force was needed to supply our growing population with its needs for food, fiber, and tobacco. (See fig. 3.) This meant that workers no longer needed on farms were available for producing nonfarm goods and services and thus raising our level of living.

FIGURE 2

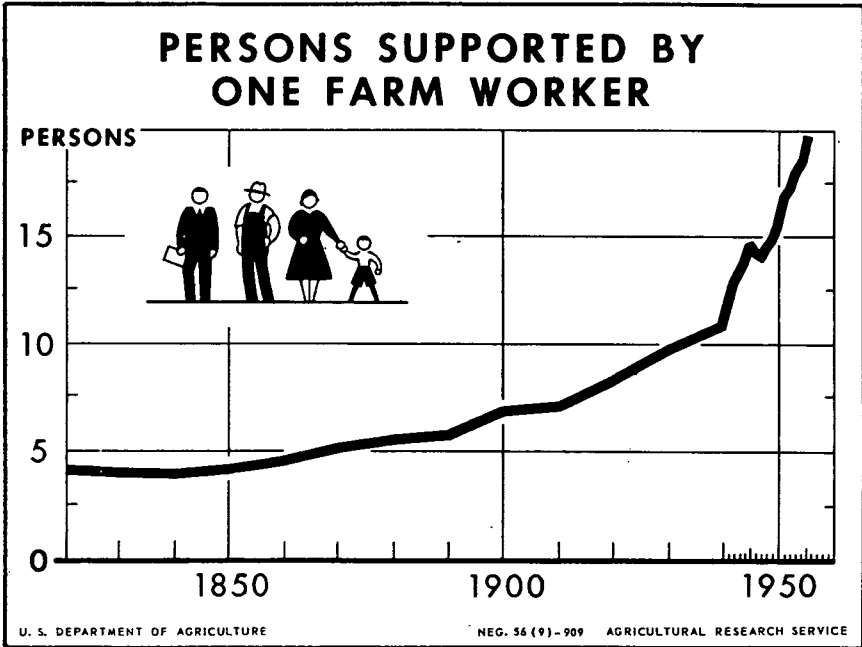
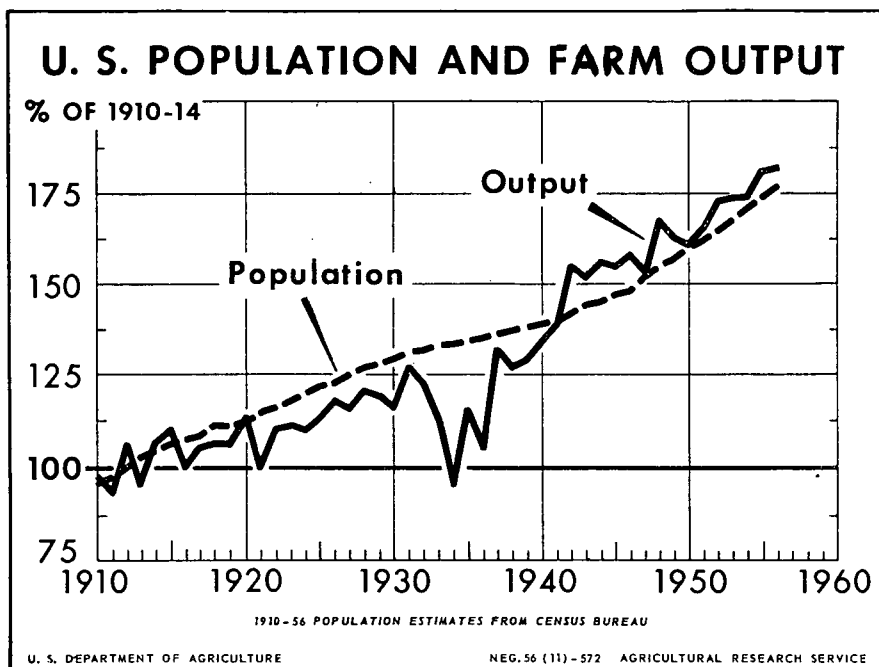


FIGURE 3



An upward trend in output per acre of cropland became evident about 1920. The end of World War I marked the beginning of major substitution of nonfarm production goods for farm labor, farmland, and farm-produced animal power. A more detailed examination of the productivity trends over the period since World War I follows.

PRODUCTIVITY TRENDS SINCE WORLD WAR I

Increasing production per acre, per animal, and per man-hour has dominated the farm picture in the United States during the last generation. Drought and depression slowed the upward trend in crop production per acre during the interwar period (fig. 4). Beginning about 1940, however, a sharp upward trend began. Average production of crops per acre in 1957 may be a record thus far and a fourth larger than in 1940. Livestock production per breeding unit—milk per cow, eggs per hen, and so on—rose slightly more than crop production per acre during this period. From 1919 to 1940, production per breeding unit increased by more than a third, in contrast to a rise of about 15 percent in crop production per acre.

Output per man-hour of farm labor has about doubled since 1940, an increase in farm output of more than a third being obtained with 30 percent fewer man-hours (fig. 5). This was a rapid acceleration of the trend during the interwar period when output per man-hour rose by less than half.

Gains in labor productivity in agriculture have compared favorably with those in manufacturing (fig. 6). The increase in output per man-hour of farm labor was only a fifth as great as in manufacturing during the interwar period. But labor productivity in manufacturing

went up by less than half from 1940 to 1955, when productivity of farm labor doubled.

FIGURE 4

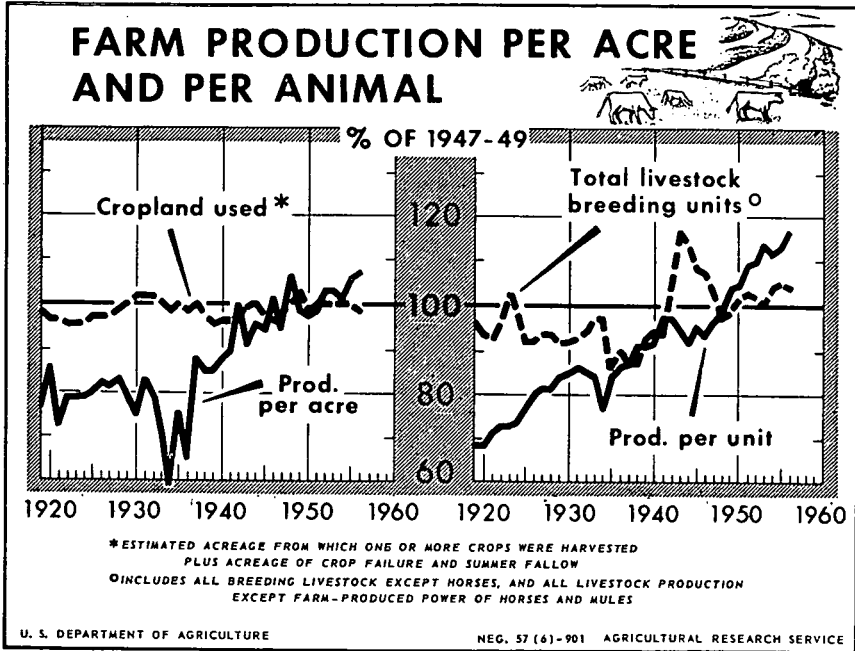


FIGURE 5

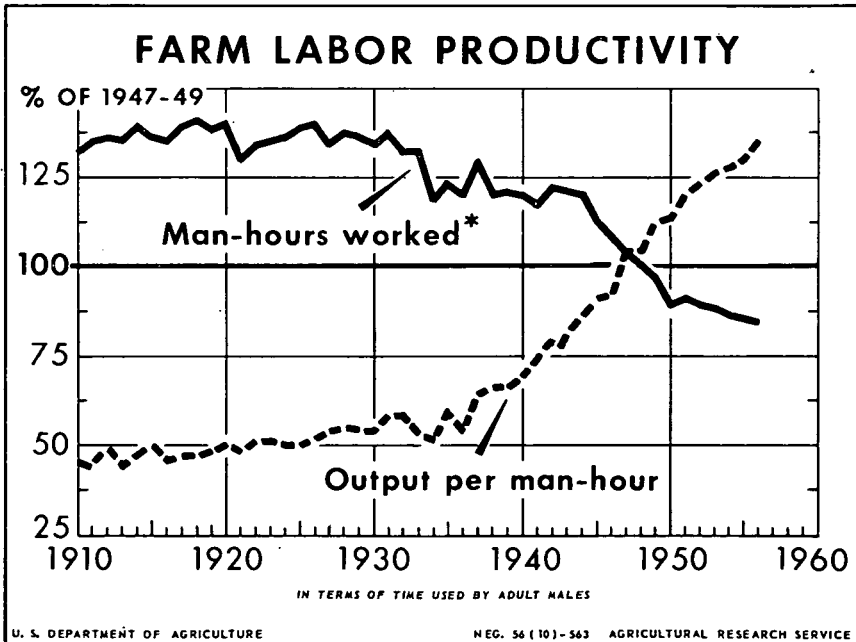
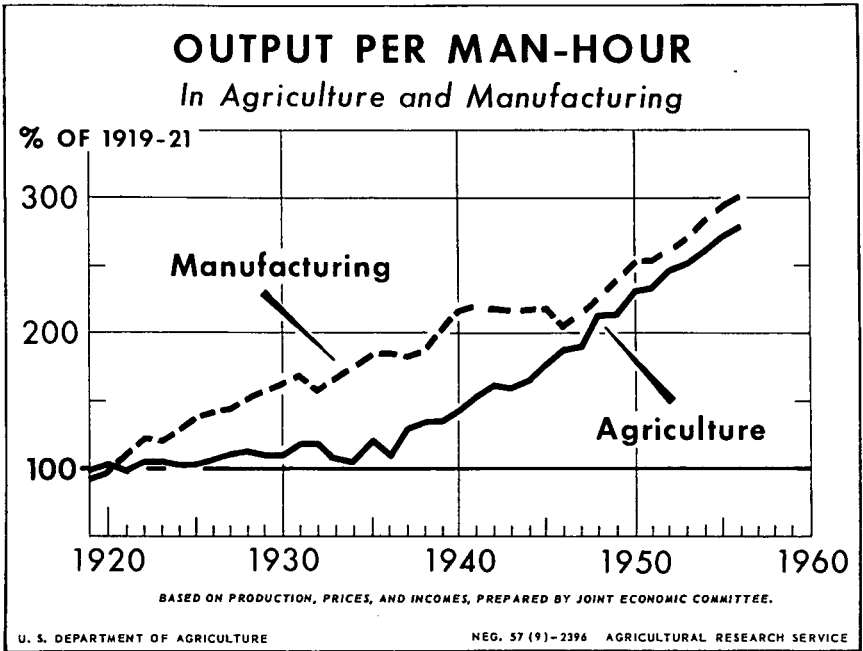


FIGURE 6



SOURCES OF GREATER PRODUCTIVITY

Advances in technology have been the chief basis for the rise in productivity of farm labor, cropland, and animals. An increasing dependence of agriculture on nonfarm goods and services has accompanied the upward trend in productivity, especially during the last 15 years. Capital investment in agriculture also increased substantially during this period. Value of capital assets, other than land and buildings, per farmworker has about doubled since 1940.

Increased mechanization has been the dominant influence in the upward trend in labor productivity in agriculture. During the interwar period, mechanization accounted for more than half the increase in output. During the last 15 years its influence on output has been less pronounced but it has resulted in a rapid reduction in farm labor requirements. Farmers now have more than 4.5 million field tractors—about 3 times the number on farms in 1940. The number of motor-trucks has increased by about the same proportion. The number of newer type machines, such as field forage harvesters and pickup balers has increased greatly since the end of World War II (fig. 7). The number of each of these farm machines is now 12 times as large as it was in 1945.

Greater use of fertilizer is a major reason for the upward trend in crop production per acre in recent years (fig. 8). Fertilizer use in agriculture is now nearly 3½ times as great as in 1940. Fluctuations in farm income did not influence annual use of fertilizers in the last decade as much as they had done earlier. Use of fertilizer continued to trend upward in the period following World War II even after realized gross income leveled off.

FIGURE 7

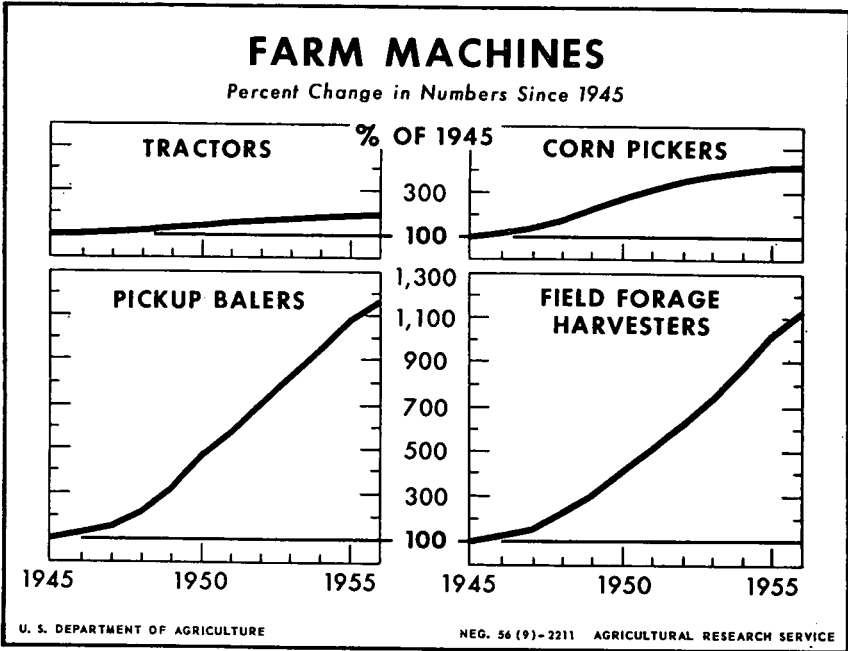
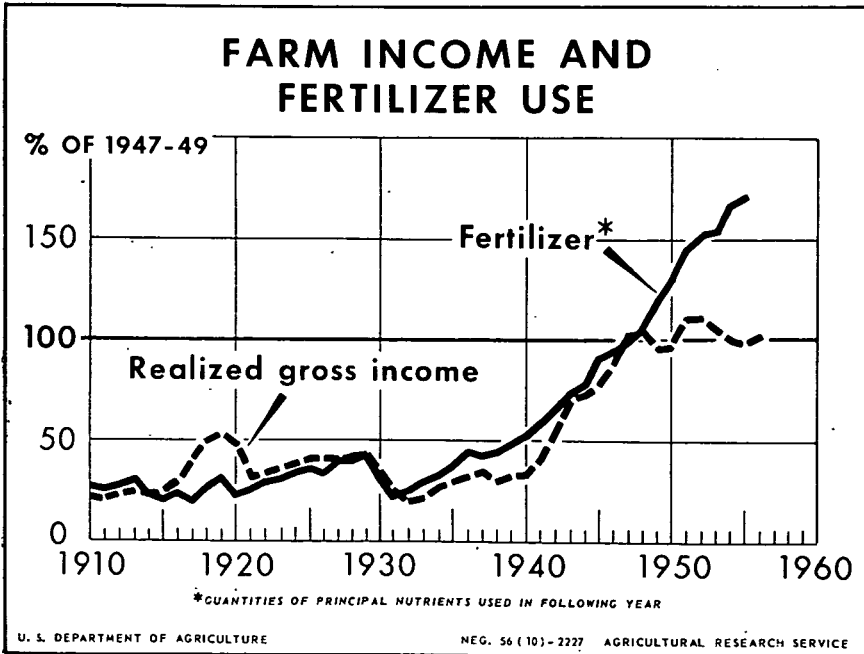


FIGURE 8

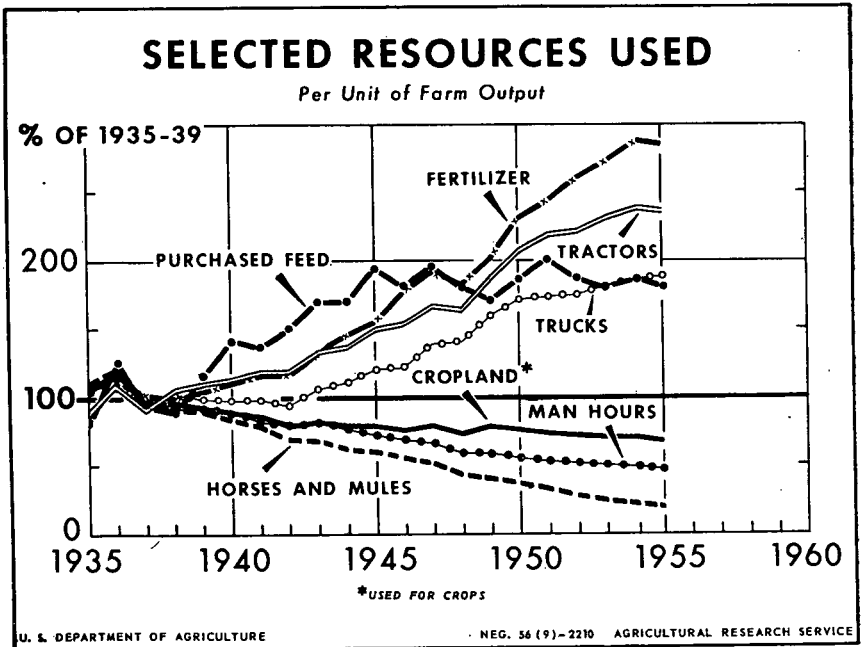


Greater use of hybrid corn seed and of improved varieties of other crops, as well as large quantities of new and better pesticides have

added to our crop yields. Additions to our irrigated acreage and increasing use of supplemental irrigation have contributed to the same end. Improvements in livestock and poultry, and heavier feeding of better balanced rations, which involves greater dependence on purchased feeds, have helped in getting more livestock production per breeding unit. Greater yields of both crops and livestock have combined with increased mechanization in raising production per man-hour of farm labor.

The rising productivity of farmworkers, cropland, and animals has been associated with a substitution of purchased goods for these agricultural resources. This substitution of nonfarm goods for farm resources has been especially rapid during the last 15 years (fig. 9). The quantity of fertilizer and purchased feed, and the number of tractors and trucks used on farms, for example, have increased at a more rapid rate than volume of farm output. Man-hours of farm labor, cropland, and horses and mules used per unit of farm output have decreased greatly.

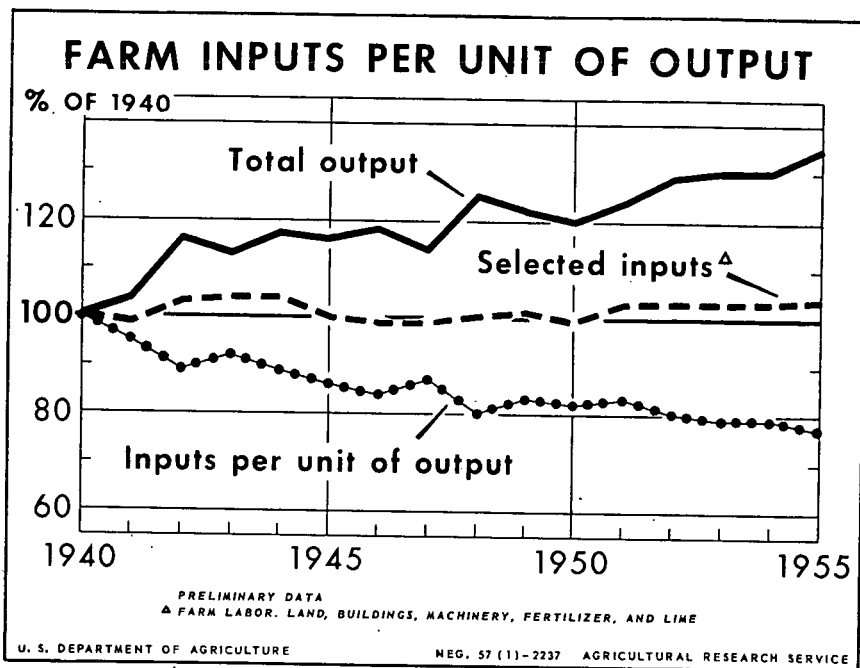
FIGURE 9



TRENDS IN PRODUCTIVITY OF TOTAL RESOURCES

The evidence is that farm output per unit of total resources has been rising as is indicated by the data in figure 10. Farm output per unit of total resources may have increased by nearly 25 percent from 1940 to 1955. Compared with 1920, we may now be getting 40 to 50 percent more farm output per unit of all resources.

FIGURE 10



From 1940 to 1955, total farm output rose by 35 percent. During this period, increasingly greater quantities of machinery, fertilizer, and other nonfarm resources were used in farm production. Increases in these resources were largely offset by the decline in both farm labor and resources used for the production and maintenance of farm horses and mules. The rise from 1940 to 1955 in total resources used probably was only about 10 percent. Moreover, preliminary results of research on this subject show only a nominal rise in total resources used in agriculture from 1910 to 1940, when volume of farm output increased by more than a third. Thus the large increases in farm output are mainly the result of a shift in resources used with an accompanying rise in productivity of these resources. The increases in output per unit of total resources represent significant technological progress in agricultural production.

IMPLICATIONS OF GREATER PRODUCTIVITY

Our trends in agricultural productivity have important implications to economic growth and development both in agriculture and the nonfarm sectors of our economy. The upward trend in agricultural productivity has meant that over the years relatively fewer resources have been needed to supply our Nation's requirements for food, fiber, and tobacco. Production resources, especially manpower, thus have been released for producing ever greater quantities of non-farm goods and services. This has meant a rising level of living for all our people. In the absence of the productivity gains registered in agriculture, a much larger proportion of both the Nation's labor force

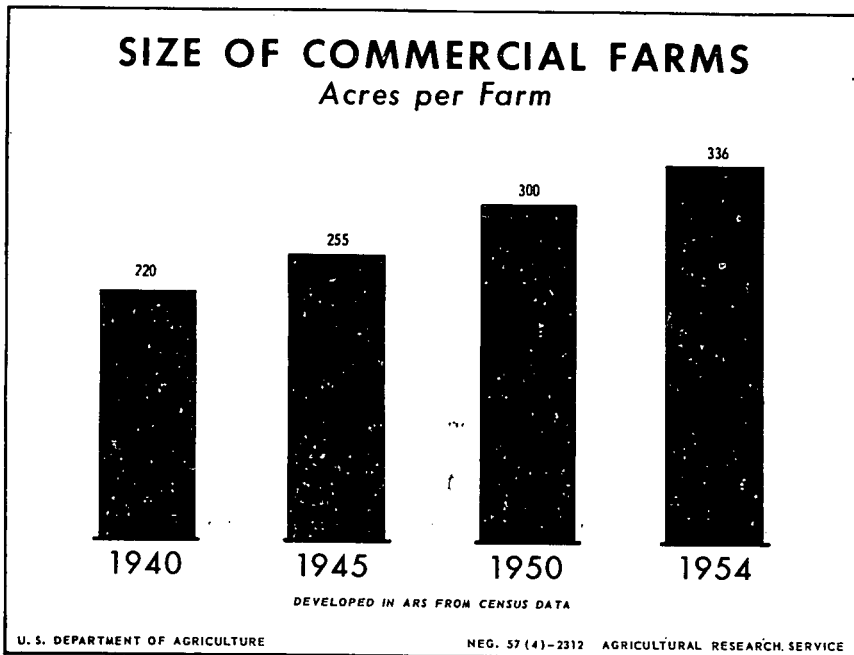
and of its capital goods would be needed to meet our present needs for farm products, and our level of living would not be nearly so high.

Rising productivity has several implications to agriculture. Unquestionably, in the long run, farm people have shared in the rising productivity of both the farm and nonfarm sectors. Greater efficiency of farm production has permitted farmers to increase their real incomes over the longer run.

However, increases in farm output in the World War II and postwar periods have tended to outrun the current growth in market demand for farm products. The volume of farm output produced in any given year represents the quantity of resources used in agriculture multiplied by the productivity of these resources. As increases in productivity, or in output per unit of resources, have been the chief basis for our increases in level of living, a prevention of further rises in productivity would have unfortunate economic consequences. Currently, a major adjustment alternative would appear to be in the area of encouraging a general reduction in resources used in agriculture. In the long run, the problem is one of adjusting the rate of increase in farm output to the rate of growth in market demand. Here also, adjustments in quantity of resources used in agriculture would appear to be more economically desirable than a dampening of the rise in output per unit of resources.

In the past, agriculture has made important adjustments in transferring resources to other sectors of the economy. This has been true especially during the last 15 years. For example, from 1940 to 1956, the number of farmworkers was reduced by 3 million, or nearly 30 percent. Further evidence of the large adjustment in labor resources is the fact that 28 percent of all farm operators worked 100 days or more off their farms in 1954. This was about twice the proportion in 1939. The adjustment in production resources is evident in other ways. About a third of the tracts of farmland purchased in recent years were bought to enlarge existing farms. This means that large numbers of farm operators believe that they presently have sufficient family resources and accumulations of machinery and other capital goods to farm efficiently a much larger acreage than they are currently farming. The importance of past adjustments in this regard is indicated by the fact that the average acreage per commercial farm in the United States has increased by more than 50 percent since 1940 (fig. 11).

FIGURE 11



The rapid adjustment in agricultural labor resources in recent years, both in terms of the sharp decreases in number of farmworkers and in the increasing importance of off-farm employment of farm operators, points up the great dependence of farm people on nonfarm jobs. Farm people thus have a major stake in economic stability in the nonfarm sectors and are becoming increasingly vulnerable as regards economic depression and the loss of job opportunities outside agriculture.

The rapid substitution of nonfarm inputs for farm labor and for farmland in the process of raising productivity in agriculture also is relevant to the problem of farm production adjustment. The past record underscores the difficulty of trying to adjust downward total production of crops or total farm output through reduction in the quantity of any single agricultural resource, such as cropland. The production-decreasing effects of a moderate reduction in acreage of cropland can be offset quickly by increases in yields obtained through greater use of fertilizer, irrigation, and other improved practices, most of which involve use of large quantities of production goods obtained from the nonfarm economy.

THE NATURE OF INCOME PROBLEMS OF FARMERS

C. Brice Ratchford, North Carolina State College

My assignment is to describe the nature of the income problems of different economic classes of farmers and the application of price policy to the solution of farm families' income problems. I congratulate the committee on considering the problems of the several economic classes of farms separately. Certainly the problems of the several classes are different, and there is evidence that the solution will be different.

ECONOMIC CLASSES OF FARMS

Several broad classes of farms are identified and described in this introductory section. The number of farmers in each category is given as an aid in evaluating the importance of the major problem areas.

There are at least four categories of farms which should be considered in a study of income problems. These are: (1) larger than family-type farms, (2) family-type farms, (3) smaller than family-type farms, and (4) part-time and residential farms.

These categories of farms can be described in general terms quite easily. Let us begin with the family farm.¹ The family farm is one that is large enough to produce an income, over a period of years, sufficient to give the farm family a level of living comparable to average levels of living of nonfarmers who have comparable amounts of labor and investment. This concept is further qualified by having the work requirements handled by the operator and his family with only supplementary² use of hired labor. Larger than family-size farms are those, which even using current levels of technological efficiency, have productive work requirements in excess of those that ordinarily would be handled by the operator and members of his family with only supplementary use of hired labor. The farmers who fall in these two categories are frequently labeled as commercial farmers. The smaller than family type farms are those which even with good management do not have sufficient resources to provide full-time productive employment for the family labor and to give the family an income sufficient to support a level of living comparable to the average enjoyed by nonfarmers. The farm families in this category are the so-called low-income farms. The part-time and residential farms are those where the operators depend only partly on agriculture for their income. By definition, the operators work off the farm 100 or more days or other income of family members exceeds sales from the farm.

¹ In this section the author has drawn generously from the USDA publication entitled "Family Farms in a Changing Economy," by Jackson McElveen, Agricultural Information Bull. No. 171, March 1957.

² "Supplementary" is defined as not requiring hired labor at all seasons but only during peak labor requirement periods.

It is impossible to determine exactly the number of families in each category. A rough approximation may be secured, however, from the classification of farms provided in the agricultural census of 1954. Table 1 shows the economic classes of farms for 1954 as adjusted by McElveen.³ The majority of the class 1 farms fall in the category of larger than family farms. In 1954, these farms had average sales of \$56,200 and paid average cash wages of \$8,300. The majority of the farms in classes II, III, and IV are apparently family-size farms. Sales for the farms in these classes averaged \$7,300 in 1954 and hired labor amounted to an average of \$1,166 for class II farms, \$422 for class III farms, and \$214 for class IV farms. The farms in classes V and VI averaged sales in 1954 of only \$1,300 and hired labor amounted to \$106 for class V farms and \$43 for class VI farms. Certainly the average farmer in these classes does not have resources to qualify as a true family farm.

TABLE 1.—Number of farms by economic class, 1954

Economic class	Value of sales	Number of farms
Commercial farms:		
Class I.....	\$25,000 and over.....	134,000
Class II.....	\$10,000 to \$24,999.....	449,000
Class III.....	\$5,000 to \$9,999.....	707,000
Class IV.....	\$2,500 to \$4,999.....	811,000
Class V ¹	\$1,200 to \$2,499.....	536,000
Class VI ¹	\$250 to \$1,199.....	463,000
Total.....		3,100,000
Noncommercial farms:		
Part-time and residential ²	Under \$2,500.....	1,507,000
Subsistence ⁴	Under \$250.....	175,000
Total.....		1,682,000
All farms.....		4,782,000

¹ With operator not working off the farm as much as 100 days and farm sales greater than income of family members from off-farm sources.

² With operator working off the farm 100 or more days or other income of family members exceeding sales from the farm.

TABLE 2.—Number of farms by category

Category	Number of farms	
	Number	Percent
Larger than family farm ¹	134,000	2.8
Family farms ²	1,967,000	41.1
Smaller than family farms ³	1,174,000	24.5
Part-time and residential ⁴	1,507,000	31.6
Total.....	4,782,000	100.0

¹ Economic class I.

² Economic classes II, III, IV.

³ Economic classes V and VI plus 175,000 subsistence farms classified in table I as noncommercial farms.

⁴ All noncommercial farms shown in table I minus the subsistence farms.

The number of farms in each of the four categories under discussion is shown in table 2. There are 134,000 or 2.8 percent which are larger than family size, 1,967,000 or 41.1 percent true family farms,

³ McElveen, Jackson V., Family Farms in a Changing Economy, USDA Agricultural Information Bull. No. 171, Washington, D. C., March 1957.

1,174,000 or 24.5 percent smaller than family type farms and 1,507,000 or 31.6 percent of part-time or residential farms. These data show several significant points. While their sales are an important part of total agricultural sales, large-scale farms still constitute a small percent of all farms, granted the number has been increasing. The number of part-time and residential farms has been increasing and now constitutes a significant percent of all farms. The true family farm is the largest category, and the farms in this category are constituting an increasingly larger share of the total number of farms. The number of small scale or low-income farms has been decreasing, but the number is still large from an absolute point of view.

This classification is somewhat unique in that there is a smaller than family type category as well as a larger than family type category. This point is frequently ignored. Many people apparently define a family farm as any tract of land currently supporting or subsisting a family. In this popular usage, there is no such thing as a "too small" family farm. Promotion of family owned and operated farms has been a continuous policy of this country from the beginning and the vast majority of our citizens favor continuing this policy. The fact that farms can be too small should be recognized, however, as programs are developed to implement the policy. The farms which are too small to provide a decent level of living for a family, even with good management, are not a priceless asset to either the families on these farms or to the country as a whole. Programs designed to protect family farms should not perpetuate a category of low-income farms. The programs should seek rather to eliminate low-income farms over time by permitting some to become family farms and others to move out of agriculture. Moreover, the size of any family farm is likely to change over time as a result of changes in technology and in economic factors; and our programs should be flexible enough to permit, if not to positively encourage, such changes.

INCOME PROBLEMS OF FARMERS

This section is devoted to a discussion of the income and related problems of family farms, smaller than family farms, and part-time and residential farms. The income problems of large scale farms will not be handled in this paper. In order to simplify exposition, family farms will be designated as commercial farms and smaller than family farms as low-income farms.

Income problems of commercial farmers

(a) *Cost-price squeeze.*—Decreased income due to the so-called price-cost squeeze is undoubtedly the major "felt" problem of commercial farmers. However, it should be recognized that this is really evidence of a problem or a number of problems. The cause of the problems(s) is the important point from a policy point of view. Some farmers have been able to offset the income squeeze through increased use of technology, improved management, increased volume of business, and new enterprise combinations. Apparently the majority, however, have experienced decreasing incomes in the last 4 to 6 years. True, some of the families in this category are still making incomes equal to alternatives in other economic activity; but it is never a happy situation when incomes are decreasing, particularly when some

other segments of the economy are enjoying ever increasing incomes. The decrease in net incomes to farmers is occurring at a time when the need for cash by farm families is increasing. As in farm production, increasing amounts of the goods and services used in family living are being purchased rather than produced on the farm and in the home. Cash living costs in farm homes are approaching those of urban dwellers. The need for increased cash incomes is causing the decrease in farm income to pinch more than might be apparent from studies of income per se.

A commonly recommended remedy for a cost-price squeeze on an individual farm is to increase production. This alternative has been rather effectively blocked for some farmers through quotas and allotments. The expansion in volume of all commodities not restricted by quotas and allotments could hardly be the answer to higher net income if we agree that the demand for agricultural commodities is inelastic, which means prices fall faster than volume increases. Expansion through purchasing or renting more land has likewise not appeared to be a good opportunity to many farmers and in some cases additional land has simply not been available at a reasonable price.

Reduction of costs is another frequently suggested remedy for the cost-price squeeze. There are many ways in which farmers can reduce per unit costs; but most of the most common means increase production. In the case of allotted crops, this results in a further decrease in allotments. It is almost impossible to reduce total costs because fixed costs constitute such a high proportion of total costs. It can even be argued that on the family-type farm labor is a fixed cost. Over time, costs can be reduced substantially through improvement in technology; but this is far from a satisfactory answer in the short run.

(b) *Price instability.*—Price instability continues to be a major problem facing commercial farmers. Prices of nonsupported commodities continue to vary widely from season to season. These variations are due largely to changes in supply, although there are some changes in demand. While some of the variation in supply is due to weather conditions, farmers' reaction to changing prices is the major cause of variation in supply nationally. Good prices at time of sale of present crop continue to cause farmers as a whole to increase production in the next production period. This results in sharply falling prices and a substantial curtailing of production which results in higher prices and starts the cycle over. Due to the inelastic demand, prices change sharply with relatively small changes in supply. Such a situation is probably inherent in an economy where several million units are operating independently, particularly so long as there is unused productive capacity.

(c) *Increasing capital requirements.*—Requirements for both fixed and operating capital have been increasing rapidly. While new technology has given great benefits, it has almost invariably increased capital requirements. An equally important factor has been the increase in cash costs of farming due to substituting purchased supplies for home-produced supplies. For example, the farmer of today buys tractors and fuel whereas for many years he produced the work animals and feed for them on the farm. The increasing capital requirements affect the farmer in two ways. First, the farmer has the prob-

lem of accumulating and/or acquiring the capital. This becomes increasingly difficult as net income decreases. The second effect is that risk is increased and this has several repercussions. Risk may appear so high, particularly in view of the lower profit margins, that some investments needed to increase efficiency are not made; crop failures due to bad weather or poor management can very quickly force a farmer out of business; and the need for competent management is increased sharply.

Perhaps the greatest impact of the high capital requirements is in the area of young people getting started in farming. Most young people do not have and cannot borrow the necessary capital. Those who can borrow the required capital, probably through family connections, find that interest and principal payments require such a high amount of their total income that they must accept a low standard of living for many years.

(d) *The marketing problems of farmers.*—Another major problem of commercial farmers is adjusting to the demands of the modern marketing system. The marketing system has changed as rapidly as production due to new technology and the addition of new services. The present-day marketing system requires a large volume, consistent quality, and dependable supply. The volume of most family-type farms is too low to permit the family to do the packaging, storage, processing, advertising, etc., required. Volume is often too low to attract processing and merchandising firms. The alternative is for farmers themselves or marketing firms to assemble the produce of a number of farmers. The assembly per se is not difficult, but securing the necessary consistent quality and a dependable supply do become limiting factors. Many people attribute vertical integration in some commodities to the need on the part of processors and marketing firms for a dependable, large volume of consistent quality product.

Income problems of low-income farmers

The low-income farmers have to some extent the same problems as the commercial farmers. These problems are generally of less importance, however, than several problems peculiar to low-income farmers.

(a) *Limited resources.*—The vast majority of the low-income families have too few resources to sustain levels of living consistent with United States standards. The amount of land and capital available to them is so low that even if the best technology and management is used, income is still low. The problem is accentuated because the small size of business often prevents use of much technology which would increase income. As an example, many small farms cannot justify mechanizing farm operations; yet mechanization is necessary for a return to labor comparable to that earned in nonfarm employment. Limited resources also mean there are limited assets to use as collateral for borrowing money.

(b) *Resource accumulation difficult.*—One obvious answer to the problem of low-income farmers is acquiring additional resources. Accumulating additional resources is very difficult for this group for a number of reasons. First, low income makes it difficult to save, the bare essentials for the family requiring all income available. Second, on the average, low-income families have an above-average ratio of dependents to income producers, due largely to outmigration of work-

ers in the productive age bracket. This makes it difficult to increase income and does increase consumption. Third, many low-income families have a low preference to save, the reasons for this being obscure and debatable but the consequences obvious. Even if income is increased through grants or due to some windfall, it is likely to be consumed rather than invested in income-producing uses. The high propensity to spend even makes these families a poor credit risk and is a limiting factor to making additional resources available through a program of easy credit. Of course, there are a number of low-income families which can be converted into commercial farmers through a liberal credit program. The record of the Farmers' Home Administration proves this. At the same time, there is ample evidence that liberal credit is not a feasible solution for the income problems of many of the families.

(c) *Limited ability of operators.*—Many operators of low-income farms do not have the ability to apply modern technology and manage a modern commercial farm. Low-income farms have tended to be concentrated in the same geographic areas for many years. There has been a constant outmigration of the better trained people. Also, there has been less formal and informal training for farmers in the low-income areas than in other areas. These factors have resulted in poorly trained farm operators which is just as much and perhaps more of a cause of low income than limited land and capital.

Income problems of part-time and residential farmers

This is a very heterogeneous group of families. Some in this category consider themselves to be primarily farmers, looking to off-farm work as merely a supplement, and may even refuse nonfarm work if farmwork is pressing. There are others who consider farming as a supplement to their nonfarm income, living in rural areas and farming because they inherited a farm or because they consider raising a family on a farm to have many noneconomic benefits. There is still another group of part-time and residential farmers who have little employment in either agriculture or off-farm work.

The nonfarm employment of people in this category runs the full gamut of employment possibilities. Some are professional people, some are self-employed, while still others work at the most menial task.

The income situation and income problems also vary widely. The combination of farm and nonfarm employment gives some of the families larger income than either most full-time farmers or most full time nonfarmworkers. At the other extreme are those who eke out a bare existence and are really welfare cases.

Farmers of this category have income problems of two sorts. They have basically the same problems in connection with their nonfarm employment as people engaged only in nonfarm employment. In this category falls problems such as keeping fully employed, job security, wage rates, working conditions, and the like. Some part-time farmers feel that the employment problems of part-time farmers are different from those of non-part-time farmers. They feel that they may be the first to be released if employment is curtailed simply because they do have a farm and, hence, have a possibility of other income. There are some reports of more absenteeism on the part of part-time farmers

because they take time to work on the farm. This, in turn, may have some effect on advancement and job security. Part-time farmers are less mobile than those workers not farming. This probably results in lower wages. The solution of many of these problems is beyond the realm of agriculture policy. The answers to some of the problems, for example farmwork conflicting with nonfarm work, can be solved within the agricultural economy.

Part-time and residential farmers also have agricultural problems. As in the case of low-income farmers, the part-time and residential farmers have some of the same agricultural problems as commercial farmers. Part-time farmers are concerned with the price-cost squeeze, price instability, and marketing. They are of much less importance, however, to part-time than to commercial farmers. On the other hand, part-time farmers have some special problems. Some part-time farmers use such poor technology and management and/or have such a small scale of operation that some of the nonfarm income is required to support the farming operations. A much more common problem is conducting farming operations which conflict with the nonfarm employment. This likely results in a poor job at each. This problem can often be solved through either a change in scale of operations, a change in enterprise combinations, or both. Part-time farmers usually make less use of technology than full-time farmers, likely due to lack of interest, scale of operation, and the lack of necessity for efficient production rather than to a shortage of capital which is likely the major limiting factor with low-income farmers. There is a tendency for part-time farmers to leave some resources, particularly land, idle and let it erode, which may be more of a public than a private problem.

For some part-time and residential farmers the farm problems are more important while for others the nonfarm employment problems are more important. There is considerable evidence that the farmers themselves are more concerned with their nonfarm employment problems. The fact that they accepted nonfarm employment is evidence that they recognized that their income problems had to be solved outside of agriculture. The low level of technology, large amount of idle land, etc., are further evidence of a declining interest in agriculture.

Mention should be made of those in this broad category who are making low earnings from both agriculture and nonfarm employment. A number of studies show that for either physical or mental reasons many of these families are not capable of productive work. Some of these families are not hopeless welfare cases and can be rehabilitated. Regardless of whether they are hopeless or can be rehabilitated, they are largely a problem for the welfare agencies.

SUMMARY OF INCOME PROBLEMS

The commercial farmers are faced with the problem of maintaining income. This is proving difficult in the face of a cost-price squeeze. Price instability, increasing capital requirements, and a changing and increasingly complex marketing system add to the problem of maintaining income.

The basic problem of the low-income farmers is insufficient resources. It is almost impossible for these farmers to save and acquire additional resources and preference patterns keep liberal credit from being a universal answer. The scale of business and limited managerial ability even limit the use of new technology with existing resources to improve income.

Many part-time and residential farmers have a satisfactory level of income. Their position is complicated, however, by having both farm problems and problems connected with nonfarm employment. Special farm problems include coordinating farm activities with nonfarm activities, and keeping the farming operations profitable. In the broad category of part-time and residential farmers there is a group of people who make very low incomes from all sources. These families usually have some disability. Their income problems must be solved through a welfare program.

APPLICATION OF PRICE POLICY TO THE SOLUTION OF THE INCOME PROBLEMS OF DIFFERENT CATEGORIES OF FARM FAMILIES

Appraising the impact of price policy on the solution of farmers' income problems is immensely complicated. Further, there are both favorable and unfavorable points. Conclusions as to overall value undoubtedly vary from one group of farmers to another and from one commodity to another. Hence, in a paper of this nature, only broad generalizations can be made.

Overall impact of price policy.—One point which is quite clear is that price supports do not affect all farmers equally. The purpose of price supports is to raise prices above those that would prevail in the absence of Government regulations. Those who sell the most units receive the greatest benefit. Small farmers receive less benefit than large farmers and subsistence farmers receive no benefits. In spite of this, the plight of the small and low-income farmers has been frequently used to justify price-support programs.

It is equally clear that price supports have increased farm income in any given year. This is true even where production has been restricted as a prerequisite for price supports. With an inelastic demand, an increased volume at a lower price will not give as much income as a smaller volume at a higher price. The above conclusions may not be true in the long run for commodities where there are close substitutes for the product and where exports are a major factor. An expanding market is one of the major conditions needed for farmers to work out their income problems. High price supports tend to work against this goal.

Price supports have certainly reduced price instability. This has reduced risk and has encouraged increased efficiency and thus has contributed to increased income. Means of securing reasonable price stability without the loss of markets should be explored, however.

The allotments associated with some price supports have contributed to inefficiency and hence, lower incomes in several respects. Efficient production of each commodity requires specialized (cannot be used for another commodity) equipment and frequently specialized buildings which are quite expensive. Successful production of each commodity today requires specialized skills and a great deal of knowledge. These factors indicate the desirability of specialization on one

or at least a few commodities. Allotments have prevented specialization.

The small acreage of a given crop has often made investment in specialized equipment and buildings impractical. This has resulted in inefficient production methods on some farms. On farms where the acreage will still justify modern equipment, capital requirements have been increased by forcing farmers to equip for several enterprises. Preventing concentration of production on a given farm and in a given area has accentuated the marketing problems of volume, consistent quality, and dependable supply.

Allotments have contributed to inefficiency in still other ways. They have served to at least slow down the shifting of production from one geographic area to another that would normally have taken place.

On the other hand, high price supports without allotments or with certain exemptions, as in the case of wheat, have stimulated production in new areas, thus contributing to the surplus problem. Reducing acreage on farms which are equipped and have the know-how for efficient production and at the same time creating new producers has not created efficiency in production and has not contributed to a solution of the surplus problem.

As a final point, the price policies have undoubtedly tended to keep some small farmers in agriculture. The higher prices plus the increased land values accruing from the allotments have been sufficient to keep a number of farmers above the margin point of necessarily getting out of agriculture. While the above point is true, it probably has much less effect on movement out of agriculture than has the availability of tangible nonfarm employment opportunities.

Impact of price policy on commercial farmers.—The major impact of price policy has been on commercial farmers. The effects have varied, partially because the programs have varied. Those farmers producing commodities which have had no price supports have received no benefits. They may have been harmed to the extent that imposing allotments on some crops has encouraged other farmers to produce their commodity. The effect has also been different where allotments have accompanied price supports and where there have been no allotments. Effects have been different where there has been a continuous program as in tobacco and where there has been only temporary help as in the case of hogs. In spite of these differences, it appears that the average commercial farmer has received some benefits from price programs. Incomes have been raised and less instability of prices and lower risk have increased production efficiency. On the other hand, the higher prices have tended to curtail the market, particularly for those commodities which have industrial substitutes such as cotton and those commodities which depend a great deal on exports such as wheat and tobacco. Allotments have contributed to inefficiency in several ways. It is likely that up to this time the gains have been greater than the losses. There is some evidence that this will not hold true for the future.

Impact of price policy on low-income farmers.—Price programs have been of quite limited help to the low-income farmers. True, prices have been raised for them as for commercial farmers, but the low-income farmers have had less to sell. Further, except where the

benefits of price supports have been automatically available as in the case of tobacco, many small farmers have not taken advantage of the price-support program. Pricing programs have kept some farmers in the low-income category because sufficient income has been made available to prevent forcing them to either become larger or to get out of agriculture. Allotments have made it harder for small farms to become larger, as usually the first and best means of expanding scale of business is to increase an existing enterprise. It would not be surprising, if all facts were available, that they would show that the pricing programs had actually worked to the disadvantage of low-income farmers. Certainly, this has been the case for residential and subsistence farmers.

Impact of price policy on part-time and residential farmers.—Price programs have probably been of even less help to part-time farmers than they have to low-income farmers. Many of the part-time farmers are even smaller than low-income farmers and even fewer have chosen to take advantage of the aid available. On the other hand, the undesirable effects of the pricing programs have had less impact on the part-time farmers than on low-income farmers, largely because part-time farmers have not sought to expand operations. The higher land values occurring from allotments and higher prices may have caused some people to remain as part-time farmers instead of getting completely out of agriculture. Whether this is good or bad is debatable.

MAJOR POLICY NEEDS

It is largely beyond the scope of this paper to suggest policy alternatives. A few brief generalizations concerning policy needs are offered, however, primarily to substantiate the introductory remark that problems of the several groups of farmers are different and that different types of programs are needed to solve them.

Policy needed for commercial farmers.—I believe there is evidence to support the contention that it is not in the interest of either commercial farmers or society as a whole to completely eliminate farm pricing programs, certainly as long as agriculture is tending consistently to overproduce. The ideal pricing program would be far different from present programs. The ideal pricing program would eliminate unreasonable price instability and yet would not consistently stimulate excess production. Allotments would be eliminated and a storage program instituted to help stabilize prices. Such an ideal program would promote efficiency, would not interfere with reallocation of resources either within agriculture or between agriculture and other segments of the economy, and would give our agricultural products a chance of competing with industrial production and foreign competition. If this ideal pricing program does not give commercial farmers an income level which is termed desirable by the Congress, then some direct means of transferring income to farmers should be devised.

Price and income programs alone are insufficient in order for commercial farmers to continue to compete successfully with the nonagricultural economy. Agriculture must continue to be served by a Government-sponsored research and education program comparable to that conducted by industry. Likewise, the Government may have to con-

duct or at least underwrite a credit program designed for commercial farmers, particularly in connection with the transfer of farms from one generation to another.

Policy needed for low-income farmers.—Two types of programs are needed to help solve the problems of low-income farmers. Some low-income farmers can be moved into the commercial farming category. They should have an opportunity to do so. For this opportunity to be realized, there must be a pricing and research program similar to that suggested for commercial farmers; even more educational assistance will be needed; and some sort of Government conducted and underwritten credit program will almost certainly be needed to help these people acquire additional resources.

Some of the low-income farmers will need to move into nonfarm employment on either a full-time or part-time basis. Several steps are needed to bring this about. As a minimum, these people need information on nonfarm employment opportunities and training in nonfarm employment. This may be insufficient to move a substantial number into nonfarm employment. Studies show that most farmers will not move far from their home community to accept their first nonfarm employment. This suggests a policy of encouraging the development of nonfarm employment opportunities in areas of high concentration of low-income farmers. Another alternative, which could be used in combination with the above, is an assistance program for moving low-income farmers to nonfarm employment. This could include paying moving expenses, providing housing, and guaranteeing certain employment for a stated period.

Part of the low-income farmers will either be incapable or not desire to become either commercial farmers or accept nonfarm employment. If it is determined that this group is entitled to aid, assistance beyond that available to commercial farmers should be through some sort of welfare program.

Policy needed for part-time and residential farmers.—Much more must be known about the characteristics of part-time and residential farmers, particularly about their nonfarm employment, before assistance programs for this category are developed. It is clear that this group needs assistance in connection with nonfarm employment problems as well as their farm employment and that these must be related. In addition to the pricing programs suggested for commercial farmers, several special aids are needed. These people need educational help in exploring alternatives available in agriculture, in nonfarm employment, and the various alternatives for combining the two. Many of these farmers are far below their optimum income; and there is evidence that many cannot continue to operate as they now are over a period of years.

Many of the part-time farmers do not want to actively participate in farming yet they do not want to sell the farm because of the security it provides. This category needs advice on possibilities of renting land to others who want additional resources and on possibilities of land uses such as pasture and trees which require little labor and yet conserve the soil.

As in the case of low-income farmers, some families in this category are essentially welfare cases and if assistance to this group is desirable, it should come through some sort of welfare program.

As indicated earlier, some of the part-time farmers have solved their income problems. Many others can move into this category with further guidance and training in nonfarm employment concurrent with guidance in use of their agricultural resources.

DISTINCTIVE PROBLEMS OF AGRICULTURE IN ADJUSTING TO ECONOMIC GROWTH AND DEVELOPMENT

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We live in a world in which nothing is more certain than uncertainty, and nothing is more constant than change. Any segment of our economy which fails to take note of these facts, and to adjust accordingly, will soon find itself left behind in the inexorable march of time.

For reasons which are not widely understood agriculture as a whole seems to have encountered more problems than other industries in attempting to adjust to economic growth and development. It will be the purpose of this paper to examine some of these problems as a first step in any program designed to facilitate adjustments which are obviously indicated.

At the outset it needs to be said that the problems of agriculture as a whole do not necessarily coincide with the problems of individual farmers or even of farmers as a group. For example, no one questions the necessity for an agricultural system which will not only provide adequate supplies for current demand but which will permit the accumulation of needed reserves and at the same time maintain the productive capacity of the agricultural plant. This, of course, is no mean undertaking and, except in a country blessed with abundant resources and widespread adoption of improved practices resulting from research and education, it might prove to be well-nigh impossible. It is obvious, however, that this is not now a problem of United States agriculture. On the other hand, agriculture's success in this regard has undoubtedly created some problems for United States farmers. Since the problems have arisen in part as a direct result of Government policy, and since any other policy might give rise to even greater problems, it is apparent that the Nation itself must face up to the issues arising out of conflict between the long-time national interest and the interest of individual farmers here and now.

Some of these issues may be stated as follows:

1. How large a stockpile of reserve supplies should be maintained?
2. What is the best and most economical way to accomplish the goal with the least harmful effect on the agricultural economy?
3. What measures do we need to take in order to conserve the physical resources needed for the future without undue hardship on the present owners of these resources?
4. How can the basic needs of our population be supplied at a cost commensurate to the purchasing power of consumers as a whole?
5. Should steps be taken now to assure continued availability of the manpower needed in agriculture?
6. Are there values inherent in rural life which must be preserved in the national interest?

It should be apparent from these questions that a satisfactory adjustment to economic growth and development by individual farmers in their own interest (assuming that it can be made) would not per se result in a satisfactory adjustment by agriculture in the interest of the country as a whole.

Broadly speaking there are three possible courses open to farmers faced with the necessity for adjusting: (1) leave agriculture altogether for some nonfarm employment; (2) supplement farm income with income from nonfarm sources; and (3) adjust the organization and operation of the farm to meet changing conditions.

A great many have already taken the first course.¹ Others are seeking full-time jobs in industry, the trades and professions and will shortly remove themselves from the classification of farmers. This movement deserves to be encouraged by every legitimate means. In most cases involving a transfer from farm to nonfarm employment the worker not only betters himself and his family but adds weight to the forces contributing to the improvement of agriculture. It has been found that people raised on farms are reluctant to move great distances, and for this reason the establishment of industries in areas of dense farm population provides a much more effective means of enticing farmers into nonfarm jobs than does any scheme involving large-scale migration of underemployed rural people. It cannot be over-emphasized that the voluntary movement of farm people into full-time nonfarm jobs provides one of the quickest and least costly means by which agriculture can adjust to economic growth and development. Likewise this is the road to greater economic security for those who move. It must not be forgotten, however, that the attachment of farm people to the land is deep seated and very real. It is largely for this reason that many people do not choose to give up a lifetime of experience on the farm even when to do so offers every prospect of improvement in their economic status.

To many people now on farms, the economic motive is secondary, and it is virtually impossible to understand the agricultural situation in the United States without recognizing this fact. Obviously, any adjustment opportunity open to them is evaluated not in terms of financial reward but of a host of intangible (psychic) values embodied in expressions such as "freedom of action," "good place to raise children," "beauty of surroundings," "security of employment," "closeness to God." One 38-year-old farmer "called" to be a minister, put it this way as he explained (with tears in his eyes) the agony accompanying his decision to heed the call and consequently to leave the farm: "On the farm," he said, "possessions are personal. Every animal has a name. A farmer is not only attached to the soil but to a particular plot of ground. I would not have left under any circumstance except to enter the ministry." The extent of this feeling is such that it cannot be written off as of no economic significance. It undoubtedly is an important factor in explaining why so many people remain in agriculture when, according to commonly accepted standards, they should move out.

¹ Official figures show that the number of farms in the United States has declined from about 6.5 million in 1920 to 4.8 million in 1954. During the same period farm population has decreased from 32.0 million to 22.2 million.

As has been indicated, there are two ways by which those who choose to remain in agriculture seek to do so. One of these is through part-time, or, more commonly, part-family employment in industry. This does not call for any change in family residence and need not have any effect on the regular and normal operation of the farm. It may, however, be the first step in the abandonment of most or all of the farming operations. Whatever else may be said of this type of "adjustment," it has become widespread, and in many parts of the country today it is almost impossible to find a farm family which does not have at least some nonfarm income. For more than 1.5 million farms, or 30 percent of the total, such income exceeds the value of farm products sold.² The presumption is that on many of these farms a satisfactory adjustment has already been made. The same may also be said of a somewhat similar group which is made up largely of what are described as "rural residents."

In addition to those who seek to remain in agriculture by supplementing their income with nonfarm employment, another large group may be expected to achieve a successful adjustment as full-time farmers. This group represents a substantial proportion of the 40 percent of United States farms accounting for 90 percent of the value of all agricultural products which enter into commercial channels. While there are problems, farmers in this group are least likely to encounter insurmountable difficulties in making the adjustments indicated for successful farming. This is true because they are better farmers and command more of the resources needed for essential changes.

For the most part, the farms in this group are adequate as to size and not overly handicapped by lack of capital. While there are outstanding exceptions, the most widespread and serious obstacles to adjustment in this group will be (1) unfavorable economic conditions generally and (2) a lack of really good management. In the event of failure to achieve and maintain a satisfactory and profitable adjustment on these farms (assuming reasonably normal economic growth and development), the one factor most likely to be responsible will be management. Other influences, however, are definitely in the picture and will, to a greater or less degree, shape the time, manner, and form of the adjustments made. Many of these influences are inherent in the farming business and distinctive as to agriculture. For example, there are qualities of land which, while ideally suited to one type of farming, are entirely unfit for another. There are also limitations imposed by climate and by location. Expensive buildings which serve admirably on a cotton and tobacco farm may very well be in the way if the adjustment is to livestock. Equipment bought for a dairy farm finds little use if conditions call for a shift to beef cattle or hogs. Moreover, each type of farming requires a new and different kind of skill. This "fixity of investment," which is characteristic of agriculture, is one of the explanations for the stability of the farming business and a prime factor in "freezing" patterns of farm production. Add to this the fact that land is both "immobile" and "indestructible," and it becomes even more clear why farmers as a group face serious and distinctive problems not only in shifting

² See article by Louis J. Ducoff, *Classification of Agricultural Population in the United States*, *Journal of Farm Economics*, vol. XXXVII, No. 3, August 1955, p. 515.

their production to other lines but in leaving agriculture for other industries. Furthermore, the number of opportunities to dispose of such holdings is limited.

Other problems peculiar to the farming business include the following:

1. Dependence upon weather.
2. Long time between "start" and "finish."
3. Production cannot be turned "on" and "off" at will.
4. Preponderance of family labor.

In addition to these, farmers, to a very high degree, are subject to the uncertainties of the market; to public policies governing money, trade, etc.; to changes in technology on the farms; and to competition with industry for labor.

All of these problems are particularly significant in the case of farms in the group with which we are here most concerned; that is, those having substantial investments in specialized (or even generalized) enterprises well adapted to a particular area but now apparently faced with mounting surpluses and a decreased demand.

For many in this situation the choice of "sticking it out" (with the aid of Government price supports) many times appears preferable to any available alternative. For others, with small investments in land and capital and with less adequate training and experience (a circumstance not unusual for a large number of low-income farmers, particularly in the South), the decision is even more positive. What else can they do? Where else than in agriculture can they find the same social acceptance or even the same level of living they now enjoy? Who but a benevolent farm owner will insure a "home in the country" and a line of credit to the host of sharecroppers who seek a new location (in farming) nearly every year?

These are questions which must be reckoned with in any program designed to assist agriculture in adjusting to economic growth and development.

DOES ABSENCE OF MONOPOLY POWER IN AGRICULTURE INFLUENCE THE STABILITY AND LEVEL OF FARM INCOME?

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Agriculture is rightly regarded as the last great area of small business. Even the 100,000 farms which are classified in the census as "large" are tiny compared with even a medium-sized manufacturing company, and the 3 million or 4 million "family farms" are, of course, still smaller. The only other large areas of economic life which compares with agriculture in the average size of the firm are retailing and the service industries, and even here the income per enterprise is 3 or 4 times what it is in agriculture.¹

The problem of the relation of the size of the firm to the nature of the market which it faces is one of the most difficult in economics, both theoretically and empirically. We cannot assume, offhand, that, just because a firm is small, there are no elements of monopoly in its market situation. The village barber, the small specialized manufacturing concern may have an effective degree of monopoly. Nor is there a necessary connection between large size and monopoly power; many large corporations are effectively hemmed in by the competition of similar firms, of substitute products, and by the pressures of public opinion and Government regulation.

Nevertheless, where we have a situation with small firms producing for the most part a standard commodity for a large national market, as we do in commercial agriculture, we can feel confident that the element of monopoly in this situation is practically nil, and that here is one place in the economy where the economist's beau ideal of perfect competition is found. One may hesitate to claim, with Adam Smith, that "Country gentlemen and farmers are, to their great honor, of all people, the least subject to the wretched spirit of monopoly" (*The Wealth of Nations*, Modern Library edition, p. 428), but the most jaundiced antiagrarian cannot deny that, of all people, farmers have the least opportunity for monopoly. Indeed, I am aware of only one agricultural product in which there has been any really successful exercise of monopoly power; this is the California lemon, where a relatively small number of growers, concentrated in one area and protected by climate and the tariff, have succeeded in organizing themselves sufficiently to exert a true monopolistic control over the output and price of lemons.

Is this, however, an occasion for rejoicing; that, in the midst of so many who have bowed the knee to the Baal of monopoly, there are

¹ Income per enterprise (1950 census) was \$2,521 in agriculture, \$7,846 in retail trade, and \$8,408 in service industries. The disparity would be much less, of course, if subsistence agriculture were excluded. By comparison, income per enterprise was \$49,179 in mining and quarrying, and \$83,149 in manufacturing. (See Ronald H. Mighell, *American Agriculture*, p. 47.)

the faithful remnant who preserve the practice, if not the faith, of competition in its purest form on which our society supposedly rests, or it is an occasion for lamenting the injustice involved to the faithful remnant, who do not, or cannot, avail themselves of the monopolistic defenses of the rest of the economy, and who, therefore, merit the special protection and support of government? One wishes there were some nice, simple answers to these questions.

There are really two distinct problems. One is the short-run problem of the effects of the distribution of monopoly and competition on the behavior of the economic system during the business cycle. The other is the long-run problem of the effects on the broad course of economic progress. Of these two problems the first is the easiest to answer. The record makes it clear that agriculture behaves very differently from manufacturing industry over the course of a business fluctuation, and especially in severe depressions. A depression is characterized by a general decline in money income and in the money value of output. This decline is fairly uniform, industry by industry. That is to say, when the money value of national income is about halved, as it was from 1929 to 1932, the money income of each major industry likewise is approximately halved. The money income of an industry however is the money value of its annual product, and this in turn is equal to the quantity of product multiplied by its price. If wheat farmers for instance produce 500 million bushels of wheat in a year, and sell it at an average price of \$2 per bushel, the value of their product, and therefore their gross money income, is \$1 billion. In agriculture a decline in money income is brought about almost wholly by a decline in the prices of agricultural produce. In manufacturing industry by contrast much of the decline in money income is brought about by a decline in employment and output, while prices stay up or decline much less. There is no doubt that the reason for this difference lies in the different market structures: in agricultural markets unsalable stocks of goods produce an almost immediate downward pressure on the price. In the markets for industrial goods unsalable stocks of goods produce not so much a fall in the price as a cutback in output and employment. These different market structures are again related to the size of the firm in proportion to the total output of its product: if an individual wheat farmer reduces his output this will have no perceptible effect on the price of wheat; if a manufacturer of some specialized and brand-named article cuts back his output, he can maintain his price without difficulty in the face of falling money demand.

From the point of view of society as a whole the inability of agriculture to reduce output in a depression is an almost unmixed blessing. If it were not for this fortunate characteristic of agriculture we would starve in a depression as well as suffer from unemployment and from diminished outputs of industrial goods. As it is, even in the severe depression of 1929-32, average food consumption in the United States did not appreciably decline, though there is no doubt that the distribution of food consumption worsened—that is, some people ate very little and some too well. Food consumption did not decline because food production did not decline. If the farmers had been able to protect their prices by restricting their outputs, as manufacturers are so frequently able to do, we would not merely have suffered loss of real income and unemployment, we might have starved as well.

The question must be raised however whether this support of the rest of the economy in depression by the farmer does not involve him in a real sacrifice, so that in a sense he is exploited by the rest of society. It is true that a depression invariably involves the worsening of the farmer's "terms of trade" or "parity ratio," and this is undoubtedly one reason why parity has become an important symbol for the farm groups. The reason for this is found basically in the different responses of agriculture and industry in regard to output. The farmer's terms of trade are what he gets (in real goods) for one unit of what he sells. In a depression he has just about as much to sell as before, as his production stays up. What industry has to offer to him, however, has sharply diminished in quantity. He can buy less industrial goods with his wheat, simply because there are fewer industrial goods being produced. It is the bathtubs and paint and clothing and automobiles which are not being produced because of unemployment that the farmer cannot buy, because they are not there to buy. This is the "real" phenomenon behind the relative price changes—the greater fall in agricultural prices than in industrial prices.

The farmer, of course, is not the only person who is affected adversely by a depression, and it may be doubted whether he is affected more adversely than the industrial worker, the stockholder, or the small-business man. Indeed, the fact that there is a slight drift back to the farms in a severe depression indicates that in spite of the worsened terms of trade of agriculture, the fact that it offers employment opportunities more than outweighs the disadvantages, and that as compared with the combination of high real wages for the employed and a large chance of unemployment in industrial occupations, and full employment at low real wages in agriculture there seems to be some pull toward the latter. We really know very little about the incidence of depression on the distribution of personal incomes by occupations and by regions and by large industrial groups. The only groups which clearly gain from depression are the receivers of interest, pensions, and annuities, and those who are in "protected" employment positions, with tenure and seniority. Thus the proportion of national income going to interest rose sharply from 7 percent in 1929 to 13 percent in 1932; the proportion going to wages and salaries likewise rose from 58 percent to 73 percent. We may be pretty sure that this represents a shift from youth to age—a depression almost certainly shifts income markedly from the young to the old. Just how it shifts income from urban to rural populations we do not really know. It would not be surprising, however, if we discovered that there was a shift away from rural areas; more interest receivers and pensioners proportionally may live in urban areas, and certainly more people with "protected" jobs live in urban areas.

The farmer may not be the most disadvantaged group in a depression, but he is certainly on the disadvantaged side of the line. The answer to this problem, however, is not to improve the relative position of the farmer by a still further decline in the national product. The answer is clearly to prevent depressions. The worsening of the terms of trade of agriculture in a depression is not a result of something that is wrong with agriculture, but is a result of something that is wrong with industry. We could, of course, improve the terms

of trade of agriculture by diminishing its output, as the worsening of the terms of trade are simply a reflection of the fact that agricultural output declines less than the output of industry. But this would be sheer madness: the sensible thing to do is obviously to improve agricultural terms of trade by increasing industrial output, not by diminishing agricultural output—assuming here that we are not talking of a shift in output between agriculture and industry, but simply of unemployed capacity.

One further point in connection with the depression experience is relevant to this discussion. There is not much relation between the distribution of monopoly power in the economy and the ability to protect profits. A depression is marked by a great shift away from profits into almost all other forms of income, for reasons which we cannot go into here. The monopolist can protect his price in a depression better than the firm in highly competitive markets, but this does not mean that he can protect his profits. The decline in output which the monopolist suffers is just as destructive to his profits as the decline in price which the competitive firm suffers. Indeed that broad division of national income which suffers the greatest decline in a depression is corporation profits. The fact that so large a proportion of total farm income is labor income probably protects farm income very substantially in a depression. Thus in the face of sharp deflationary movements it is by no means clear that monopoly gives any advantage. Indeed, there is evidence to show that firms which are in a monopoly position are too reluctant to cut prices in a depression, even from the point of view of their own profits, and that the inertia and lack of sensitivity to price policy which seems inevitably to be the outcome of monopoly is a detriment to the monopolist himself in times of sharp monetary changes, whether of deflation or inflation. The monopolist even from the point of view of his own interest does not lower his prices fast enough in a deflation, nor does he raise them fast enough in an inflation. In these short-run problems, then, the view that a monopolistic market situation gives a great advantage to its possessor may be severely questioned.

We now turn to the much more difficult question of the long-run effects of the distribution of monopoly power, especially as between industry and agriculture. Here we must take a look for a moment at the broad dynamics of the historical relation between agriculture and the rest of the economy. In a society in which agricultural techniques are improving there is a constant decline in the proportion of the national economy which is occupied by agriculture, whether this is measured by labor force, by value of output, or any other measure. This is basically because of the nature of agricultural commodities as "necessities"—goods of low-income elasticity. As income rises a smaller and smaller proportion of income is spent on food and fibers. Improvements in agriculture therefore result ultimately in an increase in the proportion of the total product which is contributed by industry, rather than an expansion of agricultural production. If the total population is rising rapidly enough of course there may not be an absolute decline in the agricultural population, but there will always be a relative decline. In the United States for instance the agricultural population has declined from something over 90 percent in colonial times to about 15 percent today. It is the resources released

from agriculture, moreover, which have enabled the United States and similar countries to build up their industrial systems. If it had not been for the technical improvement in agriculture the effectiveness of industrial improvements would have been much less. In a very real sense therefore the American standard of life and economic power rests on the base of agricultural improvement, in the sense of constantly increasing output per agricultural worker.

Paradoxically enough, however, it has been precisely this high rate of improvement in the productivity of agriculture which had led to the relative disadvantage of agriculture in the distribution of income. One may put the matter crudely by saying that the only way to get people out of a declining industry is to squeeze them out—that is, to make the declining industry less attractive than the expanding ones. This is accomplished very neatly through the price system; the declining industry has a chronic tendency toward overproduction, as it never declines quite fast enough; this overproduction leads to relatively low prices for its products and therefore to relatively low incomes for its workers and its capitalists. The differential in incomes between the declining and the expanding industries depends on the mobility of resources between them—that is on the ease with which labor and capital can move out of the declining and into the expanding industry. If resources are mobile a very slight disadvantage of incomes in the declining industry is enough to induce people to make the requisite transfers to the expanding industries; if resources are immobile it will take a large disadvantage in the decline industry to induce enough people to transfer out of it.

Mobility has two aspects: one is the ease in getting out and the other the ease of getting in. Resources in agriculture may be immobile either because there are customs, habits, or laws which tie people to the land and prevent them from leaving agriculture, or because there are obstacles to people entering industry. The question at issue here, and it is a difficult one to which no very positive answer can be given in the present state of knowledge, is the importance of the distribution of monopolistic and competitive markets, and the related distribution of sizes of firms, among the various factors which affect the mobility of resources between agriculture and industry.

About the best we can do is to outline the various elements in the situation which contribute toward the mobility of resources out of agriculture, in order to try to make some rough assessment of the possible importance of the element of monopoly power. Historically one of the principal obstacles to exit from agriculture has been the geographical and cultural isolation of the rural population. In all previous civilizations there has been a sharp cultural division between urban and rural people; the very word "civilization" means literally something that happens only in cities, and the overtones of words like civil, urban, rustic, and so on testify to the past differentiation between urban and rural life. Insofar as the cities have maintained themselves by the exploitation of the rural population they have usually tried to justify themselves by the denigration of rural culture as crude, primitive, and uncivilized. It is to the very great credit of our own society that to a large extent, at least in the field of commercial agriculture, we have overcome this geographical and cultural isolation of rural people. For the first time in history we have built

a civilization in which the farmer also is part of the "civis." Part of this is due to the revolution in transportation and communications which has removed the geographical and communicational isolation of the farmer—the automobile, the radio and television, and so on. Part of it is due to the high technology of commercial agriculture itself, which demands a level of education and skill of the farmer at least equal, if not superior to his urban equivalent. Whatever the reason, it is clear that in the area of commercial agriculture at any rate the farmer is no longer isolated from the rest of society, and that this factor no longer can be invoked as an explanation of the failure of resources to leave commercial agriculture in sufficient amount. In the area of subsistence agriculture, which represents the main problem of agricultural poverty, pockets of cultural and geographical isolation still are found, though even here better roads, radios, buses, and so on are breaking down the old isolation.

A dynamic factor which used to be of considerable importance in explaining the continuing surplus of the agricultural population is the differential birthrate in rural areas. A marked feature of earlier periods was the much greater reproduction rate in the country than in the towns. This meant that even if agriculture maintained a constant proportion of the labor force it would still be necessary for people to move from agriculture into industry in order to feed the population increase of the country into the population deficiencies of the towns. Even if there were no forces making for relative decline in the proportion of people engaged in agriculture, it would still be necessary for agricultural incomes to be somewhat less than urban incomes in order to move the excess population of rural areas into industrial occupations. This factor again is of considerable importance in the area of subsistence agriculture; it is of much less importance in the area of commercial agriculture, where birthrates are no longer greatly different from urban birthrates—perhaps because of the profound urbanization of rural life.

Another factor which may be of some importance in preventing the exodus from agriculture is found in the institutions of land tenure and ownership. If farmers are bound to the land by feudal ties, or if land ownership and tenure are in forms which freeze existing arrangements, and make consolidation or extension of holdings difficult, or if credit arrangements are so primitive that it is difficult for able and active farmers to extend their operations beyond what chance or inheritance has given them in the way of land and equipment, or if inheritance laws favor the splitting up of estates among children so that children are encouraged to stay on the land and farm tiny, scattered, and inadequate plots, then the difficulties of migration from agriculture are accentuated. In many parts of the world these factors are of great importance; it is hard to believe that they are of much importance in the commercial agriculture of the United States, where credit facilities are generally good, where farms have been growing in size rather than being fractionated, and where it does not seem to be too difficult for an able farmer to acquire more land and equipment.

One is left with the conclusion that the cultural and institutional factors are not of great importance in holding people in commercial agriculture in this country; the exit gate is pretty wide and easy to open. The one criticism of existing institutions which might be made

on this score is of the rural school, which might perhaps do more to equip its pupils for the urban lives which a considerable proportion of them will face. Where the difference between urban and rural culture is so small, however, as it is in this country this factor cannot be of very great importance.

Is then the difficulty with the entrance into industrial occupations rather than with exit from agriculture, and if so, is this at least partly to be explained by the prevalence of monopoly or large-scale organization in industry? This is a question to which I frankly do not know the answer, and which deserves very serious study. I can think of no more valuable research project in this field than a good study of farmers who have left agriculture in the past generation. Unfortunately it is nobody's business to study these people: Having left agriculture, they have passed out of the heavily subsidized intellectual area, and they do not form an easily recognizable class of people or a pressure group. Nevertheless the key to understanding what is the matter with agriculture may very well lie in the study of the experiences of those who have left it. We do not really know where they go, what they go into, what fields are open to them, and most important, what fields are closed to them. It might turn out that one difficulty is that of fitting a small capital into the current industrial structure. It may not be too difficult for farm laborers without capital to enter the industrial working force. It may be quite difficult for a farm operator, who is a laborer-plus-capital, to find an equivalent niche in industrial society. This may or may not have anything to do with the existence of large-scale industry. We do not expect, of course, a farmer to start a steel mill or an automobile plant. There are, however, many areas of industry where small capitalists are important—in retailing, in construction, in personal services and in the professions. If, however (as one suspects), in the overall distribution of enterprise by size there is a disproportionate number of small enterprises in agriculture, this may present a real obstacle to the transfer of small worker-capitalists from agriculture to industrial employment.

One further question needs to be asked, though here also a definite answer is hard to give. It is sometimes argued that the farmer is peculiarly disadvantaged because he sells to large concerns with monopolistic control over their markets, whereas he buys in the general competitive market, or even worse, buys from large, monopolistic concerns also. According to this view he is subject to monopolistic exploitation from his suppliers, and to what economists call monopsonistic exploitation from the purchasers of his products, squeezed between big buyers on the one hand and big sellers on the other. We certainly cannot deny the possibility of such exploitation. For it to be effective, however, there would have to be an almost total absence of competition among the firms supplying or buying from farmers, and it is probable that there would also have to be price discrimination—the purchasers, for instance, paying a smaller price to farmers with lower costs or with lower mobility. Otherwise, given sufficient mobility, any attempt to exploit farmers would simply result in their leaving the occupation in numbers sufficient to force the purchasers to raise their prices in order to get an adequate supply. It is to mobility, rather than to simple market monopoly, that we must look for an explanation of the farmer's difficulties.

In the past, and in particular places, this element of monopolistic or monopsonistic exploitation may have been important. Today however there are two important safeguards against it. One is the Robinson-Patman amendment to the Clayton Act, which seems to have been at least modestly effective in preventing price discrimination. The other, and perhaps the most important, is the rise of the marketing cooperative. If there are any unusual profits in the wholesaling, processing or even retailing of farm produce it will not be difficult for farmers to cash in on these profits for themselves through the device of the marketing cooperative.

If there are unusual profits in the business of selling to farmers, farmers should be able to cash in on these through the device of the purchasing cooperative. The rise of the farm cooperative in the past 50 years or more is evidence that a problem of exploitation by middlemen may have existed. The relative stability of the cooperative sector of the market now however is evidence that the problem is no longer serious, and that there are no longer any large areas of unusual profit for the cooperatives to undermine. This does not preclude the possibility of local situations where exploitation of this kind continues, especially where it may be combined with racial or other forms of group discrimination. As a large general problem, however, I think we may claim that whatever its importance in the past, it is no longer a major concern.

A final word might be added on the peculiar position of the landowner in agriculture, for although this is not a problem of size of enterprise, it may well be a problem in monopoly. It is a long established principle in economics that an increase in agricultural income tends to be absorbed eventually by the landowner either in rise in rents or in the value of property. This is especially likely to be the case where the location of the farm gives it an advantage, whether natural or artificial, and whether geographic location or social location. A striking illustration of this principle is the impact on land values of tobacco marketing quotas. These are attached to the farm rather than to the farmer. Insofar as they enable the tobacco grower to get monopoly gains (which apparently they do) these gains are soon capitalized in the value of the farms to which quotas are attached. Thus the benefits of the scheme to the tobacco growers tend to accrue to those fortunate individuals who own the farms which received quotas at the beginning of the scheme.

Anyone wishing to come into tobacco growing now has to pay what amounts to a tax to the present owners of these farms in the shape of higher land prices. A plan therefore which was devised to help growers simply amounts to a free gift from society to landowners—a gift which is hard to defend on any rational or moral grounds. There is a somewhat weaker tendency for all subsidies to agriculture to be captured by the landowner. Where—as is frequently and increasingly the case in this country—the landowner and the farm operator are combined in the same person the problem may not be serious. There still may be substantial inequities involved, however, and as the poorer farmers are the least likely to be the landowners, subsidies to agriculture (as opposed to subsidies to the poor) are all the more likely to aggravate the existing inequalities within agriculture. Our agricultural policy has not inaptly been described as a

“charity racket”: in order to help the 25 percent or so of farmers who really need it, we scatter largess broadcast over the 75 percent who do not. Any program designed to help agriculture is bound to produce scandalous inequities, because agriculture is not a homogeneous industry, and farmers are not a homogeneous group of people. Programs of redistribution should be designed to deal with poverty, not with agriculture. There is nothing in the mere fact of a man being a farmer which entitles him to special consideration from society. We should be particularly on guard against the argument that because some farmers may be in a disadvantaged position, whether because of their situation in the market network or for any other cause, therefore all farmers should be subsidized.

AGRICULTURE AND THE BUSINESS CYCLE

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The relationship of the agricultural portion of the economy to the level of economic activity in the nonagricultural economy has been a subject of discussion for many years. The rapid changes within the American economy make it desirable to periodically reexamine any earlier conclusions regarding these interrelations in light of the changing structure. This need for reexamination is intensified by the events of recent years in which trends have developed in the levels of income of the farm and nonfarm economy that have been considered by some as unique in our economic history.

The passage of the Employment Act of 1946 gave official recognition to the responsibility of the Federal Government for the maintenance of economic stability. To exercise this responsibility it is necessary to have available knowledge which will enable the development of economic policy consistent with growth and stability. Thus, an examination of the interrelationships between the nonagricultural and agricultural economies seems particularly desirable at this time.

It was assumed that it was not the purpose of this paper to explore what might be a desirable level of farm income. Instead, the central question to be discussed is the relationship of changes in income in the farm and nonfarm sectors of the economy. On this basis it would seem there are two questions pertinent to this inquiry. They are: (1) What are the effects of changes in economic activity in the nonfarm economy upon the well-being of the farm economy, and (2) What are the effects of changes in the level of agricultural income upon the nonfarm economy?

In attempting to answer these questions at least two approaches are possible. In recent years there have been substantial advances in the formulation of statistical models of the economy. These models vary widely as to their level of aggregation and inclusiveness. Unfortunately, however, few of these models adequately incorporate the agricultural sector of the economy sufficiently to give precise answers to the questions being asked here. In many cases sufficient data are not available for such refined statistical analysis. Therefore, it has been necessary to rely upon somewhat less precise statistical methods, wherever possible substantiated by the use of more refined but less inclusive models.

THE GENERAL FRAMEWORK UNDERLYING THE ANALYSIS

The major portion of the agricultural products produced in the United States are consumed domestically, and therefore, the level of domestic demand is highly important to agricultural producers. There are several major commodities which depend heavily upon export de-

¹The author is indebted to several of his colleagues, including J. T. Bonnen, W. A. Cromarty, G. L. Johnson, and L. W. Witt, who made helpful suggestions throughout the preparation of this paper. Lyle Pettig, graduate research assistant, assembled much of the material for the tables. The author is responsible for the analysis and any errors or omissions therein.

mand—notably cotton, tobacco, and wheat—but these crops also are subject to influences of the domestic market.

The domestic demand for farm products is usually considered to be directly related to two factors: The size of the population and the level of income, which determines in part the kinds of products that consumers will demand and the prices they will pay for these products. Since changes in population are usually important only in a longer-run framework, it is the latter relationship which is of primary interest in our context.

For food products as a group at the retail level, most of the statistical evidence indicates a positive income elasticity of less than unity, i. e., a rise in income per capita will result in increased expenditures for food, but the increase will be less than proportional to the increase in income. However, there are important qualifications to this statement. This relationship varies widely among farm products, and appears to be negative for some products. Thus, it appears that the demand for white flour, lard, dry beans and peas, and potatoes declines with a rise in income. The per capita consumption of these and some other products has declined steadily and markedly as income per person has risen. For other products, a rise in per capita incomes brings about a greater than proportional increase in demand. Steaks, some fruits and vegetables, and some manufactured dairy products appear to fall in this category. For farm products as a group, gains in real income per person due to increased employment, productivity, or wage rates increase the effective demand for farm products.

A second important relationship is that between the nonfarm services associated with the farm product, when sold at retail, and changes in nonfarm income. The demand for agricultural products is, in a sense, a joint or derived demand, since few farm products are sold in exactly the form they are produced. Instead, the purchaser of food at a retail store buys the raw farm product and some non-farm-produced services which have become an integral part of the product, i. e., packaging, freezing, processing, or canning. It appears that the income elasticity for these marketing services usually is higher than for the farm product involved. Thus, as income increases, a higher proportion of the increase in income is spent for the service associated with the food at the retail level than for the raw product. Historically, once these services have become an integral part of the marketing system they have been slow to be reduced in either number or price. This has the effect of making the price elasticity of demand for the raw farm product even more inelastic, thus increasing the magnitude of the fluctuations in farm prices that will result from changes in supply, export demands, or non-income-induced changes in domestic demand.

It does not appear that this latent force tending to increase the magnitude of fluctuations in farm prices and incomes has received the attention it deserves. As we look forward to steadily increasing nonfarm income levels, we should recognize that changes in the supply of agricultural products are likely to bring forth greater instability in farm prices and incomes, and should be prepared to adapt our exist-

ing institutions to these conditions or develop new ones to cope with them.

It is increasingly apparent in recent years that the reactions of agricultural producers during periods of rising prices and periods of falling prices are not reversals of the same relationship. Several important theoretical developments have been made in recent years, relating to the forces underlying the supply of agricultural products.² Therefore, in this paper, the relationships for periods of business cycle expansion and contraction have been examined separately.

In order to identify the relationships between agriculture and the other sectors in the economy in different phases of the business cycle, it is necessary to have some measure of general economic activity. This paper relies heavily upon the indicators of business cycles developed by the National Bureau of Economic Research. The only exception to this is the period 1918-20.³ Since much of the data pertaining to agriculture is reported on an annual basis, the annual reference dates were used, which are admittedly somewhat less precise than the monthly reference dates generally used by the National Bureau. However, the general conclusions do not appear to be altered, and it does allow the use of a wider range of data than would otherwise be feasible.

THE EFFECTS OF NONFARM BUSINESS CYCLES UPON AGRICULTURE

In examining the effects of business cycles upon the agricultural sector of the economy, it was assumed that changes in level of nonfarm business activity were to be considered as the causal or determining factor. Therefore, in table 1, the time periods are divided into two groups. The first group contains years of expansion in nonfarm business activity; the second group contains years of contraction. These periods are arrayed in terms of the magnitude of change in gross national product from the trough year to the peak year for expansions and the peak year to the trough year in contractions rather than in time sequence. The other columns of table 1 show the percentage changes in various measures of the well-being of farmers during the same period.

² Among the papers that should be noted in this connection are W. W. Cochrane, *The Nature of the Race Between Farm Output and Food Supply*, *Journal of Farm Economics*, May 1953; Vernon Ruttan, *The Contribution of Technological Progress to Farm Output*, *The Review of Economics and Statistics*, February 1956; T. W. Schultz, *Reflections Upon Agricultural Production, Output, and Supply*, *Journal of Farm Economics*, August 1956; and Glenn L. Johnson, *Some Facts and Notions About the Supply Function for Agriculture—Their Relationship to Agricultural Problems and Prosperity in the Next Two Decades*, Report of the Conference on Adjusting Commercial Agriculture to Economic Growth, Farm Foundation, Chicago, to be published in 1958.

³ For the development of these measures, see Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles*, National Bureau of Economic Research, New York, 1947; and Geoffrey H. Moore, *Statistical Indicators of Cyclical Revivals and Recessions*, Occasional Paper No. 31, National Bureau of Economic Research, Inc., 1950. The National Bureau measures show the period August 1918 to April 1919 as a period of moderate business contraction and the period April 1919 to January 1920 as a period of moderate expansion. I do not wish to differ with them on this point. However, the use of annual data on cycles of less than 1 year's duration raises serious problems. In addition, despite the short-lived contraction recorded, annual estimates of gross national product and national income, which probably reflect quite closely the demand for goods and services, both rose from 1918 to 1919.

TABLE 1.—Percentage changes in gross national product and in measures of farmers' income during periods of business expansion and contraction, 1910-56

Periods of business	Gross national product	Prices received by farmers	Prices paid by farmers	Gross farm income ¹	Farm production expenses	Net farm income ¹	Average per capita net income from farming	Number of farm-workers	Average annual farm income per worker
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Expansion:									
1911-13.....	8.7	8.5	2.0	10.2	10.9	9.6	9.1	0.2	8.7
1927-29.....	11.7	5.7	0	4.5	2.6	7.0	7.0	1.0	4.8
1924-26.....	14.3	1.4	0	4.1	-1.1	11.3	20.9	-4	11.0
1954-56.....	14.3	-5.6	2.1	1.1	3.4	-3.2	-10.9	-6.9	4.9
1921-23.....	19.9	14.5	1.2	15.2	6.2	30.5	45.0	-1.8	27.3
1946-48.....	23.0	21.6	30.2	20.2	30.7	9.8	24.3	.7	10.8
1949-53.....	41.2	3.2	13.9	11.2	18.6	1.4	17.7	-13.9	16.9
1932-37.....	55.2	87.7	6.5	72.5	36.0	156.7	158.8	-6.5	141.9
1914-19.....	100.3	114.9	94.1	131.0	106.8	157.4	122.1	-2.5	131.7
1938-44.....	148.1	103.1	33.3	144.8	110.2	195.9	224.8	-12.1	222.5
Contraction:									
1910-11.....	3	9.6	4.2	-3.9	1.4	-8.7	-17.7	-1	-7.2
1948-49.....	0	-12.9	-2.4	-8.5	-3.9	-14.0	-25.8	-3.9	-9.1
1953-54.....	-6	-3.5	1.1	-4.2	1.3	-12.6	-1.1	-1.5	-10.7
1944-46.....	-1.0	19.8	14.3	20.8	17.6	24.1	21.7	.7	22.0
1923-24.....	-1.1	7	0	5.1	5.5	4.5	-2.7	-1.0	5.6
1926-27.....	-1.9	-3.4	-1.2	.3	1.2	-.8	-2.3	-2.6	1.6
1913-14.....	-3.8	-1.0	0	-2.5	1.4	-6.5	9.8	1	-5.4
1937-38.....	-6.2	-20.5	-4.5	-12.2	-4.7	-21.3	-26.1	-3.0	-15.7
1920-21.....	-18.4	-41.2	-18.3	-33.9	-24.9	-45.0	-54.3	-3	-42.9
1929-32.....	-44.0	-56.1	-24.8	-54.1	-41.8	-69.2	-65.2	.4	-65.8

¹ Excluding Government payments.

Source: Col. 1—1910-28, Handbook of Basic Economic Statistics, Economic Statistics Bureau of Washington, D. C., Jan. 15, 1957, p. 224; 1929-56, Historical Supplement to Economic Indicators, U. S. Government Printing Office, Washington, 1957, p. 3. Col. 2—1910-55, Agricultural Prices, U. S. Department of Agriculture, October 1956, p. 48; 1956, Agricultural Prices, May 1957, p. 36. Col. 3—Agricultural Prices, October 1956, p. 48. Cols. 4-6—Farm Income Situation, No. 164, U. S. Department of Agriculture, July 1957, p. 18. Cols. 7-9—Ibid., p. 25.

In columns 4 and 6 of table 1 the relationships between the business cycle and gross and net farm income appear. Gross farm income increased during each of the 10 periods of business expansion from 1910 to 1956. Net farm income, perhaps the most commonly used measure of agriculture's well-being, increased during 9 of the 10 periods of business expansion, the exception being in 1954-56. It should be noted, however, that only during periods of vigorous business expansion (as measured by increases in gross national product) has there been consistent relationship between the magnitude of increase in either gross or net farm income and general business activity.

The columns relating to prices paid by farmers and farm production expenses are also worth noting. Prices paid by farmers (col. 3) have remained stable or increased during every business cycle expansion. Farm production expenses (col. 5) also increased during every period of expansion except 1924-26.

Gross farm income has declined in 7 of the 10 business contractions, and has declined in every severe contraction. On the other hand, farm production expenses have declined in only 4 out of the 10 periods of business decline, and in every case the percentage reduction in farm expenses was less than the reduction in gross farm income during the same period. As a result, net farm income (excluding Government payments) has declined in 8 of 10 periods of business slackening. One of the exceptions was the period 1944-46, when an unusual postwar foreign demand existed for food and fiber.

Although the observations are limited there are some indications that some changes of importance have taken place in the post World War II period. In each of these recent expansions, the rate of increase in prices paid and production expenses exceeded that for prices received and gross income, whereas prior to World War II the opposite held for every expansion. Non-farm-produced items make up an increasing proportion of production expenses in recent years, and their prices rise during periods of expansion. As a result of this greater dependence of farmers upon such non-farm-produced items, in the future relatively moderate periods of business expansion may inflate farmers' cost more rapidly than either farm prices or income.

There are other measures of farmers' well-being which should not be ignored and which appear highly associated with the expansion of general business activity. First, during 7 of the 10 periods of expansion the number of farmworkers has declined. As a result of the decline in numbers and the coincident increase in income, the income per farmworker has increased during every expansion in business activity. The magnitude of the increase appears quite directly related to the magnitude of the increase in gross national product. In many ways income per worker seems the most significant statistic with which to measure the well-being of agriculture, since presumably we are more interested in the well-being of the people engaged in agriculture than of the industry as such.

The income per capita from agriculture of persons living on farms has also increased during 9 of the 10 periods of business expansion, the exception again being 1954-56. If one adds income from nonfarm sources to the income of farm people from farming, the income per capita has risen during every period of expansion.

The nonfarm business contractions have varied in their effect upon the longtime secular downtrends in farm population and numbers of farmworkers. During some contractions the farm population and number of farmworkers have continued to decline. In other periods there was an actual reversal of the downtrend. As a result, there have been substantial declines in the per capita income from farming and income per farmworker during some relatively mild contractions. In a few instances income per capita and per worker have increased during some moderate business recessions. It is clear, however, that a severe depression tends to be accompanied both by a sharp reduction in farm income and a slowing or reversal of the movement of excess labor from agriculture. The result has been a drastic reduction in the income of farm people during these periods.

There are several measures of farmers' well-being other than measures of current income which deserve scrutiny. One of these is the change in the current value of the assets owned by farmers. Table 2 shows these changes for each year since 1911. In a number of years these changes in asset values have exceeded the magnitude of net farm income. Thus, it is possible for a farm owner who has never enjoyed a high annual income to accumulate substantial assets over his lifetime, and it is also possible for a farmer who has consistently earned a good annual income and reinvested it in his business to reach the point of retirement and have accumulated few or perhaps no assets.

TABLE 2.—Changes in current value of assets held by farmers due to price changes and net farm income, 1911–56

[In millions of dollars]

	Net change in asset position	Net farm income ¹	Total, capital gains plus income		Net change in asset position	Net farm income ¹	Total, capital gains plus income
	(1)	(2)	(3)		(1)	(2)	(3)
1911.....	\$528	\$3,888	\$4,416	1934.....	\$2,449	\$3,428	\$5,877
1912.....	911	4,975	5,886	1935.....	1,424	5,858	7,282
1913.....	1,598	4,253	5,851	1936.....	1,875	4,954	6,829
1914.....	-810	4,677	3,867	1937.....	1,201	6,754	7,955
1915.....	2,371	4,797	7,168	1938.....	-1,626	5,101	3,475
1916.....	4,259	5,103	9,362	1939.....	-704	5,189	4,485
1917.....	7,670	9,001	16,671	1940.....	1,091	5,299	6,390
1918.....	5,756	9,736	15,492	1941.....	5,470	7,455	12,925
1919.....	10,921	10,061	20,982	1942.....	6,511	11,074	17,585
1920.....	-10,513	9,009	-1,504	1943.....	6,561	13,248	19,809
1921.....	-10,377	4,138	-6,239	1944.....	5,619	13,352	18,971
1922.....	-287	5,081	4,794	1945.....	5,337	14,021	19,358
1923.....	-1,310	5,895	4,585	1946.....	11,729	16,721	28,450
1924.....	149	5,681	5,830	1947.....	12,343	17,383	29,726
1925.....	-92	7,575	7,483	1948.....	1,655	19,704	21,359
1926.....	-1,999	6,810	4,811	1949.....	-4,158	14,651	10,493
1927.....	239	6,509	6,808	1950.....	16,190	15,459	31,649
1928.....	417	6,844	7,261	1951.....	13,197	18,003	31,200
1929.....	-727	7,024	6,297	1952.....	-5,628	17,044	11,376
1930.....	-7,444	5,060	-2,384	1953.....	-5,829	15,094	9,265
1931.....	-9,749	3,981	-5,768	1954.....	2,380	14,438	16,818
1932.....	-8,451	2,510	-5,941	1955.....	2,011	13,590	16,201
1933.....	1,978	3,012	4,990	1956.....	8,225	13,374	21,599

¹ Including Government payments.

Source: Col. 1: Computed. Col. 2: Farm Income Situation, July 1957, p. 20. Col. 3: Col. 1 plus col. 2.

Table 3 shows the percentage changes in the current value of physical assets held by farmers due to price changes, and the changes in liquid assets of farmers over the business cycle. In 7 out of 10 periods of business expansion since 1910 the assets held by farmers at the beginning of the period increased in value because of price inflation. The three exceptions all occurred in the 1920's.

TABLE 3.—Percentage changes in measures of farmers' financial position during periods of business expansion and contraction, 1911-56

Periods of business	Gross national product	Current value of real assets	Farmers' financial assets	Farmers' bank deposits	Farm mortgage debt
	(1)	(2)	(3)	(4)	(5)
Expansion:					
1911-13.....	8.7	6.7	1.9	11.7	19.8
1927-29.....	11.7	-1	-2.4	-3.3	-1.3
1954-56.....	14.3	9.5	.2	0	17.0
1924-26.....	14.3	-3.1	-5.0	0	-2.6
1921-23.....	19.9	-15.7	10.0	8.9	-3
1946-48.....	23.0	31.5	-6.7	.9	6.9
1949-53.....	41.2	12.7	-2	-.4	35.3
1932-37.....	55.2	1.0	30.4	58.8	-17.8
1914-19.....	100.3	39.6	132.3	137.6	69.3
1938-44.....	148.1	50.5	253.7	177.8	-27.2
Contraction:					
1910-11.....	.3		-6.3	4.1	11.6
1948-49.....	0	-2.4	-8.0	-3.6	6.0
1953-54.....	-6	-2.6	1.2	1.2	7.0
1944-46.....	-1.0	33.0	25.8	45.3	-3.2
1923-24.....	-1.1	-1.8	-2.0	3.6	-7.0
1926-27.....	-1.9	-2.9	-3.3	3.4	1.0
1913-14.....	-3.8	1.6	-6.1	2.6	6.0
1937-38.....	-6.2	6.8	-3.0	0	-2.5
1920-21.....	-18.4	-24.3	-31.9	-7.6	4.7
1929-32.....	-44.0	-43.3	16.8	-41.4	-12.1

Source: Col. 1, op. cit.; col. 2, computed from data in table 2 and data on current dollar value of farmers' assets at beginning of year; col. 3, 1910-48, Goldsmith, Raymond W., A Study of Savings in the United States, vol. I, Princeton University Press, 1955, table A-55, p. 831; 1949-53, 1953 Balance Sheet of Agriculture, U. S. Department of Agriculture, 1954; 1953-56, 1956 Balance Sheet of Agriculture, 1957; col. 4, 1910-48, Goldsmith, op. cit., table A-56, p. 833; 1949-56, same as in col. 3; col. 5, 1910-48, Goldsmith, op. cit., table A-61, p. A-61; 1949-56, same as in col. 3.

An examination of the changes in farmers' asset position during periods of contraction of the nonfarm economy show about the same relationships. Declines in the price of land, livestock, crops, or machinery held by farmers have reduced the value of farmers' nonfinancial assets in 6 of the 9 periods of contraction for which data are available.

Three other measures of farmers' financial position over the business cycle are available. These are farmers' bank deposits, financial assets, and mortgage debt.

There have been increases in farmers' financial assets during 6 of the 10 periods of general business expansion. Farmers' financial assets have expanded significantly during every major business expansion. Although the number of observations is small, it appears that during moderate expansion farmers' financial assets are not likely to conform closely to the business cycle. Farmers' bank deposits have moved much the same as have total financial assets, increasing in 6 of the 10 periods of expansion. However, bank deposits have moved inversely to business expansion only twice, indicating a somewhat higher conformity than other financial assets.

Farmers' financial assets also have declined in 7 of 10 business contractions, although the substantial margins of error possible in the statistics available make the relatively small changes somewhat dubious measures. The statistics relating to bank deposits show they have declined in only 3 of the 10 periods of business contraction. Even allowing for some errors in the estimates, these latter statistics suggest that farmers tend to attempt to maintain their liquidity position during periods of declining income, an action that will be discussed more fully in relation to the impact of agricultural expenditures upon the general economy.

Farm mortgage debt has increased during 5 of the 10 periods of business expansion and decreased a like number of times. The magnitude of the change seems completely unrelated to the magnitude of the expansion in the nonfarm economy. Farm mortgage debt also has risen in 6 of 10 business contractions, and the decline in mortgage debt in 1929-32 is specious, since it was largely the result of foreclosure rather than repayments.

There is one other phase relating indirectly to agricultural well-being which is of interest in relation to the business cycle. Table 4 shows some measures of agricultural production. The index of net farm output has increased in 9 of the 10 business expansions and remained unchanged in the other—the period 1914-19. This increase in output seems to be due to two factors—increases in the output of animal products, and the positive conformity of crop yields per acre with the nonfarm business cycle.

TABLE 4.—Percentage changes in measures of agricultural production during periods of business cycle expansion and contraction, 1911-56

Periods of business	Gross national product (1)	Index of net farm output (2)	Index of crop production per acre (3)	Index of livestock and livestock product output (4)
Expansion:				
1911 to 1913.....	8.7	1.7	1.3	3.3
1927 to 1929.....	11.7	2.8	-2.5	1.3
1954 to 1956.....	14.3	4.6	5.9	4.3
1924 to 1926.....	14.3	7.4	3.8	1.4
1921 to 1923.....	19.9	11.3	8.2	12.1
1946 to 1948.....	23.0	6.1	5.0	-4.0
1949 to 1953.....	41.2	6.9	4.0	10.7
1932 to 1937.....	55.2	7.9	11.4	-6.2
1914 to 1919.....	100.3	0	-7.2	3.1
1938 to 1944.....	148.1	22.8	12.9	32.9
Contraction:				
1910 to 1911.....	3	-3.3	-5.1	1.7
1948 to 1949.....	0	-2.9	-6.6	6.2
1953 to 1954.....	-7	0	-1.9	2.6
1944 to 1946.....	-1.0	1.0	5.2	-3.8
1923 to 1924.....	-1.1	-1.4	0	-1.4
1926 to 1927.....	-1.9	-1.4	-1.2	2.7
1913 to 1914.....	-3.8	10.0	9.2	1.6
1937 to 1938.....	-6.2	-3.7	-3.4	3.9
1920 to 1921.....	-18.4	-11.4	-15.1	3.1
1929 to 1932.....	-44.0	2.7	0	5.2

Source:

Col. 1—Op. cit.

Col. 2—Changes in Farm Production and Efficiency, 1956 Summary, U. S. Department of Agriculture, p. 8.

Col. 3—Ibid. p. 17.

Col. 4—Ibid. p. 8.

It also should be noted that agricultural output remained unchanged or declined over 7 of the 10 periods of contraction in the nonfarm economy. There was only one period, 1913-14, in which farm output increased substantially in the face of an economic downturn. The index of crop yields per acre remained unchanged or declined in 8 of the 10 periods of contraction.

These statistics raise serious questions regarding the often stated conclusions that farmers never reduce output in response to lower prices and incomes. Our increased understanding of the nature of the economic forces determining agricultural output would lead us to expect output to be more responsive during periods of expansion than during periods of contraction. However, it does not appear valid to suggest that farmers always increase output regardless of economic conditions. These same general conclusions are supported by the much more refined analysis of Geoffrey Moore of the National Bureau of Economic Research who stated:

Another finding is that the relation of crop production to business cycles has become more systematic during the historical period we cover. During 1867-96, a comprehensive index of crop production conformed positively (i. e., moved in positive rather than inverse relation) to business cycles in only 3 instances out of 13; during 1895 to 1920, it conformed positively in only 5 instances out of 13; but during 1919-49 it conformed positively in 12 instances out of 13. It appears that the relatively high level of conformity in recent decades is attributable more to the behavior of average crop production per acre than to aggregate acreage.

Tentatively we conclude that business cycles have come to exert a more powerful (though still far from dominant) influence upon crop production, and that this is effected largely through such control as the farmer has over yields per acre. The increasing use of fertilizers, machinery, and other items that involve large cash outlays and directly affect yields has operated in this direction. Although there is evidence that farmers "respond" to business cycles by shifting acreage among crops, these shifts tend to cancel out in the aggregate; not so with yields per acre. In any event the evidence seems to put a heavy burden of proof upon those who believe the farmers make a special effort to increase output during depressions, via either acreage or yield changes. Furthermore, it is not easy to reconcile the shift toward a more systematic relation between output and business cycles with the notion that crop fluctuations have played a systematic causal role in business cycles; for one would expect this role to decline, not increase, as the size of the agricultural sector relative to the whole economy has diminished. The causal connection has probably worked mainly in the other direction.⁴

Thus far agriculture has been considered as a single industry and only aggregate measures of well-being have been considered over the business cycle. However, it is generally accepted that as incomes

⁴ Business Cycle Research and the Needs of Our Times, 33d Annual Report, National Bureau of Economic Research, Inc., May 1953, pp. 35-36.

rise persons tend to eat more of certain kinds of foods. The question arises as to whether this means that producers of certain commodities are relatively better off during different phases of the business cycle.

An examination of the price ratios between feed grains and livestock products, food grains and livestock products, cotton and other farm products, milk and feed, beef cattle and feed, and eggs and feed fail to disclose any systematic relationships or changes in relationships over the business cycle. This conclusion is substantiated by earlier research which stated:

Similar information reveals that most relative prices within the farm economy are not related to the level of employment; that output of labor-cheap farm products is not changed relative to the output of labor-expensive farm products as employment and, hence, the relative costs of farm labor varies; and that the relative profitability of different farm enterprises such as milk and pork production are not related to the level of employment.⁵

The apparent reasons for the failure of divergent movements within agriculture to appear in the face of presumed differences in income elasticity between agricultural products will not be discussed here. However, in general it appears that the fortunes of producers of widely differing agricultural commodities rise and fall together over the business cycle, suggesting that the examination of aggregate measures of well-being is not meaningless for policy purposes.

SUMMARY AND SOME IMPLICATIONS OF THE IMPACT OF THE GENERAL BUSINESS CYCLE UPON AGRICULTURE

In summary, it appears there are several conclusions of import to policy that can be reached on the basis of our examination of the impact of the business cycle upon agriculture. They are:

(1) Severe business contractions or expansions have a direct and similar effect upon agriculture. This relationship extends to total net income, income per worker, and changes in the value of assets owned by farmers. These effects are largely due to the substantial expansion or contraction of demand that occurs during vigorous business expansions and contractions. There is substantial evidence of increasing positive conformity of the supply of agricultural products to the business cycle.

(2) Although the conformity of agriculture to the business cycle is much less marked during mild or moderate cycles, it is not entirely absent. However, during mild expansions the benefits appear to be more the provision of employment for excess labor which may wish to leave agriculture rather than any significant expansion in the demand for farm products. Moreover, the apparently increasing sensitivity of prices paid by farmers and production expenses to mild business expansions suggest that periods of relatively mild expansion are not likely to result in substantial improvement in aggregate farm income. If the absolute level of the farm population and working force should become stabilized, the per capita income and income per

⁵ Johnson, Glenn L., *Allocative Efficiency of Agricultural Prices—As Affected by Changes in the General Level of Employment*, unpublished doctor of philosophy dissertation, department of economics, University of Chicago, 1949, p. 141.

worker in agriculture might not increase automatically during periods of general prosperity.

THE EFFECTS OF CHANGES IN ECONOMIC ACTIVITY IN AGRICULTURE UPON THE NONFARM ECONOMY

It has already been pointed out in the earlier discussion that economic conditions in agriculture are closely related to conditions in the nonfarm economy. This portion of this paper will attempt to answer the more difficult question "What is the impact of a change in agricultural income (regardless of cause) upon the level of business activity in the nonfarm economy?" To be even more specific, it is doubtful if any group with responsibility for general economic stability is seriously concerned regarding the likelihood of a rise in farm income creating serious inflationary pressures. Instead, it appears the question of major interest is whether a decline in agricultural income may lead to a depression in the nonfarm economy.

This question presumably arises because of the continued belief in some quarters of the "7 to 1" theory of national income, which holds that agriculture is our basic industry and national income will be seven times the level of agricultural income. It is possible to dismiss this theory by pointing out that in our growing economy that agricultural income makes up a declining portion of our total income and, therefore, it is unlikely that any fixed numerical ratio will hold. However, this reasoning, which is only slightly better than the view that agricultural income is the major determinant of national income, ignores several important factors. First, net agricultural income is only one measure of agricultural well-being. Second, agriculture may well have its major impact upon the nonfarm economy due to variations in expenditures for capital equipment and current production expenses rather than via consumption expenditures which are usually assumed to be largely related to net income. Third, sharp fluctuations in the value of agricultural assets may seriously impair the solvency of the financial institutions which provide credit to assist in the acquisition of these assets.

Therefore, the impact of these factors upon the stability of some areas of the nonfarm economy have been evaluated in view of their historical and potential importance. The areas considered are (1) the relationships between agricultural income, asset values, and expenditures for capital items and other nonfarm produced inputs used in agricultural production, (2) the relationships between farm income and farmers' expenditures for consumer durables and automobiles, (3) the relationship of farmers' incomes and asset position to the stability of the financial institutions which serve rural areas, and (4) the effect of changes in agricultural prices upon the general price level.

THE RELATIONSHIPS BETWEEN CHANGES IN FARM INCOME AND FARMERS' EXPENDITURES FOR ITEMS USED IN PRODUCTION

One of the major changes in American agriculture has been the widespread substitution of machinery for human labor and the increased purchase of non-farm-produced items for use in agricultural production. Appendix table C-4 shows current farm operating expenses for selected periods. You will note that these expenditures

have run in excess of \$15 billion annually since 1951. In addition, gross capital expenditures upon farm buildings, motor vehicles, and other machinery and equipment have exceeded \$5 billion annually in at least one year and \$4 billion in each year since 1948. Thus, including current operating expenses and expenditures for the repair, maintenance, and net additions to buildings and equipment, farmers' expenditures have amounted to \$20 billion annually in recent years. It is obvious that substantial changes in expenditures of this magnitude could conceivably have destabilizing influences upon the nonfarm economy.

It is often asserted that farmers continue to purchase and use about the same inputs, even in the face of sharp reductions in income. It has been argued that farmers attempt to increase output during depressions. Evidence presented earlier in this paper and apparently substantiated by the forthcoming publication of Dr. Geoffrey Moore suggests that this hypothesis cannot be supported by the presently available facts.

Equally important is the possibility that farmers can defer capital expenditures during periods of reduced income. It is a commonly accepted fact that farmers can and do live and operate by depreciating accumulated capital investment during adverse years. Therefore, it seems that these expenditures might be timed to accentuate the nonfarm business cycle.

To examine the changes in expenditures of farmers the same periods of general business expansion and contraction have been used as in the earlier sections. However, in this case the order was determined by the order of magnitude of change in farm income. Changes in both current and constant dollar expenditures are presented, where possible, the latter as a rough measure of the change in physical quantity of inputs. In some cases the physical quantity purchased may have more effects on levels of employment than do the dollar expenditures, which are partially determined by prices. One note of qualification should be added regarding these data. Many are official estimates of the Department of Agriculture and other agencies, some are not. In certain cases these estimates undoubtedly contain a substantial margin of error. All of the sources used are shown, and where more than one estimate is available, all are shown.

Let us first examine the record of farmers' purchases of variable inputs used in farm production, shown in table 5. Farmers' current expenditures on purchased feed rose during every period in which farm income was rising but one—the period 1924–26. However, physical quantity purchased rose in only 8 of the 11 periods that farm income rose. Both the quantity purchased and expenditures rose significantly during periods of substantial increase in farm income.

TABLE 5.—Percentage changes in farmers' expenditures and in physical quantities used of nonfarm produced items used in current production during periods of business cycle expansion and contraction, 1910-56

Periods of business	Net income of farm operators from farming ¹	Expenditures			Fertilizer and lime, current dollars	Fertilizer (tons used)	Lime, (tons used)	Expenditures		
		Purchased feed		Fertilizer and lime, current dollars				Petroleum fuel and oil		Other motor vehicle operation, current dollars
		Current dollars	Constant dollars					Current dollars	Constant dollars	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
Expansion:										
1954-56-----	-1.0	0.3	10.1	-2.1	1.6	15.0	5.4	-0.5	16.4	
1949-53-----	1.5	24.2	12.7	39.2	44.5	-25.9	19.9	8.2	32.0	
1927-29-----	7.0	3.0	-3.6	12.4	20.3	2.9	23.6	19.2	-1.0	
1911-13-----	9.6	16.0	19.7	4.2	5.3	30.4	57.1	-----	142.9	
1946-48-----	6.3	32.2	5.8	20.9	10.8	-12.8	56.9	20.9	35.8	
1924-26-----	11.3	-20.2	-9.1	12.9	11.0	3.5	45.6	47.1	39.4	
1921-23-----	30.5	15.4	-10.2	6	33.8	10.1	6.8	35.0	-8.0	
1914-19-----	157.4	165.0	29.8	83.6	-15.0	52.3	447.8	170.9	481.8	
1932-37-----	171.4	131.3	19.3	136.4	98.3	297.5	42.7	24.2	32.9	
1938-44-----	185.9	335.7	134.2	123.3	76.8	212.6	54.7	26.2	130.0	
Contraction:										
1944-46-----	22.8	24.5	7.7	18.6	22.2	19.9	26.3	19.1	11.0	
1923-24-----	4.5	36.3	32.3	4	7.8	4.6	8.9	7.7	11.8	
1926-27-----	-8	.1	-4.0	-10.4	-3.9	14.0	-1.2	-3.4	2.0	
1913-14-----	-6.5	2.0	-3.1	11.4	12.9	11.7	4.5	60.0	29.4	
1910-11-----	-8.7	-17.8	-19.5	10.5	9.6	18.0	27.3	-----	75.0	
1953-54-----	-12.2	4.0	4.5	2.2	7.4	-8.5	.4	0	-5.2	
1948-49-----	-14.2	-24.3	-8.1	8.4	6.0	8.6	12.4	2.0	2.5	
1937-38-----	-18.3	-30.8	-7.7	-7.5	-6.2	9.2	1.5	-4.5	4.0	
1920-21-----	-45.0	-43.4	12.1	-36.2	-30.9	5.3	19.2	41.9	-2.1	
1929-32-----	-69.2	-62.1	-19.5	-60.7	-44.1	-53.6	-25.3	-21.5	-24.0	

¹ Including Government payments.

² Deflated using wholesale price of petroleum products.

Source: Col. 1, Farm Income Situation, July 1957, p. 20; col. 2, *ibid.*, p. 33; col. 3, *ibid.*, deflated by index of prices paid by farmers for purchased feed; col. 4, *ibid.*; cols. 5 and 6, Changes in Farm Production and Efficiency, p. 21; cols. 7 and 9, Farm Income Situation, p. 20; col. 8, col. 7 deflated by prices paid by farmers for fuel and motor supplies.

During the 10 periods of business contraction since 1910, farm income has declined in 8. It also declined in one period of business expansion, 1954-56. Farmers' expenditures on purchased feed were reduced in 5 of the 9 periods of decline in net farm income, including substantial declines during the 4 periods when farm income was most sharply reduced. The quantity purchased was reduced in 6 of the 9 periods when farm income declined, the most notable exception being the period 1920-21, when feed prices apparently fell more rapidly than expenditures.

Turning to the series on fertilizer and lime, it appears that farmers' expenditures for these items have increased during every period of expansion in farm income. The index of tonnage applied tells much the same story for fertilizer, except for the period 1914-19, which was presumably a period of shortage. The tonnage of lime applied declined in 2 periods that farm income was increasing.

Expenditures on fertilizers and lime contracted in 5 of the 9 periods that farm income was contracting, with the largest reductions in the periods of greatest decline in farm income. However, the tonnage of lime applied declined in only 2 of the periods of contraction, 1 of which was the 1929-32 period.

There has been a strong upward trend in the use of fertilizer and lime. These percentage changes do not take these trends into account. Presumably, however, such a trend should increase the frequency and magnitude of the positive changes and reduce them for negative changes. Since there are substantial upward trends in the usage of several other items, the same qualifications would apply.

Largely because of the upward trend in the consumption of petroleum, fuel, and oil, farmers' expenditures for these products have increased or been maintained in both expansions and contractions other than the severe depression of 1929-32. The very rough measure of physical volume indicates approximately the same thing. Such findings are to be expected. Once a farm has been mechanized and becomes dependent upon motor fuels, to reduce these inputs virtually means ending the production of crops. Other current expenses for motor-vehicle operation seem to react in about the same fashion as those for fuel.

One completely independent source gives us some check and additional confidence as to the validity of these statistics. Table 6 compares independent estimates of changes in farmers' expenditures in Iowa in the period 1929-39 with the national estimates. Both are consistent in direction and magnitude.

TABLE 6.—Comparison of percentage change in expenditures by farmers, Iowa and United States, for fertilizer and lime, and petroleum, oil, and fuel, during periods of business cycle expansion and contraction, 1929-38

Business cycle period	Net income, farm operators ¹	Fertilizer and lime		Petroleum, fuel and oil	
		Iowa	United States	Iowa	United States
	(1)	(2)	(3)	(4)	(5)
Contraction, 1929-32.....	-69.2	-74.2	-60.7	-31.3	-25.3
Expansion, 1932-37.....	171.4	137.5	136.4	59.7	42.7
Contraction, 1937-38.....	-18.3	-17.5	-7.5	5.9	1.5

¹ Including Government payments.

Source: Cols. 1, 3, and 5, Farm Income Situation, No. 164, July 1957; cols. 2 and 4, Witt, L. W., Incoming and Outgoing Payments of Iowa Farm Families, Research Bulletin 293, Iowa State College, 1941, p. 416.

In summary, it appears that variations in farmers' expenditures for current operating expenses have been partially obscured by the strong secular rise in such expenditures. However, it appears that in periods of very sharp reductions in farm income, such as those experienced in 1920-21 and 1929-32, farmers do reduce both expenditures and physical inputs of these items. As the upward trend in these expenditures tend to level off when their economic usage approaches the maximum point of profitability for most farms, it seems reasonable to expect the usage will become more sensitive to changes in farm income.

THE RELATIONSHIP BETWEEN FARM INCOME AND EXPENDITURES UPON FARM CAPITAL GOODS

It has already been mentioned that since some expenditures on capital items used in agriculture are potentially deferrable that such items might well be subject to substantial fluctuations, depending upon farmers' income and asset position.

It also should be noted that there has been a strong secular trend in numbers of tractors, autos, trucks, and other farm machinery on farms. The smaller base numbers, particularly prior to 1920, therefore, cause relatively small absolute changes to appear as large percentage changes. However, it does appear that these estimates may be somewhat more reliable than for the expenditures covered in the previous section. The census of agriculture provides benchmarks for some items. In addition, manufacturers' shipments and similar data provide some check on other estimates.

Farmers apparently increased their expenditures upon tractors during every period in which farm income rose except three periods: 1949-53, 1944-46, and 1923-24 (table 7). It should be noted, however, that sales reached an alltime high in 1951, a peak year of net farm income. Therefore, increases in farm income have been associated with increased expenditures by farmers. In general, the deflated series, which roughly measures numbers, and manufacturers' shipments to dealers are consistent with changes in expenditure.

TABLE 7.—Percentages changes in farmers' expenditures and purchases of farm capital items during periods of business cycle expansion and contraction, 1910-56

Periods of business—	Net income of farm operators ¹	Current value of real assets	Tractors				Domestic shipment to dealers
			Current dollars		Constant dollars		
			(3)	(4)	(5)	(6)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Expansion:							
1954 to 1956.....	-1.0	9.5	-5.9	-----	-7.8	-----	-17.0
1949 to 1953.....	1.5	12.7	-3.7	-----	-8.8	-----	-24.6
1946 to 1948.....	6.3	31.5	174.3	133.4	104.8	89.3	112.9
1927 to 1929.....	7.0	-1	19.3	16.8	20.6	-4.7	-3
1911 to 1913.....	9.6	6.7	37.5	25.0	-----	40.0	25.0
1924 to 1926.....	11.3	-3.1	40.5	40.2	32.9	22.2	27.2
1921 to 1923.....	30.5	-15.7	19.7	16.9	-----	71.8	75.0
1914 to 1919.....	157.4	39.6	782.6	795.0	-----	926.7	833.6
1932 to 1937.....	171.4	1.0	913.6	746.9	764.0	745.7	882.6
1938 to 1944.....	185.9	50.5	123.7	78.6	117.5	83.3	60.5
Contraction:							
1944 to 1946.....	22.8	33.0	-29.1	3.3	-35.6	3.7	-18.2
1923 to 1924.....	4.5	-1.8	-6.3	-5.2	-----	-13.7	-16.0
1926 to 1927.....	-8	-2.9	14.4	20.2	14.4	23.4	26.8
1913 to 1914.....	-6.5	1.6	109.1	100.0	-----	114.3	120.0
1910 to 1911.....	-8.7	-----	60.0	33.3	-----	25.0	33.3
1953 to 1954.....	-12.2	-2.6	-17.3	-----	-18.2	-----	-36.8
1948 to 1949.....	-14.2	-2.4	15.9	10.5	5.5	-5.3	3.7
1937 to 1938.....	-18.3	6.8	-31.8	-25.8	-35.0	-25.0	-34.8
1920 to 1921.....	-45.0	-24.8	-61.4	-60.8	-----	-56.2	-52.9
1929 to 1932.....	-69.2	-43.3	-84.5	-82.3	-83.9	-80.7	-83.9

¹ Including Government payments.

Source: Col. 1, Farm Income Situation, July 1957, p. 18, col. 2, computed by taking the absolute value of the capital gains or losses over the period as a percentage of the total value of assets at the beginning of the period; col. 3, F. I. S. No. 164, p. 36; cols. 4 and 6, Goldsmith, op. cit., table A-18, p. 777; col. 5, same as col. 3, deflated by unpublished index of prices paid by farmers for tractors; col. 7, Facts for Industry, United States Department of Commerce. Includes only wheel tractors 1910-20, tracklaying 1922-56.

Periods of business—	Other farm machinery				Trucks		Buildings			
	Current dollars		Constant dollars		Current dollars	Constant dollars	Current dollars		Constant dollars	
	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
Expansion:										
1954 to 1956.....	-3.0	-----	-7.7	-----	9.7	7.6	-5.1	-----	-11.5	-----
1949 to 1953.....	-8.3	-----	-20.4	-----	-20.2	-28.5	20.8	-----	5.1	-----
1946 to 1948.....	161.0	83.7	98.0	39.3	147.7	100.2	55.0	63.2	9.5	17.8
1927 to 1929.....	13.0	10.5	14.5	11.7	10.3	2.7	-13.5	-13.5	-13.1	-13.3
1911 to 1913.....	-1.9	7.0	-1.9	7.0	66.7	110.0	8.4	0	11.0	6.0
1924 to 1926.....	40.7	30.2	50.5	30.9	20.6	22.1	-3.3	-3	-1.1	1.4
1921 to 1923.....	28.8	46.3	39.2	58.0	-8.5	5.0	42.2	42.2	38.5	40.8
1914 to 1919.....	-18.5	57.9	-49.0	-1.4	244.4	209.6	167.6	192.8	32.4	47.9
1932 to 1937.....	620.5	367.9	581.5	331.9	72.8	248.4	421.6	459.5	348.3	344.2
1938 to 1944.....	185.2	74.5	159.3	58.7	133.3	56.6	82.6	65.5	39.8	3.0
Contraction:										
1944 to 1946.....	-34.3	37.3	-37.3	31.2	71.4	50.1	288.0	202.5	194.5	155.8
1923 to 1924.....	-19.5	-16.1	-23.2	-19.7	58.1	66.1	-6.0	-6.0	-6.6	-4.3
1923 to 1927.....	-2.4	-3.6	-3.0	-4.1	-4.9	-4.9	19.5	19.5	21.3	21.6
1913 to 1914.....	-1.2	-8.3	-1.0	-8.3	80.0	73.8	0	0	8.3	1.4
1910 to 1911.....	-8	1.6	-8	1.6	0	17.6	-4.7	-5.1	-7.6	-5.2
1953 to 1954.....	2.7	-----	1.1	-----	7.2	6.8	-8.5	-----	-8.6	-----
1948 to 1949.....	8.4	4.0	-3.7	-7.6	.9	-1.8	-6.8	-7.5	-8.1	-4.2
1937 to 1938.....	-15.7	-8.1	-18.5	-11.2	-41.3	-45.8	-10.9	-17.4	-9.2	-13.4
1920 to 1921.....	-64.4	-65.8	-63.0	-64.6	-29.9	-13.0	-60.6	-60.6	-49.5	-44.7
1929 to 1932.....	-86.0	-78.5	-85.1	-76.7	-70.9	-67.4	-87.9	-87.9	-85.0	-83.1

Source: Col. 8, F. I. S. No. 164, p. 36; cols 9 and 11, Goldsmith, op. cit., table A-16, p. 773; col. 10, col. 8 deflated by index of prices paid by farmers for farm machinery; col. 12, F. I. S. No. 164, p. 36; col. 13, col. 12 deflated by unpublished index of prices paid by farmers for farm trucks; col. 14, F. I. S. No. 164, p. 36; cols 15 and 17, Goldsmith, op. cit., table A-7, p. 761; col. 16, col. 14 deflated by index of prices paid by farmers for building material.

Periods of large reductions in farm income usually have been accompanied by substantial reduction in farmers' purchases of tractors. Beyond that the figures are difficult to interpret. First, two of the periods of reduced farm income and general business contraction were prior to 1920, when total tractor numbers were low. In addition, the 1948-49 period undoubtedly was influenced somewhat by the "catching up" following the World War II shortages.

A more refined statistical model developed by Dr. W. A. Cromarty, Michigan State University, to explain variations in tractor purchases includes cash receipts for the previous year and price changes in the value of assets other than machinery owned by farmers. He found that a 10-percent increase in cash receipts of farmers was associated with about a 6-percent increase in tractor shipments, and that a 10-percent increase in asset values was associated with about a 2-percent increase in shipments.

Turning to expenditures and quantities purchased of other farm machinery, it seems that both expenditures and quantities purchased generally increased during periods in which farm income was expanding. However, the different estimates for the periods 1911-13, 1914-19, and 1944-46 are not consistent. Since two of these periods are war periods and the third very early, no attempt will be made to resolve the differences.

During periods of decline in farm income there usually appears to have been a decline in farmers' expenditures for machinery and of the physical quantities purchased. These declines have been marked during periods of substantial decline in income. Again, the different estimates vary in direction of change in 1910-11 and 1948-49.

For farm trucks the pattern appears quite similar. During periods of sharp rises in farm income there apparently have been substantial increases in truck purchases by farmers. In periods of large reductions in farm income, farmers' truck purchases have declined. Secular trends, shortages, and other factors may have obscured similar changes for more moderate movements in farm income, but these data in the present form do not warrant definite conclusions.

Farmers' expenditures upon building seem somewhat more closely related to changes in farm income. Expenditures on new construction increased in 7 of the 9 periods when farm income and business in general were expanding and also increased in 1944-46 when farm income was expanding in the face of a general business contraction. The only reductions in these expenditures in periods of rising farm income were in the 1920's. These exceptions might be explained by the steady deflation in the current value of real-estate assets which occurred every year from 1920 through 1932 and which was large in both 1923 and 1926. (See table 2).

Expenditures for buildings were reduced during periods of declining farm income, with the exception of the periods 1913-14 and 1926-27. The increase in the latter period is difficult to explain in view of the general decline in the price of real estate and buildings already owned by farmers. However, there seems little question regarding the relationship between reductions in farm income and reductions in farmers' expenditures upon buildings during periods of drastic reductions in income.

The data from the Iowa study again seem to be largely consistent with the aggregate data for the Nation (table 8). The only inconsistency seems to be during 1937-38 when Iowa farmers' expenditures on buildings were estimated to have increased, whereas the national estimate shows a decline.

TABLE 8.—*Comparison of percentage change in expenditures by farmers, Iowa and United States, for machinery and for buildings and repairs, during periods of business cycle expansion and contraction, 1929-38*

Business cycle periods	Net income of farm operators ¹	Machinery		Buildings and repairs	
		Iowa	United States	Iowa	United States
		(1)	(2)	(3)	(4)	(5)
Contraction 1929-32.....	-69.2	-80.0	-86.0	-83.1	-77.8
Expansion 1932-37.....	171.4	445.3	620.5	231.1	229.3
Contraction 1937-38.....	-18.3	-20.3	-15.7	16.1	-3.0

¹ Including Government payments.

Source: Columns 1, 3, and 5, Farm Income Situation, No. 164, pp. 18, 35, 36. Columns 2 and 4, Witt, L. W., op. cit., p. 416.

Thus, it appears that, in general the hypothesis is substantiated that farmers' expenditures for capital goods items are associated with changes in farm income. This conclusion is strengthened by the report of a study by the Federal Reserve Bank of San Francisco. It stated:

"Current income affects the volume and pattern of farm capital expenditures, particularly since farmers may regard

current earnings as indicative of future income. Since 1920, farmers have tended to divert an increasingly greater share of their cash receipts to the purchase of capital items as income rose, and they reversed this expenditure pattern when income declined. Income, therefore, constitutes a crucial element in the course of farm capital outlays. * * *

During the period from 1910-40 (exclusive of the years during World War I) a change of about \$175 million in farm capital expenditures was associated, on the average, with a change in the same direction of \$1 billion in realized net income of farm operators. The period during World War I was exceptional, with farm capital expenditures being relatively low in comparison to net income. Farm capital expenditures were also depressed by the nonavailability of capital items during and immediately after World War II but increased rapidly thereafter. Based on the average relationship prevailing from 1910 to 1940, farm capital expenditures should have been somewhat more than \$2 billion from 1948 through 1954. This is a much smaller amount than was actually spent by farmers during this period.

A higher average level of capital spending relative to income appeared during the 1950's. Farm capital expenditures have risen from less than one-fifth of the net income of farm operators for the prewar years to about one-third in the 1950's. There is also a greater response of farm capital expenditures to changes in net income of farm operators. For a change in net income of \$1 billion, farm capital expenditures changed in the same direction by about \$250 million, compared with a change of roughly \$175 million in the prewar period. This means that with declines in net income from present levels a greater cutback in expenditures may be forthcoming than would have been expected from a similar drop in income in the prewar period.⁶

The question that logically follows is whether gross capital investment by farmers is of sufficient magnitude to either (1) cause a change of direction of business activity, or (2) to influence the magnitude of the general business cycle. The Federal Reserve bank had this to say:

Excluding inventories, farm investment expenditures, however, have ranged from as little as 6 percent to as much as 18 percent of gross private domestic investment for structures and equipment. Capital outlays by farmers have accounted for a somewhat larger part of the total during most of the post-World War II period than in prewar years. The postwar peak in the ratio was reached in 1949. Farm capital expenditures, however, have since trended downward in relative importance and by 1953 were almost back to their share of gross private domestic investment (excluding inventories).⁷

This statement, of course, does not answer either question. It does suggest, however, that the magnitude of gross capital expenditures

⁶ Farm Capital Expenditures, Monthly Review, Federal Reserve Bank of San Francisco, July 1956, pp. 81-82.

⁷ Ibid., p. 80.

by farmers is such that it cannot safely be ignored as a potential source of instability. These expenditures have varied substantially over time, and these variations appear to be associated with changes in farm income. Substantial increases in gross capital expenditures by farmers at a time when there are already inflationary pressures in the economy would add to the pressures. Conversely, if sharp reductions in farmers' capital expenditures coincided with a general business recession it would appear probable that the downward trend would be magnified.

It should be noted that causal relationships have been avoided in the foregoing statement. There is no basis for concluding that variations in agriculture's gross capital expenditures have or have not been a causal or contributing factor in the general business cycle. About all that can be concluded is that the magnitude of such expenditures and their variability suggests a fuller analysis of their impact is needed.

THE RELATIONSHIP OF FARMERS' EXPENDITURES ON CONSUMERS' DURABLES AND CHANGES IN FARM INCOME

The sources of available data on consumption expenditures by farmers are limited. Those that are available pertain largely to consumer durables. Farmers' purchases of automobiles have been included in the general category of consumers' durables in this case, largely because automobiles on most commercial farms are used relatively little as utility vehicles since the advent of farm trucks and high-speed rubber-tired tractors.

Changes in farmers' expenditures on consumer durables are shown in table 9. Unfortunately, the estimates upon which these data are based end with 1949.

TABLE 9.—Percentage changes in farmers' expenditures for consumer durables and automobiles, in new car sales and registration, and in the index of rural retail sales during periods of business cycle expansion and contraction, 1910-56

Periods of business	Net income of farm operators ¹	Consumer durables		Automobiles			
		Current dollars	Constant dollars	Current dollars		Constant dollars	
				Estimate 1	Estimate 2	Estimate 1	Estimate 2
(1)	(2)	(3)					
Expansion:							
1954-56	-1.0			-18.5			
1949-53	1.5			11.6		-3.5	
1946-48	6.3	31.0	4.3	195.2	181.9	156.0	106.7
1927-29	7.0	25.3	25.1	78.8	81.0	71.8	74.0
1911-13	9.6	8.9	3.0	8.1	5.7	35.2	32.2
1924-26	11.3	19.5	24.5	7.5	19.2	10.9	20.9
1921-23	30.5	115.9	135.9	212.2	285.7	255.6	340.3
1914-19	157.4	184.4	65.9	240.0	224.0	199.8	182.9
1932-37	171.4	207.2	188.8	60.6	246.9	42.6	224.1
1938-44	185.9	30.9	.0	-54.3	-94.2		-94.0
Construction:							
1944-46	22.8	166.2	148.4	225.0	2,016.7		2,150.0
1923-24	4.5	-9.6	-7.1	-21.6	-26.2	-18.3	-23.0
1926-27	-8	-15.3	-15.6	-34.1	-38.9	-35.5	-38.6
1913-14	-6.5	6.8	1.0	37.5	35.9	35.1	34.6
1910-11	-8.7	.4	-11.5	32.1	31.8	49.7	51.3
1953-54	-12.2			-26.9		-25.9	
1948-49	-14.2	4	-1.5	57.7	57.5	44.1	44.6
1937-38	-18.3	-27.5	-26.1	-38.6	-39.4	-41.4	-42.9
1920-21	-45.0	-62.0	-56.0	-64.2	-67.9	-69.2	-60.4
1929-32	-69.2	-76.4	-67.5	-53.3	-84.4	-50.9	-82.9

¹ Including Government payments.

Source: Col. 1: F. I. S., No. 164, p. 18. Cols. 2 and 5: Goldsmith, op. cit., table A-24, p. 784. Cols. 3 and 7: Ibid., table A-25, p. 786. Col. 4: F. I. S., No. 164, p. 36. Col. 6: Data for col. 4 deflated by index of prices paid for automobiles. 1910-37, Income Parity For Agriculture, pt. III, sec. 4, p. 13; 1937-48, Bureau of Labor Statistics Bulletin 966, p. 78; 1949-52 BLS Bulletin 1165; 1953-55, Monthly Labor Review, November 1955, p. 1273.

Periods of business	New automobile registration, sales					Index of rural retail sales
	Kansas	Iowa	South Dakota	Mississippi	H. S. summary	
	(8)	(9)	(10)	(11)	(12)	
Expansion:						
1954 to 1956	-6.7	-14.9	-10.3	10.8	7.6	
1949 to 1953	11.2	-1.4	-2.8	12.5	18.6	15.2
1946 to 1948	107.2	108.9	128.3	104.9	92.3	28.6
1927 to 1929	64.8	53.5	67.6	39.3	46.4	
1911 to 1913						
1924 to 1926						
1921 to 1923						
1914 to 1919						
1932 to 1937	280.8	259.5	218.1	284.4	217.9	90.9
1938 to 1944	-96.3	-98.8	-98.0	-95.0	-96.5	67.7
Contraction:						
1944 to 1946	2,221.7	5,610.7	3,875.3	1,935.9	2,661.6	49.4
1923 to 1924						
1926 to 1927	-22.9	-26.8	-6.9	-50.5	-19.1	
1913 to 1914						
1910 to 1911						
1953 to 1954	4.4	-2.2	2.6	4.0	-3.5	
1948 to 1949	52.7	48.2	54.9	42.2	38.6	-9.4
1937 to 1938	-51.5	-30.4	-37.8	-39.6	-45.7	-5.7
1920 to 1921						
1929 to 1932	-80.5	-82.5	-87.3	-84.3	-72.7	-49.1

Source: Cols. 8-12: 1926-35, Automotive Industries, Annually; 1936-46, *ibid.*, Mar. 15, 1947; 1947-56, Automotive News, 1957 Almanac Issue, p. 56. Col. 13: Agricultural Finance Review, U. S. Department of Agriculture, vol. 19, February 1957, p. 131.

During most periods of expansions in farm income, farmers' expenditures on consumer durables and the quantity purchased are estimated to have expanded. There was no increase in physical quantity in the period 1938-44, presumably because of wartime shortages.

During periods when farm income was declining the physical quantities of consumers' durables taken by farmers generally declined. Total expenditures also declined in most of the later periods.

Farmers' expenditures for automobiles also appear to be rather closely associated with changes in farm income. Estimated expenditures for automobiles rose during every period of rising farm income except 1923-24 and 1938-44, the latter period, of course, being affected by the war. Changes in new car registrations in States containing substantial numbers of commercial farms are generally consistent with these estimates.

Periods of declining farm income have generally brought reductions in farmers' purchases of automobiles. Exceptions were the periods prior to 1920 and that of 1948-49. Once again the estimates of expenditures are strengthened by the similar movements in new car registrations in the farm States.

Additional evidence that farmers' consumption expenditures vary directly with changes in current income is found in the index of rural retail sales, which covers the period since 1929. This measure has changed in the same direction as the net income of farm operators during every period covered by the data.

Thus, those personal consumption expenditures by farmers for which data are available indicate that such expenditures vary directly with changes in farm income. The question follows as to whether these variations are a source of instability to the economy.

Presumably, this is partially dependent upon their relative importance to the total of such expenditures. Estimates suggest that since about World War I farmers' expenditures for consumer durables have accounted for a declining proportion of the total of such expenditures. Prior to 1920 farmers apparently accounted for about one-fifth of the purchases of consumer durables. Since World War II farmers apparently have accounted for something less than one-tenth of the total purchases of consumer durables. This decline is not unexpected in view of the decline in the farm population.

Prior to World War II farmers' expenditures on automobiles accounted for about one-seventh of the total. In recent years this has declined to about \$1 in \$13. Continued decline in the importance of farmer expenditures would be expected if the farm population is reduced further.

Even if the low-income, part-time, and residential farmers are excluded from our statistics it appears that the per capita income of commercial farmers probably does not equal that of nonfarmers, even in prosperous times. Therefore, it would seem reasonable to expect that the farmers' expenditures for personal consumption items would probably be less than for a nonfarm group of the population of a similar size. If the farm population declines still further, as is expected by most agricultural economists, the influence of variations in farmers' consumption expenditures is likely to prove a less important source of potential instability than in the past.

SUMMARY AND CONCLUSIONS REGARDING FARMERS' EXPENDITURES

The indications from the available data substantiate that farmers' expenditures tend to be consistent with expectations developed by economic theory. For items which are generally complements in production (lime and motor fuels) expenditures appear to vary consistently with income only in the case of very large contractions or expansions. Expenditures upon fertilizer, capital items, and consumption goods seem to vary more directly and be more sensitive to changes in current farm income. These conclusions appear supported by the other independent research available.

The variability and magnitude of farmers' expenditures for non-farm-produced production and capital items suggest that these items have more relevance to business cycles than changes in net farm income as such. While income changes apparently have an important influence upon expenditures, undoubtedly many other factors also are important. The role of farmers' expenditures for capital items and current production items has not been examined in relation to the non-farm business cycle. It appears that such an examination would be useful. The data examined in this paper present no valid basis for policy conclusions regarding the causal role of farm expenditures in the business cycle.

THE IMPACT OF CHANGES IN FARMERS' WELL-BEING UPON THE FINANCIAL INSTITUTIONS SERVING AGRICULTURE

There are at least two ways in which the economic well-being of farmers might affect the financial institutions serving agriculture. First, if financial adversity forced farmers to reduce substantially their demand and time deposits, this could put a severe financial strain upon banks heavily dependent upon such deposits. Second, if agricultural assets pledged as loans to financial institutions were to deflate in market value rapidly and substantially this could put a financial institution having a large quantity of such loans in great difficulty.

Some data relating to changes in farmers' bank deposits and in the demand deposits of rural banks are shown in table 10. As noted earlier, changes in farmers' bank deposits seem to bear relatively little relation to either changes in farm income or the general business cycle, except during periods of very large expansions or contractions. The variations in deposits in rural banks in the leading agricultural States show somewhat similar patterns.

TABLE 10.—Percentage changes in indexes of total and demand deposits of country banks in 20 leading agricultural States during periods of business cycle expansion and contraction, 1910-56

Periods of business	Net income of farm operators ¹	Total deposits	Demand deposits
	(1)	(2)	(3)
Expansion:			
1954 to 1956.....	-1.0	2.5	1.7
1949 to 1953.....	1.5	16.2	16.2
1927 to 1929.....	7.0	2.0	-1
1911 to 1913.....	9.6	-----	-----
1946 to 1948.....	6.3	5.2	3.1
1924 to 1926.....	11.3	6.3	5.3
1921 to 1923.....	30.5	-----	-----
1932 to 1937.....	171.4	40.8	77.3
1914 to 1919.....	157.4	-----	-----
1938 to 1944.....	185.9	176.6	257.0
Contraction:			
1944 to 1946.....	22.8	52.4	48.5
1923 to 1924.....	4.5	-----	-----
1926 to 1927.....	-8	-1.1	-2.6
1913 to 1914.....	-6.5	-----	-----
1910 to 1911.....	-8.7	-----	-----
1948 to 1949.....	-14.0	-2.0	-2.0
1953 to 1954.....	-12.2	3.5	1.7
1937 to 1938.....	-18.3	-6	-2.9
1920 to 1921.....	-45.0	-----	-----
1929 to 1932.....	-69.2	-36.9	-42.1

¹ Including Government payments.

Source: Col. (1) FIS No. 164, p. 18; col. (2), 1924-44 Agricultural Finance Review, November 1944, pp. 107-108; 1946-56, *ibid.*, February 1957, p. 133; col. (3) *ibid.*

The rapid deflation of agricultural assets has already been covered in a previous section. Two researchers concluded that these deflations could and did cause serious financial difficulties in the 1920's. They said:

Before the liquidation that began in the early twenties, commercial banks were the largest holders of farm mortgage loans among the institutional lenders. * * *

Direct evidence of area variations in foreclosures and loss rates for commercial banks is not available, but considerable indirect evidence is provided by data on deposit changes and bank failures. By their very nature, the operations of commercial banks are certain to reflect the prosperity of the communities in which they do business. Declining incomes and tightened money conditions will quickly manifest themselves by deposit withdrawals. If withdrawals continue, and if investment losses are severe, bank failures are apt to result.⁸

⁸ Lawrence A. Jones and David Durand, *Mortgage Lending Experience in Agriculture*, Princeton University Press, 1954, p. 43.

Bank suspensions during the twenties were mainly in agricultural areas. * * *

Concentration was heavy in a strip running north to south from North Dakota and Minnesota to eastern Texas. Georgia and South Carolina also had numerous bank failures.⁹

However, it would appear that the possibilities for the reoccurrence of this situation are quite remote. More stringent loan regulations, more diversified loan portfolios, the high owner equity in agricultural assets, the existence of Federal financial agencies in the area, and many other factors create conditions quite different from those of the 1920's and 1930's.

Thus, while it appears that severe deflation of agricultural assets and sharp reductions in deposits in the 1920's and early 1930's did seriously affect the stability of local financial institutions serving agriculture, the variability of these items in modern cycles does not seem likely to threaten the position of these institutions.

THE EFFECT OF CHANGES IN AGRICULTURAL PRICES UPON THE GENERAL PRICE LEVEL

Another important variable in the economy is the general price level. The prices of farm products are immeasurably entwined in our price system. The level of farm prices affects retail food prices. These in turn affect the Consumer Price Index, which increasingly affects the level of wages of millions of workers, in turn affecting the general level of the prices of industrial products throughout the economy.

The detailed relationships between farm prices and the general price level are impossible to trace. It seems safe, however, to conclude that the rapid rise in farm prices immediately following World War II and in 1950-51 contributed both directly and indirectly to the substantial inflation of those periods. On the other hand, declining prices for farm products helped to offset rises in other items in the Consumer Price Index and thus contributed to stability in the period 1952-55.

Within the context of our present economic and political system, substantial rises in farm prices seem more likely to trigger general price increases than sharp declines in farm prices would be to precipitate general price declines. Increasingly, collective-bargaining contracts contain escalator clauses automatically increasing wages if the Consumer Price Index rises, whereas both wages and prices tend to resist downward movements.

Little research is available upon these relationships. One study which indirectly throws some light on the subject was an analysis of "The Contribution of Farm Price Support Programs to General Economic Stability."¹⁰

Discussing the influence of price supports upon the general price level the author said:

Under the recession pattern assumed here, the present price support program might reduce the drift in the general retail price level by as much as 30 percent; it might reduce the de-

⁹ *Ibid.*, p. 46.

¹⁰ Karl A. Fox, *Policies To Combat Depressions*, a conference of the Universities-National Bureau Committee for Economic Research, Princeton University Press, 1956.

cline in gross national product and disposable personal income by something like 10 percent; and it would reduce the drop in farm prices (which it is specifically set up to do) by 50 percent relative to the level expected in the absence of a price support program.¹¹

However, it should be pointed out that Fox assumed that there would be only a 9-percent decline in the Consumer Price Index in the absence of farm price supports. He went on later to say:

If the program reduces the drift in nonfarm prices and wage rates, does it slow down inventory liquidation and help to maintain business investment? This seems plausible, but I believe it would be extremely difficult to quantify these effects. Second, in formulating the objectives of counter-cyclical policy, how much weight should be given to price stability as such, both farm and nonfarm? Price deflation increases the real burden of all obligations which were fixed in money terms before the onset of recession and there is a widespread impression that falling prices are viewed with great concern by the business community. Certainly the severity of price dislocations and cost-price squeezes tend to increase with the speed and amplitude of general price deflation.¹²

Thus, those estimates available suggest that movements in farm prices can influence the general price level, but that on the down side at least, the influence of agricultural prices alone is not very great.

GENERAL SUMMARY AND CONCLUSIONS

This paper has attempted to cover the involved and difficult questions of how changes in general economic activity affect agriculture, and conversely, how changes in agriculture affect the nonfarm economy. A quantity of data has been presented, most of which is generally in use, in reference to the business cycle. The nature of these data and the relatively limited research in the area have prevented the presentation of concise statistical results. Wherever possible, substantiating research has been included. Based upon the nature of the data, the consistency of the apparent results, and the availability of supporting research the conclusions are divided into three categories: Conclusions, tentative conclusions, and suggestive hypotheses. These groups follow.

Conclusions

1. Vigorous expansions and contractions in the nonfarm economy affect the well-being of agriculture and farm people. Regardless of the measure used, the income of farmers has moved in the same direction as the income in the nonfarm economy during major business cycles.

2. During periods of mild expansion and contraction in the nonfarm economy the income of farmers is likely to be subject to other influences which override the effects of changes in nonfarm business

¹¹ *Ibid.*, p. 339.

¹² *Ibid.*, p. 354.

activity. However, even mild expansions tend to provide employment opportunities for underemployed farmworkers so that the income per worker has usually increased.

3. During periods of sharp reductions in income, farmers reduce their expenditures on and physical inputs of production items purchased from nonfarm sources.

4. Farmers' expenditures upon consumers' durables, automobiles, and other items for consumption tend to vary with their income.

Tentative conclusions

1. Farm output tends to increase during periods of expansion in the nonfarm economy and contract during periods of recession. This seems to be due to the positive conformity of crop yields per acre and livestock production to the nonfarm business cycle.

2. In recent years mild expansions in the nonfarm economy tend to increase the prices paid by farmers for nonfarm items more rapidly than farm prices increase.

3. The two preceding conclusions, plus the evidence of higher income elasticity for marketing services than for raw farm products, suggest that the problem of unsatisfactory returns to factors of production in commercial agriculture will not be solved completely by the maintenance of full employment and general economic stability.

Tentative hypotheses needing further substantiation

1. Gross capital expenditures by farmers together with expenditures for nonfarm-produced items used in current production are of sufficient magnitude to have a potential destabilizing influence upon the nonfarm economy.

2. Farmers' expenditures for capital items and other nonfarm-produced items used in production appear more responsive to changes in farm income in recent years than they were in earlier years.

3. The variations in such expenditures by farmers have possibly had some effect of either mitigating or intensifying the nonfarm business cycle, depending upon whether the changes were in the same or opposite direction.

4. Movements in farm prices are not likely to affect substantially the general price level in the nonfarm economy. However, declines in farm prices during periods of full employment may help offset inflationary rises in other items. Rising farm prices during periods of full employment seem more likely to add to inflationary pressures, whereas falling farm prices probably would contribute relatively little to a decline in the general price level during a recession.

It is not possible to conclude from this analysis that the agricultural sector of the economy has been or will prove to be a serious threat to the stability of the United States economy. Of equal importance however, is the suggestion that neither is it possible to conclude that the agricultural sector has not or might not be an inherent source of instability. Thus, it would seem that agriculture deserves the continuing attention of economic researchers and policy makers who bear the responsibility for continued economic growth and stability.

II. THE CURRENT AND PROSPECTIVE MARKET
POSITION OF AGRICULTURE

(PAPERS FOR PANEL B)

THE CURRENT AND PROSPECTIVE MARKET POSITION OF AGRICULTURE

THE CURRENT INCOME POSITION OF COMMERCIAL FARMS

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In appendix C of this volume is a set of tables of the standard income series relating to agriculture on a national basis, which are published regularly by the Department of Agriculture. These income figures represent the totals and averages for almost 5 million farms and more than 20 million people living on farms. They are reasonably accurate figures based on methods and sources that have been developed during a period of more than a quarter of a century.

The request of this subcommittee, however, is for information on the income position of commercial farms. As defined by the subcommittee, this group includes approximately 2 million farms which produce some 91 percent of all farm products sold. Here, our statistical base is weak. In fact, there have been no official series which represent incomes of commercial farms as distinct from all farms in agriculture.

We have, however, pieced together—primarily from the 1950 censuses of agriculture and population, the 1954 census of agriculture, and the 1955 survey of farmers' expenditures—a very preliminary and tentative set of data which roughly indicates the income levels and trends for the farm-operator families with which the subcommittee is particularly concerned. But it must be emphasized that these data are probably subject to a wider range of error than has been generally acceptable in farm-income estimates. This points to the need for an expansion of our statistical program if we are to provide better and continuing information on incomes of various groups of farmers.

1. THE CURRENT INCOME POSITION OF ALL FARMERS

(a) *Farm income*

Before turning to the specific group of farmers with which this topic is concerned, it would be well to review very briefly the significant changes in the income position of farmers in general as described in the official statistics of the Department of Agriculture. From this we will move on to an appraisal of the differences in trends for commercial farms and other farms as compared with the averages for all farms.

Appendix tables C-1 through C-5 describe in considerable detail the declining trend in agricultural income through most of the past decade. Farm income has stabilized since 1955, and some income

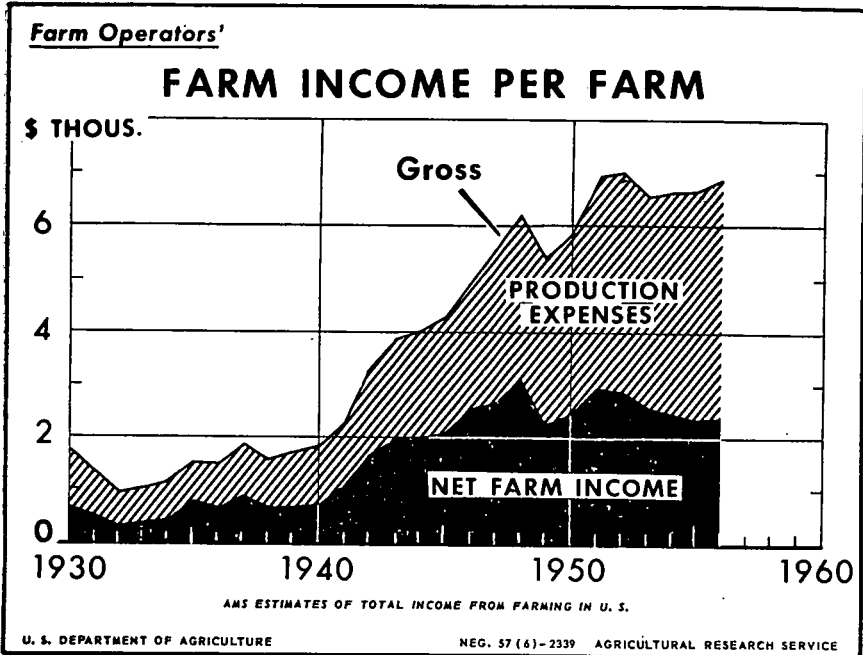
measures have turned upward. But, compared with 1947-49, aggregate net farm income in 1956 was nearly 25 percent smaller. Almost half of the decline occurred between 1953 and 1956. These trends are approximately the same, whether we refer to realized net farm income—which measures the income actually available to farm operators for family living and for capital goods of nonfarm origin—or to net farm income as represented in the national income accounts, which includes the value of inventory change.

In 1956, realized net income rose 4 percent from 1955, whereas net farm income, including the value of inventory change, showed a slight decline. This year, 1957, realized net farm income will likely show a small further increase. Net farm income, which includes the value of inventory change, may also show some improvement unless the level of crop and livestock inventories is substantially lower on January 1, 1958, than is now expected.

One of the significant points of our postwar experience is that gross income for agriculture as a whole in 1956 was actually larger than in the 1947-49 period. A larger output of farm products has offset lower prices. But production expenses increased about one-fourth during that period, and thus brought a substantial decline in net income. In the more recent period, also, since 1953, there was some decline in gross income, but the persistent rise in the farm-cost structure was a more important factor in lower returns to agriculture.

Against this background of a lower level of aggregate income from farming operations, we should take into account the declining number of farms. Since the 1947-49 period, the number of farms has been reduced about 15 percent. The decline is probably continuing at the rate of 1 or 2 percent a year. Thus, on a per farm basis the decline in net income is only about 12 percent as compared with the decline in aggregate farm income of about twice that percentage. Gross income per farm in 1956 was close to the record high, but rising production expenses have squeezed net returns to agriculture. (See fig. 1.)

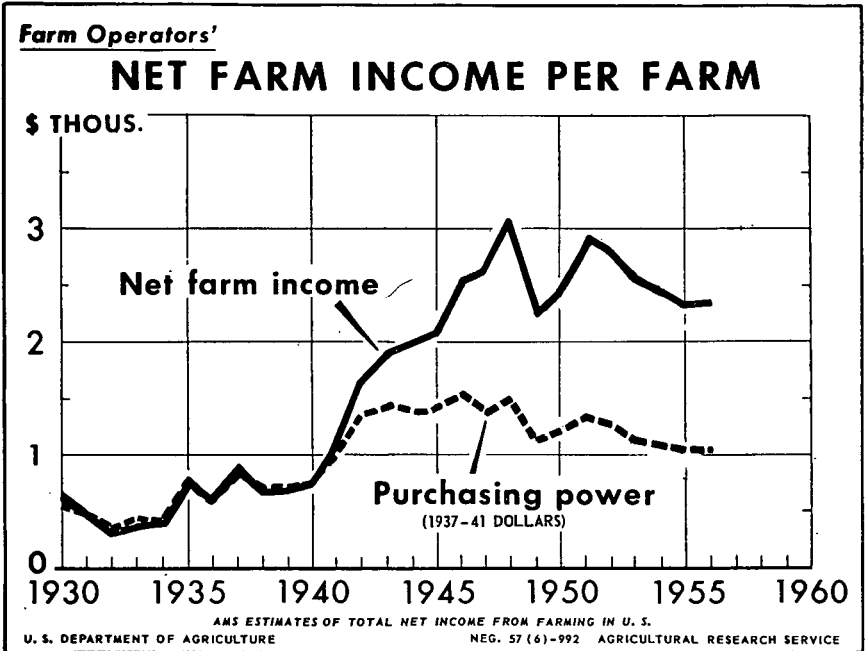
FIGURE 1



The rise in production expenses reflects two main influences: First, technological developments have substituted machines and other industrial products for human labor. This has brought a high, relatively inflexible, cash cost structure to modern agriculture. Second, persistent inflation during the last decade has had a more pervasive effect on farmers' costs than on the prices of products sold by farmers. In 1956, production expenses accounted for \$2 out of every \$3 received by farmers from farming operations. In 1947-49, expenses accounted for not much more than \$1 out of every \$2.

In addition to the decline in net income per farm—some 12 percent since 1947-49—there has been a rise of 14 percent in prices paid by farmers for family living. Thus, the purchasing power of net income per farm declined about 22 percent between 1947-49 and 1956 (fig. 2).

FIGURE 2



The purchasing power of average net farm income per farm last year was at about the same level as in 1941. In contrast, the purchasing power of average weekly earnings in manufacturing has risen more than 40 percent since 1941 and more than 30 percent during the last 8 years.

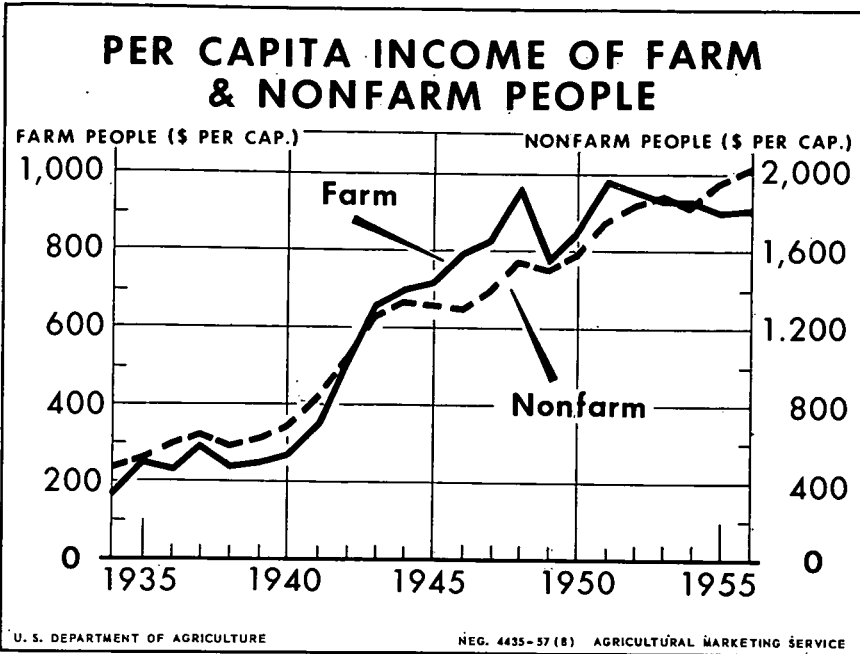
(b) Income of all farm people from farm and nonfarm sources

Thus far, we have been concerned with income from agriculture. Farm people also receive a substantial part of their total income from other sources, such as wages and salaries. In the last 8 years, the average amount received per person on farms from nonfarm sources has risen approximately 50 percent. In 1956, the total per capita net income of persons on farms was about \$900, of which \$600 were received from agriculture and about \$300 from nonfarm sources.

Figure 3 compares the per capita incomes of farm and nonfarm people. It should be noted that in this instance we are dealing with the total farm population, including not only farm operators and members of their families, but also others living on farms, such as farm laborers. The chart indicates that, since 1934, the earliest date for which the figures are available, per capita farm and nonfarm incomes have generally moved together. This indicates that in most years farm people have generally participated in the Nation's economic growth and improved living standards. However, the level of income per person on farms has averaged roughly one-half of the nonfarm level. From 1934 to 1942, per capita income of farm people generally fell somewhat short of the 50-percent level. From 1943 through 1952, per capita income of farm people ran above the 50-percent level. In the last several years, a gap has developed as incomes

of nonfarm people have risen substantially while those of farm people have held relatively level.

FIGURE 3



It is difficult to assess the meaning of the difference in levels of income as between farm people and nonfarm people. Historically, per capita income of farm people has run at a substantially lower level than that of nonfarm people. This is true not only in the United States but also in most foreign countries for which data are available. The existence of an average income gap between farm and nonfarm people is evidence that there are other forces at work, in addition to the incomes received, in determining whether a person pursues farming or some other occupation. There are many intangible factors associated with working and living in the country, and these cannot be translated into dollar terms. It is clear, however, that, while there may be some question as to the actual size of the income gap in real terms, there is some disparity in income, which has tended to widen in recent years.

Although per capita income from farming has declined since 1947-49, increases in nonfarm income to farm people have brought the total net income per person on farms from all sources up 6 percent. In the meantime, per capita income of nonfarm people has risen more than a third.

2. INCOME OF COMMERCIAL OR HIGH-PRODUCTION FARM FAMILIES

(a) Comparison of high-production and low-production farms

Table 1 and figure 4 show, annually, from 1947 to 1956, the new data on average family income broken down as between farm and

off-farm income for high-production farms and low-production farms. High-production farms represent the commercial farms as defined by the staff of the subcommittee. They encompass all farms with value of annual sales of \$2,500 or more. All other farms are in the low-production group. It should be emphasized again that these series are based on incomplete data and are, therefore, subject to more than the usual limitations of interpretation. But they suggest several significant trends that are obscured by the averages for all farms:

1. The reduction in numbers of farms since 1947, some 15 percent for all farms, was concentrated in the low-production farms, which declined about a fourth. The number of high-production or commercial farms, which account for almost all farm products sold, has remained fairly stable during this period. Even these two major groups cover up some important trends. Census of agriculture data indicate that the larger commercial farms—those that sell over \$10,000 of products annually—are increasing in number while those that sell between \$2,500 and \$10,000 of farm products are tending to decline. Among the low-production farms, the most rapid decline has been for those farms which have produced little for sale and where off-farm income has not been important.

2. The decline in net farm income per farm (including the value of inventory change) for both high-production farms and low-production farms has been greater than the average reduction of some 12 percent for all farms since 1947-49. For high-production farms the reduction has averaged nearly 20 percent, and for low-production farms possibly even more. The average for all farms is down less, reflecting the change in the composition of farms whereby low-production and low-farm income farms are diminishing rapidly, thus giving more weight in the average to high-production farms.

3. The table also illustrates the rapidly growing importance of off-farm income to farm families, not only for the average low-production farm family but for the high-production farm family as well. For all farm families combined the substantial increase in income from off the farm has more than offset the reduction in farm income since 1947-49. For low-production farms the gain in off-farm income resulted in an increase in family income of some 22 percent over the 1947-49 average. For this group, in 1947-49, roughly half of the family income was received from off the farm. In 1956, almost three-fourths was from off-farm sources. In the case of high-production farm families, the gain in off-farm income has not entirely offset lower farm incomes. The average total family income in 1956 was down about 6 percent from the 1947-49 average. But, whereas in 1947-49 off-farm income represented some 13 percent of total family income, in 1956 it accounted for 26 percent. While some of the increase in relative importance of off-farm income reflects a reduction in farm income, most is due to the continuing rapid rise in off-farm earnings as a source of income to the farm family.

FIGURE 4

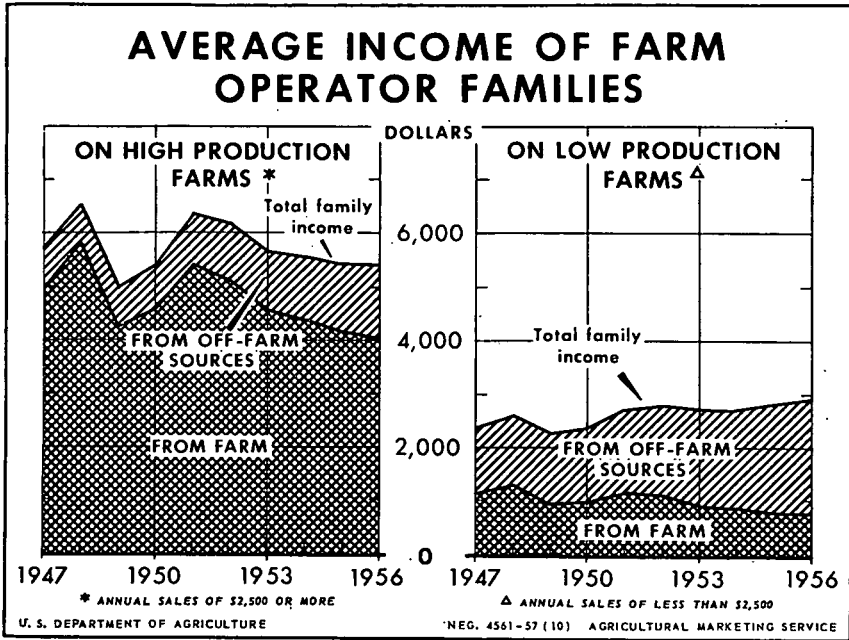


TABLE 1.—Number of farms and average income of farm operator families, by major source, by economic class group, 1947-56

Year	High production farms ¹				Low production farms ²				All farms			
	Number ³ (thousands)	Average family income			Number ³ (thousands)	Average family income			Number ³ (thousands)	Average family income		
		Farm	Off-farm	Total		Farm	Off-farm	Total		Farm	Off-farm	Total
1947.....	2, 140	\$4, 969	\$747	\$5, 716	3, 733	\$1, 114	\$1, 245	\$2, 359	5, 873	\$2, 519	\$1, 064	\$3, 583
1948.....	2, 126	5, 785	780	6, 565	3, 678	1, 297	1, 303	2, 600	5, 804	2, 941	1, 111	4, 052
1949.....	2, 113	4, 219	771	4, 990	3, 610	946	1, 285	2, 231	5, 723	2, 155	1, 095	3, 250
1950.....	2, 099	4, 571	835	5, 406	3, 549	1, 005	1, 365	2, 370	5, 648	2, 330	1, 168	3, 498
1951.....	2, 119	5, 416	954	6, 370	3, 416	1, 175	1, 539	2, 714	5, 535	2, 799	1, 315	4, 114
1952.....	2, 138	5, 104	1, 085	6, 189	3, 283	1, 086	1, 730	2, 816	5, 421	2, 671	1, 476	4, 147
1953.....	2, 158	4, 530	1, 125	5, 655	3, 150	937	1, 769	2, 706	5, 308	2, 398	1, 507	3, 905
1954.....	2, 180	4, 363	1, 165	5, 528	3, 021	881	1, 810	2, 691	5, 201	2, 341	1, 540	3, 881
1955.....	2, 196	4, 123	1, 294	5, 417	2, 889	806	2, 000	2, 806	5, 085	2, 238	1, 696	3, 934
1956.....	2, 213	4, 033	1, 382	5, 415	2, 751	789	2, 136	2, 925	4, 964	2, 235	1, 800	4, 035

¹ With sales of \$2,500 or more.² With sales of less than \$2,500.³ Census of agriculture numbers adjusted for underenumeration.

It should be noted that these data are not directly comparable with the per capita income estimates of all farm people discussed earlier. These represent farm operator families whereas the per capita estimates relate to all persons living on farms. Furthermore, the concepts of income differ to some extent as between the two series.

(b) *Comparison of farm family incomes with incomes of nonfarm families*

Table 2 compares the average family income of high production and low production farm families with the average income of nonfarm families. From 1947 through 1952, total incomes of high production farm families generally were higher than incomes of nonfarm families. From 1953 to 1956, the situation was reversed. Thus, in 1956, the average income of high production farm families was about \$5,400 compared with \$5,750 in 1947-49, while that of nonfarm families was about \$6,900 in 1956, compared with \$4,900 in 1947-49. Incomes of low production farm families have risen appreciably since 1947-49, from about \$2,400 to \$2,900.

TABLE 2.—Average family income of farm operator families and nonfarm families, 1947-56

Year	Farm operator families on—			Nonfarm families ³
	All farms	Low-production farms ¹	High-production farms ²	
1947.....	\$3,583	\$2,359	\$5,716	\$4,775
1948.....	4,052	2,600	6,565	5,070
1949.....	3,250	2,231	4,990	4,825
1950.....	3,495	2,370	5,406	5,232
1951.....	4,114	2,714	6,370	5,721
1952.....	4,147	2,816	6,189	6,013
1953.....	3,905	2,706	5,655	6,360
1954.....	3,881	2,691	5,528	6,297
1955.....	3,934	2,806	5,417	6,550
1956.....	4,035	2,925	5,415	6,900

¹ With sales of less than \$2,500.

² With sales of \$2,500 or more.

³ Based on Income Distribution in the United States, a supplement to the Survey of Current Business, 1953.

In appraising income trends, there is usually some question as to the appropriate base period for such comparisons. This report is concerned with changes during the period 1947 to 1956, primarily because the data for commercial farms could not be extended for earlier years. Some would question the comparisons with 1947-49, as that period was one of unusually high farm prices and farm incomes. From the available data on per capita incomes of all farm people since 1934, income of farm people during 1947-49 appears high compared with its usual relation to income of nonfarm people over the years. There is particular significance, however, in the trends for recent years, showing sharp increases in incomes of nonfarm families while incomes of high-production farm families have not risen.

Further, it should be recognized that high-production farms involve a considerable family investment, generally much larger than for the average nonfarm family. Rough calculations indicate that the average equity of the operator in productive assets (land, buildings, machinery, and inventories of crops and livestock) was more than \$32,000 on high-production farms in 1956. In 1947-49, the aver-

age equity totaled about \$23,000. Thus, if allowance were made for return on investment at prevailing rates of interest, the average net income from farming for high production farms in 1956 of about \$4,000 would be lowered to perhaps \$2,200. For 1947-49, the average income from farming of about \$5,000 would be lowered to less than \$4,000 as the return for farmers' labor and management, net of return on invested capital.

(c) *Farm incomes on specified types of commercial family-operated farms*

It is recognized also that the averages for high-production farms cover up many diverse income situations. The Agricultural Research Service publishes annual estimates of farm costs and returns for 29 different types of farms in various locations in the United States. These are representative of the situation on owner-operated farms in the selected areas. Because of the limited number of types covered and because tenants are not included, they should not be considered as representative of the income situation on commercial farms for the entire Nation. However, all the types of farms covered would qualify as commercial farms under the definition of the subcommittee. Table 3 shows the net farm income for 1947-49 and recent years for the selected types of farms, contrasted with the averages from table 1 for all high-production farms.

TABLE 3.—Average net farm income for high-production farms, by type and location, 1947-49 average and 1953-56¹

Type and location	1947-49 average	1953	1954	1955	1956 ²
All high production farms ³	\$4,991	\$4,530	\$4,363	\$4,123	\$4,033
Dairy farms:					
Central Northeast.....	3,892	3,493	3,735	4,248	4,248
Eastern Wisconsin.....	4,365	3,760	3,219	2,816	3,365
Western Wisconsin.....	3,284	3,159	2,382	2,434	3,005
Corn Belt farms:					
Hog-dairy.....	5,639	6,027	6,379	4,372	5,092
Hog-beef raising.....	3,370	3,357	2,945	3,016	3,333
Hog-beef fattening.....	10,665	7,055	8,833	4,433	6,898
Cash grain.....	8,930	7,471	8,393	6,516	9,141
Tobacco farms:					
Tobacco-livestock (Kentucky).....	3,334	3,457	3,439	2,850	3,200
Tobacco-cotton (North Carolina).....	3,208	3,240	2,927	3,550	3,469
Small tobacco (North Carolina).....	2,354	2,611	2,380	2,885	2,826
Large tobacco-cotton (North Carolina).....	3,923	4,042	3,326	4,463	4,636
Cotton farms:					
Southern Piedmont.....	1,565	1,918	1,438	2,297	1,708
Black Prairie (Texas).....	3,090	3,491	1,724	2,502	974
High Plains (Texas, nonirrigated).....	6,411	-640	4,637	2,755	3,326
High Plains (Texas, irrigated).....	10,761	8,448	13,205	7,243	12,736
Delta (small).....	1,923	2,073	1,581	2,033	1,660
Delta (large scale).....	20,465	24,668	16,943	25,807	21,059
Peanut-cotton farms: Southern Coastal Plains.....	2,313	2,660	2,231	3,196	3,121
Spring wheat farms (Northern Plains):					
Wheat-small grain-livestock.....	6,323	4,075	2,133	6,052	6,992
Wheat-corn-livestock.....	5,972	4,201	3,397	2,547	3,356
Wheat-roughage-livestock.....	5,370	4,512	2,813	4,259	3,122
Winter wheat farms:					
Wheat (Southern Plains).....	10,017	4,961	7,240	4,914	3,252
Wheat-grain sorghum (Southern Plains).....	9,433	1,083	3,314	1,647	2,349
Wheat-pea (Washington and Idaho).....	11,864	14,705	16,048	9,989	13,895
Cattle ranches:					
Northern Plains.....	6,466	4,216	3,625	2,839	1,926
Intermountain region.....	8,665	5,324	4,481	4,626	5,720
Southwest.....	5,698	-490	323	3,121	-1,245
Sheep ranches:					
Northern Plains.....	6,908	5,287	4,299	4,367	5,696
Southwest.....	5,224	772	955	3,303	693

¹ Estimates for individual types and locations were prepared in the Farm Economics Research Division, Agricultural Research Service.

² Preliminary.

³ With sales of \$2,500 or more.

The data illustrate marked variations in income trends among the several types of farms. For example, the ARS data for dairy farms indicate that those in the Central Northeast area have increased their average net farm income almost 10 percent between 1947-49 and 1956, while those in eastern Wisconsin have had a reduction of almost a fourth. Similarly, the typical hog-beef fattening farm in the Corn Belt has had a decline in net farm income of 35 percent since 1947-49, while cash grain farms in the same area have had a small increase. The tobacco farms shown held income fairly close to the 1947-49 average. For the selected cotton farms the smaller sized farms have mostly had some reductions in income, particularly reflecting drought in Texas. However, the larger cotton farms, notably in irrigated areas of the High Plains of Texas and in the Delta show increased net incomes relative to 1947-49. Most wheat farms show rather substantial reductions in income, but here again a few types show increases. For cattle ranches, the 3 types shown have had rather substantial reductions in income, with the cattle ranch in the Southwest showing a negative income of \$1,245 in 1956, mostly the result of drought conditions. A sharp reduction is also indicated for sheep ranches in the Southwest.

Of the 29 types of farms, a little more than half showed some improvement between 1955 and 1956. This roughly follows the pattern of developing stability in farm income overall in those years.

Table 4 shows data for the same years after allowance for return on capital investment. It should be noted that only 3 of the 29 types shown had any increase from 1947-49 to 1956 in the return to labor and management as distinct from return on investment. Moreover, 6 types had negative returns to operator and family labor in 1956.

TABLE 4.—Average return to operator and family labor on high-production farms, by type and location, 1947-49 average and 1953-56¹ (net farm income minus allowance for return on net capital investment)

Type and location	1947-49 average	1953	1954	1955	1956 ²
All high-production farms ³	\$3, 831	\$2, 853	\$2, 728	\$2, 420	\$2, 236
Dairy farms:					
Central Northeast.....	2, 801	1, 941	2, 317	2, 744	2, 627
Eastern Wisconsin.....	3, 064	1, 963	1, 531	1, 098	1, 620
Western Wisconsin.....	2, 380	1, 925	1, 195	1, 268	1, 799
Corn Belt farms:					
Hog-dairy.....	4, 130	3, 854	4, 285	2, 204	2, 968
Hog-beef raising.....	2, 162	1, 535	1, 272	1, 308	1, 569
Hog-beef fattening.....	8, 470	3, 939	6, 032	1, 405	3, 933
Cash grain.....	6, 051	3, 370	4, 373	2, 311	4, 842
Tobacco farms:					
Tobacco-livestock (Kentucky).....	2, 414	2, 177	2, 237	1, 622	1, 959
Tobacco-cotton (North Carolina).....	2, 381	2, 048	1, 757	2, 381	2, 244
Small tobacco (North Carolina).....	1, 909	1, 989	1, 775	2, 287	2, 208
Large tobacco-cotton (North Carolina).....	2, 359	1, 834	1, 173	2, 338	2, 442
Cotton farms:					
Southern Piedmont.....	999	1, 041	562	1, 402	768
Black Prairie (Texas).....	2, 230	2, 226	435	1, 170	-488
High Plains (Texas, nonirrigated).....	5, 003	-2, 530	2, 728	862	1, 364
High Plains (Texas, irrigated).....	8, 456	4, 292	8, 843	2, 938	8, 268
Delta (small).....	1, 596	1, 513	1, 036	1, 458	1, 013
Delta (large scale).....	14, 776	15, 847	8, 817	17, 425	11, 038
Peanut-cotton farms: Southern coastal plains.....	1, 980	2, 129	1, 681	2, 641	2, 547
Spring wheat farms (Northern Plains):					
Wheat-small grain-livestock.....	4, 822	1, 794	-118	3, 878	4, 612
Wheat-corn-livestock.....	4, 498	1, 980	1, 200	322	1, 160
Wheat-roughage-livestock.....	4, 051	2, 438	771	2, 209	1, 016
Winter wheat farms:					
Wheat (Southern Plains).....	7, 445	1, 213	3, 871	1, 246	-440
Wheat-grain sorghum (Southern Plains).....	6, 613	-2, 987	-541	-2, 343	-1, 561
Wheat-pea (Washington and Idaho).....	6, 854	8, 227	9, 358	2, 478	6, 212
Cattle ranches:					
Northern Plains.....	3, 396	73	-99	-909	-1, 999
Intermountain region.....	5, 568	1, 587	1, 390	1, 418	2, 658
Southwest.....	756	-8, 512	-6, 908	-3, 912	-8, 589
Sheep ranches:					
Northern Plains.....	3, 481	458	-144	-65	1, 143
Southwest.....	-828	-9, 590	-8, 546	-6, 174	-9, 114

¹ Estimates for individual types and locations were prepared in the Farm Economics Research Division, Agricultural Research Service.

² Preliminary.

³ With sales of \$2,500 or more.

This diversity in the income situation among types of farms is probably true also of the size groups within the high production farm category. Although little information is available on the situation in the top group of high production farms—those with sales of \$25,000 or more—data for large-scale cotton farms in the delta contrasted with smaller cotton farms in the same area suggest that the large farms have maintained farm income somewhat better than the smaller family-sized operations. The census and survey data for 1949 and 1954-55, which provided the basis for the estimates of average income of high production farms, also suggest, though by no means conclusively, that net farm income on farms with an annual value of sales of \$25,000 or more was fairly well maintained, while incomes of smaller operations in the high production category showed substantial declines.

Again, if we are to know more about the income situation within the high production and low production categories, our statistical program will need to be substantially enlarged.

CURRENT IMBALANCE OF SUPPLY AND DEMAND FOR FARM PRODUCTS

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WHAT IS MEANT BY IMBALANCE?

For a meaningful discussion of supply-demand imbalance, it is necessary to define what we mean by imbalance. There are at least three ways of looking at the problem and others that are modifications of those listed. They are as follows:

1. *The classical laissez faire approach*

This view, which was long accepted by most economists, assumed that supply and demand would always be equal at some price and that the total amount offered would find buyers willing to take it at that equilibrium price. This, of course, is an oversimplification of the complex relationships that exist, even in a so-called free-market economy. Underlying it is a rather vague notion of a "normal" price which in the longer run will, on the average, call forth enough production to meet the demand at that normal price.

This concept of balance was generally accepted in the markets for farm products until the 1930's. It was a natural outgrowth of a time in which the principal concern about foodstuffs was fear of scarcity. Food production was assumed to be at increasing cost as population expanded, and the idea of excess capacity scarcely entered into the thinking about agriculture and the food supply until the latter part of the 19th century. Even after the development of Western Hemisphere production eased the pressure of population on land resources, this older view of price-cost relationships continued to be widely accepted. It was not seriously challenged until the 1920's when production began to seem clearly too large to be absorbed at any reasonable level of prices in the markets then existing. Since then, it has become apparent that American agriculture has or can easily develop production capacity that is excessive in terms of effective, commercial demand for its products at prices farmers or the general public regard as "fair."

2. *The amount that can be sold at some established level of prices*

This concept is based on the idea that any amount that cannot be sold at prices that are socially and politically acceptable is excess production and therefore reflects an imbalance between supply and demand. Since the standard chosen implies that such a return would be "fair" or "just," it follows that a supply small enough to result in a price higher than these "fair" or "just" prices would reflect an imbalance on the short side. If we adopt that criterion, which is the one implied by existing legislation, production was less than adequate in the years 1942 to 1948 (and in 1950 and 1951) and has been excessive in the years since 1952. The general level of farm prices, in terms

of parity, stood at 100 in 1949 and in 1952. Neither in the Congress nor in the farm groups themselves has it been assumed that the level of farm prices could or should be held precisely at 100 percent of parity. The position taken is that, at least on the down side, large divergences from the parity level should not be permitted to occur.

The lower limit of 90 percent of parity, established in 1942, was regarded at that time as an incentive price and as a stabilizer in the first years of postwar readjustment. It was more favorable than a 90-percent-of-parity average in a free market would be because the Government was assuming some of the risk cost normally borne by the producer. Through later legislation, that standard was retained for a number of the major crops until 1955. In terms of that criterion, amounts over and above those that can be sold at support prices can be regarded as excess production and amounts small enough to result in prices above 100 to 110 percent of parity reflect inadequate production.

Both parity and the percentage of parity at which supports are maintained are somewhat arbitrary in that they are legislatively determined. That is, they are not standards that arise naturally in the marketing process. The ones actually used are by no means the only ones that could be used. The percentage of parity chosen could be 100 percent, 90 percent, 75 percent, or any other portion of full parity.

Parity is based on the idea of maintaining or restoring a set of price relationships that developed naturally in some previous period. It is arbitrary in that the adoption of a different base period or a different formula would result in a different set of parity prices. Also, it tends to drift away from the price relationships that would exist in a more natural market, owing to the fact that it does not take much account of changing costs, demands and supply responses in agricultural and nonagricultural lines of production.

Be that as it may, the parity criterion has come to be widely accepted and is deeply imbedded in the legislation relating to agricultural activities. Even so, the legislation does not provide a clear and unequivocal standard by which to estimate the amount of imbalance in agricultural production and prices. The support levels provided for some products (in terms of percentage of parity) are different from those provided for others, and for more than half the products of the Nation's farms, there is no specified level of price support. Even where percentages of parity are specified, they are subject to legislative or administrative change. Obviously (if demand is the same), the amount of excess or deficit in production will be different in terms of 90 or 100 percent of parity than it will be in terms of 75 percent of parity. Hence, the parity criterion cannot be used without careful specification of the assumptions made.

3. Longer term imbalances

A third standard can be used, though it must lean in part on the two listed above. This looks to probable longer term changes in production, needs and levels of price. This is clearly the most important facet of the problem from the standpoint of this committee but also the one in which the pitfalls facing the maker of dogmatic statements are most obvious. If demand is growing faster than production, so there is prospect of an eventual free-market balance at reasonably satisfactory prices, farmers can, if necessary, weather through a transition period with a hope of something better later. Or special transi-

tion programs can be developed which will ease the situation until the market itself is able to function more satisfactorily as a distributor of incomes. If, on the other hand, the prospect is for a production-demand situation that will be getting more and more out of balance, a quite different approach is called for.

TRANSITIONAL AID PROMINENT IN EARLIER LEGISLATION

Most of the earlier programs adopted did rest on the assumption that the thing needed was aid in a transition period. The Farm Board stabilization corporations could only work if demand recovered and production did not increase disproportionately. The first AAA was set up originally as an emergency program designed to bring production into better balance with demand. It was to be terminated by Presidential or congressional action when that aim was achieved. The postwar price supports provided in the Stabilization Act of October 1942, were of the same type, a procedure for giving market demand time to catch up and for production to be readjusted. The aid to be provided was designed to be transitional, with free-market operations taking over more of the load as the wartime maladjustments were overcome.

There are three principal causes of the changed situation and outlook we are now faced with. (1) The Korean war checked the readjustment that was getting underway just prior to 1950. (2) Yields increased spectacularly, giving rise to a prospect that output would rise faster than population, in fact, so much faster that the methods of holding production in check that had been developed over the preceding 20 years would not be sufficiently effective to result in prices satisfactory either to farmers or the Congress. The third factor was the decision to continue many of the wartime price supports at levels that tended to stimulate production, or at least to make sizable reductions in output unattractive to farmers.

There were numerous collateral actions that cannot be discussed here but which have contributed to the results observed, among them the particular methods used in supporting prices and incomes and the tendency to maintain domestic prices of export crops at levels that restrict their flow into the export markets. Along with these was a still disorganized and poorly adjusted world market in which the amount of dollar exchange was seriously deficient.

With this as background, let us turn more directly to the topic assigned. What are the imbalances that exist currently and what is the probable situation in the years just ahead? Currently, there is a larger supply of some commodities than would be taken by an unaided free market at any price that would be acceptable either to farmers or the Congress. These are principally wheat, cotton, rice, corn, and some of the manufactured dairy products. There are others that do find outlets in a relatively free market but at prices that are too low or too unstable to be satisfactory in an economy seeking to spread evenly the benefits of a generally high level of economic activity.

The analysis will be simplified by considering separately these major groupings. Let us then consider first the price-supported storables, essentially the so-called basic crops. Here, a distinction

must be made between current production and outlet and the problem posed by the stocks that have accumulated as a result of earlier price-support operations.

THE STOCK SITUATION (AS OF JULY 1, 1957)

The principal burdensome carryovers are in wheat, corn, cotton, rice, and cheese. In addition, there are sizable CCC holdings of grain sorghums, barley, flaxseed, oats, dried milk, and butter which indicate that supplies of these commodities are running somewhat in excess of what the market will take at current levels of price support. However, the quantities involved for this latter group are not so large as to be a matter of serious concern. As of June 30, 1957, they accounted (at cost value) for some \$312 million of the CCC inventory as compared with about \$5.4 billion for the 5 commodities that constituted the bulk of the holdings.

These stocks, though administratively perplexing and a potential hazard to the revival of healthy international trade, are not, in my opinion, the excess that should be of major concern to this committee. The real problem is that of maintaining some reasonable balance between output and prospective demand in the years ahead. If a program can be devised which will achieve that longer run balance, the problem of liquidating excess stocks now in hand can be isolated and dealt with by a variety of methods.

The main concern here should be that these excess stocks be so used as to contribute their maximum in social usefulness and that the procedures adopted are effectively designed to serve as transitional steps toward a better balanced and more healthy pattern of international trade. The cost of carrying out such a liquidation program is not the primary consideration. Most of the loss involved is already inherent in the situation and will have to be met in one form or another, whether through subsidized sales, donations, continuing expense for storage or otherwise.

How much of this accumulation is actual surplus and how much can be considered as a desirable reserve for contingencies?

Wheat.—July 1 carryovers in recent years have been about a billion bushels. The normal pre-1930 carryover was in the order of 100 million to 200 million. However, present-day conditions are not those of the 1920's. The possibility of heavy and unpredictable war needs cannot be ruled out, and a severe drought, if it should occur early in the season, could cut production sharply. In view of these considerations, it would seem unwise from a national standpoint to shrink customary Government controlled wheat carryovers much below 400 million to 500 million bushels, most of which should be regarded as a strategic reserve and as a means of stabilizing prices as between years of large or small production. If that view is accepted, the imbalance, so far as CCC stocks are concerned, is currently in the order of 500 million to 600 million bushels. Stocks were reduced by about 125 million bushels in 1956-57 and may be reduced further in 1957-58 but in both cases only through aggressive selling effort and heavy subsidies.

The excess carryover of wheat dates mainly from about 1953. It developed partly as a result of the 1,300-million- and 1,200-million-

bushel crops of 1952 and 1953. Production was brought down moderately in 1954-57 but still is larger than was customary in the years prior to World War II. The crops of 1956 and 1957, though much below those of 1952 and 1953, are still well up toward the billion-bushel level (997 million and 923 million). Domestic use is roughly 600 million bushels. Consequently, if production could be kept at about the 1957 level and exports up to or above 300 million bushels, the situation would be roughly in balance at current levels of price. Such larger exports or disposals as might be made could serve to reduce the excess carryover. Exports since 1950 have ranged from a low of 211 million bushels in 1953 to a high of 547 million in 1956-57. However, this high level of exports was made possible only by heavy subsidies and other abnormal types of disposal. If we can judge from the experience of 1900-14 and the 1920's, which were the last periods in which exports occurred without Government intervention, we probably cannot expect to see commercial exports of more than 100 million to 200 million bushels in most years (at competitive world prices) unless some form of export subsidy is provided.

Thus, the current imbalance would seem to be in the order of 250 million to 300 million bushels a year plus some 500 million bushels of excess stocks. To bridge that gap, if domestic wheat prices are to be kept at something near current levels, will require continuance of abnormal export procedures to account for 100 million to 200 million bushels or a cutback in production of somewhat similar proportions (or a combination of the two) plus steps designed to reduce CCC stocks now on hand. This assumes a continuance of such restrictive measures as are now being used at about their present levels of effectiveness and yield increases that are not in excess of the domestic-demand increase associated with population growth and changes in food habits.

Cotton.—The cotton carryover since 1953 has been roughly 11 million to 14.5 million bales. It built up rapidly from 1952 on. From 1947 to 1952 it was, if anything, on the low side. Here, as in wheat, some stocks over and above those the trade would carry seem desirable in the national interest and as a means of protecting the United States position as the major supplier in the international markets for cotton.

The end-of-season cotton carryovers in the years 1938-45 ranged between 10.5 million and 13 million bales and were generally regarded as excessive. They reached a low of 2.1 million bales in 1951 which proved to be an inadequate supply from the standpoint of stable conditions in the market and the maintenance of good relations with foreign consumers. In 1956 they reached a record high of more than 14 million bales. That quantity has been reduced by some 3 million bales in 1956-57 but still is about as large as the big carryovers of the war years.

Past figures provide little guidance as to what might be regarded as a normal, commercial carryover. During the 1920's, which is the last period in which the Government was not involved, carryovers ranged from as low as 1.5 million bales (in 1924-25) to as high as 6.5 million (in 1921-22). In general, they were in the order of 2.5 million to 3.5 million bales. In view of the uncertainties prevailing at the present time, it would seem that an end-of-season carryover of 5 million to 6 million bales would not be unduly large as a prudent

réserve for meeting such contingencies as may arise. If that figure is accepted, there is a backlog of some 6 million bales which may be said to represent the current imbalance in the stock situation.

United States cotton production is currently at about the 13-million to 15-million-bale level (but only 12.7 million in 1957). Domestic consumption is roughly 9 million bales. For the two to balance out without adding to or cutting down CCC stocks would require that exports be at about the 3-million- to 5-million-bale level in most years. That, in terms of past performance, does not seem an unrealistic goal to try for. In the period 1900-14, cotton exports were never less than 6 million bales and in 3 of the years were up almost to 9 million bales. From 1924-33, the peak period in cotton exports, they were never below 7 million bales and reached a high of 10.9 million in 1926. However, the United States share of the world cotton market has changed considerably since then. In the early 1900's the United States was producing nearly 60 percent of the total world output of cotton. It still accounted for about the same portion of the much larger world crop in the late 1920's. From 1933 on the United States portion of world production declined substantially. In the early 1950's United States production was only a little over 40 percent of the world total.

During the past few years, until 1956-57, United States cotton exports have been far below the amounts needed to balance production with domestic use and exports. The result has been the heavy accumulation referred to above. With a revised selling policy and various concessions to encourage buying, exports rose to 7.6 million bales in 1956-57, the largest since 1939 and enough to cause a reduction of about 3 million bales in the record-high August 1, 1956, carryover of 14.5 million bales. The carryover now is about the same as that of 1955. Exports of 4.5 to 6 million bales are expected in 1957-58.

If the 1956-57 level of exports could be maintained and if production does not increase markedly, the new supplies produced could be absorbed and excess holdings could probably be reduced to something near optimum size in 4 to 5 years. It must be recognized, however, that the achievement of the 7.6-million-bale level for 1956-57 has involved considerable subsidy and very aggressive sales effort. On the other hand, the low 1955-56 exports (2.2 million bales) were probably due in part to deferred buying by foreign purchasers in the expectation that the price of United States cotton would be lowered.

It would seem that expectation of a continuing export of 4 to 5 million bales would not be unrealistic provided the United States is prepared to offer cotton at competitive prices, either through subsidization or some modification of the level of domestic price support. It must be recognized, however, that very large factors in the situation will be the trends in acreage and in yields per acre. The 14-million-bale cotton crop of 1930 was grown on some 42.4 million harvested acres. That of 1956, 13.3 million bales, was grown on 15.7 million acres. That is, almost as much cotton was being produced in 1956 as in 1930 though the acreage grown had been reduced by nearly two-thirds.

Any large-scale shift of acreage back to cotton would, of course, upset the rough balance indicated above. So also would a continuation of the rapid increase in yields that has marked the past 20 years. The United States average yield in 1930 was 179 pounds. Customary

yields began to increase in 1934, partly no doubt as a result of the elimination of the less productive acres. With better practices, more fertilizer and improved varieties, yields were up to more than 400 pounds in 1955 and 1956 and reached an alltime high of 446 pounds in 1957 (September 1 estimate). Unless this rate-of-yield increase should level off, it will apparently be necessary either to cut back still more on cotton acreage or to find ways of enlarging the markets for the crop if a balance of the kind indicated above is to be maintained.

Tobacco.—Assuming continuance of existing controls on acreage, the tobacco situation presents fewer problems of imbalance than do most of the other basic products. The acreage harvested has remained fairly constant since 1944. Average yields for all types are approximately double those of the 1920's. Production is some 60 percent higher than in the 1920's and 1930's. However, production was down sharply in 1957 (about 26 percent) as a result of reduced acreage allotments, soil-bank participation, drought, and other causes. Exports have held up well, though they are somewhat below those of the 1920's. There are, of course, important differences in the situation as between types of tobacco. Though stocks of most types were high in 1954-55, they have declined some since then and do not appear likely to present a serious problem in the near future, assuming that controls on acreage are retained.

Rice.—United States rice production has more than doubled since 1930. Most of the increase has occurred in the years since 1940. There was a very large increase in the early 1950's, as a result of disturbed world production and trade. United States output reached 64 million hundredweight in 1954 as compared with 41 million in 1949, 24 million in 1940, and 20 million in 1930. Acreage allotments and marketing quotas were put into effect for the 1955, 1956, and 1957 crops, and United States production eased off to 41 million hundredweight in 1957, that is, to about the 1949 level.

Exports declined in 1954 and 1955 and very large carryovers came into existence. They reached a peak level of 34.6 million hundredweight in 1956 which was the equivalent of about 75 percent of that year's crop. Exports again increased sharply in 1956, partly as a result of poor crops in Indonesia and Pakistan and of the tendency for the important nations to build up government holdings in view of the fact that the world rice situation appeared to be stabilizing following the price readjustments of 1954.

As a whole, the United States rice situation does not appear to present major problems in achieving some reasonable balance of production and sales. The industry has shown considerable ability to adjust production to needs both up and down. United States production constitutes less than 2 percent of the world total, and United States exports are only a little over 10 percent of all rice exports (as of 1955, the latest year for which overall reports are available). Fairly large percentage changes in United States exports can occur without serious disturbance to the world rice economy. It must be recognized, however, that the current situation in which the excess carryover of 1954-56 has been reduced by about half is due in considerable measure to (1) the use of acreage allotments and quotas and (2) extensive resort to sales for foreign currencies and by barter. Without these assists, United States rice production would undoubtedly tend to outrun demand at prices that would be at all satisfactory to rice producers. The ex-

pected carryover as of August 1957 (17 million hundredweight) still was more than four times the 1950-54 average. As of 1956 and 1957, rice prices have been somewhat above the support levels in effect (82½ and 80 percent of parity), and the price prevailing is essentially a free-market price except for the various forms of export subsidy provided. If levels of output can be disposed of, with Government help, by the Government. Apparently, something approximating the cur-growers are willing to accept prices generally in the 80 to 90 percent of parity range. It does not appear that any production adjustment that could be made practically in the United States would push world prices up to a substantially higher level. Our contribution to world supplies is too small to make us a dominant factor in the market except in very unusual circumstances.

Corn and the other feed grains.—By far the most complex problem of balance is that relating to the feed grain-livestock economy. From the standpoint of Government inventory operations, corn is, of course, the major problem. However, cutbacks in corn acreage tend to result in large production of other coarse grains and hay and may not affect the overall livestock potential very significantly. Furthermore, there is a wide variation in the views of well-informed people as to how much reserve stock of corn is desirable from the standpoint of stabilizing the livestock industry.

In the 1920's, October 1 stocks tended to be in the order of 100 to 200 million bushels. Around 1940 stocks on hand were in the order of 500 to 700 million bushels, partly as a result of CCC price-support operations. That amount was then regarded as excessive, though these larger stocks proved useful in the war years. Corn stocks stood at about 380 million bushels in October 1933 (partly as a result of CCC loans), but this amount proved to be less than adequate in the drought years that followed. Stocks were down to 62 million bushels in October 1935 and supplies were inadequate in the drought year 1936. Again in 1946, 1947, and 1948, October 1 carryovers of 125 to 283 million bushels were less than adequate for offsetting the small corn crop of 1947.

By 1949 the total October 1 carryover had built up again to more than 800 million bushels which was generally regarded as excessive. Stocks eased off to around 500 million bushels in 1952 but have since grown again to a record high of 1,450 million bushels in 1957, of which more than 800 million bushels are owned by or pledged to CCC.

How much of a carryover is it desirable to maintain and how much of the current supply can be regarded as excess or imbalance? Total slaughter of hogs in the 1920's was generally in the order of 65 to 75 million head. In the 1950's it has been in the general range of 75 to 85 million head, an increase of some 10 to 15 percent. The cattle population, which was around 60 million head in the late 1920's was about 95 million head in 1954 and 1955. Thus, it is clear that a larger carryover of corn than that which was customary in the 1920's is needed. There is a general feeling among livestock growers that more protection should be provided than that which would result from private holding of reserve stocks. This is partly a result of the feed-supply squeezes of 1935, 1936, and 1947 and partly an outgrowth of experience with CCC which, under appropriate legislative and administrative directives, could carry out feed-stabilization operations effectively.

Estimates of an appropriate corn reserve range from 600 million to 800 million bushels (suggested by the Twentieth Century Fund Committee) to a billion bushels or more. If we take 800 million bushels as possibly roughly in line with the views of many well-informed people, the current imbalance in stocks would appear to be in the order of 600 million bushels, about three-quarters of the amount now held by CCC. This does not take account of stocks and production capacity for the other feed grains and hay, most of which are privately held. So far as CCC is concerned, these consisted (on June 30, 1957) of 43 million hundredweight of grain sorghum, acquired at a cost of \$105 million; 68 million bushels of barley, costing \$82 million; and 27 million bushels of oats, costing \$22.5 million. The corn inventory, which represents a cost of around \$1.5 billion, is, of course, the dominant factor in the situation.

The preceding analysis relates mainly to the short-run situation and to the price-supported storables. It is also concerned primarily with the excess-stock problem which is currently of considerable interest to farmers, legislators, and the public. The products thus supported accounted for between 30 and 35 percent of the total cash receipts from farming in 1954.¹

Most of the other farm products either are not under price support or are supported in more informal ways which do not ordinarily involve significant buildup of Government-owned stocks. The other price-support activities are mainly those carried out with section 32 funds and are, for the most part, designed to prevent serious declines in price as a result of temporary oversupplies in markets that operate mostly on a free-market basis. Most of them are perishables and most of the programs are relatively small-scale operations. The major perishables—hogs, beef cattle, poultry, and eggs—are not under price support, but may receive temporary or local aid in times of severe distress or seriously overloaded markets. Also, fluid milk is not included. The fluid-milk markets are so different from those in which the other major farm products are sold that they present a quite different set of problems. They do not give rise to burdensome CCC inventories, though some of the secondary products (butter, cheese, and dried milk) do contribute to the excess stocks held by CCC.

IMBALANCES IN THE MARKETS FOR PERISHABLES

The principal concern over lack of balance between production and demand in the unsupported commodities arises in respect to hogs, beef cattle, and poultry and eggs. Here a lack of balance is reflected in the prices paid rather than in accumulation of Government-held stocks. The product is all used and desired by the consuming public. Obviously, the amount of imbalance depends on the level of prices that is assumed to be in keeping with a good balance between supply and demand. However, a very difficult problem is presented by the cyclical movements of supplies and prices, especially for hogs and beef cattle. That is true also for other perishables, such as vegetables and poultry products, but for these the cycles of overproduction and under-

¹ They include the "basic" storables and others on which price supports are provided in such a way as to result in some accumulation of stocks by CCC, that is, barley, grain sorghums, oats, wool and mohair, butter, cheese, and dried milk.

production are usually shorter, and severe maladjustments tend to be corrected more quickly.

As in the case of the price-supported storables, it will simplify the analysis to consider first the situation for a few of the more important products and then undertake such generalizations as may seem warranted. In neither case is it practical to cover all products. However, in an effort to present a general view of the situation such as this committee is seeking to develop, it seems reasonable to assume that if some reasonable balance can be achieved for those major products that represent the bulk of agricultural income the production of competing minor commodities will tend to be adjusted so as to make returns comparable. Some exceptions must be noted where the relationship to the major types of production is remote or perhaps almost nonexistent. The tree, vine, and bush crops, poultry products, and some others, are cases in point. However, the problems of balance in these lines are different from those of the major crops, and hence are set aside for later comment.

The hog and beef situation

Both hog production and beef production tend to run in cycles but not in cycles of uniform pattern or length. Ad hoc factors of one kind and another affect them. If, as happened in 1955 and 1956, the peak of a hog-production cycle coincides with a period of heavy output of beef, the result is an unusually large meat supply and low prices. Beef production (in terms of units fed) was in the order of 14 to 15 million from 1945 to 1949. Though higher than in the 1920's and 1930's, this was about the level prevailing in 1916-19.² That level of production, with a greatly increased population and high buying power, resulted in high prices in the post-World War II years. Beef cattle reached a price that was 167 percent of parity in 1948, and prices were well above parity (as then computed) from 1939 through 1952.³ The average for that entire 14-year period was 133 percent of parity. That naturally provided a considerable stimulus to the industry which could not result in an immediate increase in output. By 1952 the number of units fed reached 20.2 million and held at about that level or higher through 1956. The 1956 figure was 21.1 million units, an increase of about 40 percent over the 1945-49 level.

Hog production reached an alltime high of 79.2 million units in 1943. It was low in 1946 and 1947 (58 million units), thus contributing to the high demand and high prices for beef in that period. It expanded again in 1949 and 1950, then dropped to about the 1946-47 level in 1952 and 1953. Thereafter it expanded again in 1954 and reached 66 million units in 1955. Thus, the high production periods for beef cattle and hogs coincided in the period 1954-56.

Hog prices too were well above parity through the 1940's except in 1941. They were up to 145 percent of parity in 1947 and averaged 120 percent of parity from 1942 through 1949. They were again above parity in 1953 and 1954 (107 and 106 percent) but dropped to 72 percent in 1955. They remained low in 1956 but showed some recovery

² USDA, Livestock Market News Statistics and Related Data, 1956 (Statistical Bulletin No. 209), p. 4.

³ USDA, The Livestock and Meat Situation, May 9, 1956, p. 15 (in footnote). The use of these extremely favorable years as a base in making comparisons with current levels of price and income, as is frequently done, results in a somewhat unrealistic view of the current situation.

in 1957, moving up from an index of 52 in January 1956 to 87 in September 1957. Beef cattle were likewise in the 70-80 percent of parity range in 1956 and 1957. It should be noted, however, that parity prices for both hogs and cattle, as computed by the formula used from 1950 on, are higher than if they had been computed by the "old" formula used prior to 1950.

With this record in mind, it is extremely difficult to define imbalance in the livestock industry except in terms of cyclical variations. At first glance, it would appear that, from the standpoint of price maintenance at about parity levels, beef cattle units fed would need to be kept at around 18 to 19 million units (some 5 to 7 percent under the numbers actually maintained) with population and national income at present levels. This, however, ignores the effect of pork supplies on the demand for beef. Had hog production remained at the 1953-54 levels (roughly 58 to 59 million units with an indicated price of parity or above), it is quite possible that beef cattle prices would also have shown more strength in the years since 1954. It is clear, however, that the 40-percent increase in beef cattle units between 1945 and 1949 and 1956 would have had a depressing effect on beef cattle prices even had this tendency not been exaggerated by the concurrent increase in hog production.

By almost any criterion that can be used, the beef output of the 1940's must be regarded as an imbalance on the short side. If parity price is regarded as the appropriate measuring stick, the imbalance on the long side in 1955 and 1956 was perhaps in the order of 2 to 2½ million cattle units and 1 to 2 million head of hogs. It was not until 1950 that hog prices dropped below parity, in spite of a production level of 66 million units in 1949 and 70 million in 1950, both equal to or substantially above the 65.9 million units of 1955 and well above the 64 and 63 million levels of 1954 and 1956. However, as already noted, beef cattle production in the 1949-50 period was some 5 to 6 million units smaller than in 1955 and 1956.

Putting it another way, total meat production was 27 billion pounds in 1955 and 28 billion in 1956, as compared with around 22 billion in the late 1940's when prices were still very favorable to meat-animal producers.⁴ Taking account of the increased population and continuing high level of national income, it would seem that a combined production of beef and pork some 2 to 3 billion pounds smaller than that of 1956 would be likely to result in prices that would be at or close to parity. This implies, for meats as a whole in 1956, an imbalance in the order of 8 to 10 percent if the maintenance of parity prices is accepted as an appropriate goal.

It must be recognized, however, that this would be regarded as a high-cost-of-food situation by most consumers, as it was in the late 1940's, and that it would probably result in overexpansion of both cattle and hog production, as it did in the early 1950's.

Looked at in another light, the meat output of the past few years is not a true imbalance. All of the product is wanted and needed. The imbalance, if it exists in a long-term sense, is in the return to the producers of meat. If that view is accepted, it would not seem desirable to try to shorten up supplies enough to insure full parity of price

⁴ Livestock Market News Statistics, p. 67.

in the market. A logical approach would be, first, to seek to introduce more stability into the prices of these products, in other words, to reduce the amount of cyclical change in output and, secondly, to seek other ways of overcoming such inequity of income as might thereafter remain.

It would apparently be easier to exercise some control over production of total meats by way of the hog program, with its shorter cycle and smaller dependence on weather conditions, than on the ups and downs of cattle production. That could be done by means of income payments to hog producers in times of heavy overall meat supply, with a view to maintaining a total return to hog producers that would avoid severe cutbacks and higher prices later. Such price maintenance would need to be on a loss-prevention basis rather than in terms of fully satisfactory prices if desirable downward adjustments are to be encouraged as well as the maintenance of adequate supplies.⁵ In other words, it would look to lessening the severity of the cyclical swings but not to eliminating them.

For such a program to be workable, it would probably be necessary to use a forward-pricing technique rather than merely to make ex-post income payments. Some collateral and supporting actions are feasible. For example, in the event of a pinch in feed supplies, Government-held reserve stocks could be made available—if necessary, at less than cost—as a means of maintaining production and avoiding shortages that would tend to result in unduly high prices and overstimulation of the industry, with prospect of a subsequent oversupply such as that of 1955 and 1956. That procedure was used, and rather successfully, in encouraging hog production in the war years.

Such an approach would look to aiding the beef-cattle industry indirectly rather than directly. It would seek to stabilize total meat supplies mainly through adjustments in the more manageable hog sector of the meat industry. Success in adjusting hog production to prospects of overall meat supplies would tend to lessen the severity of cyclical swings in both industries, though it obviously would not eliminate them entirely. Unforeseeable liquidations of cattle as a result of short pastures and a tendency to retain cattle as a means of using abundant feed supplies would still be disturbing influences. However, disastrous declines in income to both hog and cattle producers could be avoided by means of supplemental income payments if funds are provided. The tax cost might be higher, but the overall cost to society might be lower.

If some such procedure as that indicated were to be followed, it would be logical to abandon acreage controls and price supports on corn and give primary emphasis to the maintenance of income for the end products, principally pork and beef. Acreage controls and quotas are not effective for corn because three-quarters or more of it is not sold as corn but is fed on the farms where grown. If the price is supported at specific percentages of parity that are in excess of its use value, it tends to accumulate in Government stocks in too large volume. This is wasteful and possibly price depressing.

However, the general plan outlined above does contemplate stabilizing action on a fairly large scale by the Commodity Credit Corpora-

⁵ It could also be limited to No. 1 hogs weighing less than 225 pounds, as a means of encouraging a shift to meat-type hogs and cutting total volume.

tion. Reserve stocks would be increased in years of heavy production and reduced in years of low production. This, in turn, would have a stabilizing influence on the livestock industry and on the prices of meat animals. The amount of reserve contemplated would be in terms of reasonable implementation of such stabilizing action for both corn and meat animals but would, of course, vary from year to year. The buying in and release prices apparently would not need to be much lower than the price-support levels now in effect, perhaps no more than 5 to 10 cents a bushel, but they would be determined administratively on the basis of stabilization objectives rather than as a specified percentage of parity.

Granting the adoption of some such plan as that described above, there need be no wasteful imbalance in the hog and cattle industries in the foreseeable future. To the extent that Government funds may be needed for the type of income support indicated, the situation could be regarded as out of balance in a free-market sense, but there would ordinarily be no burdensome or wasteful surpluses hanging over the market to depress prices and disturb normal marketing procedures.

Dairy products

The other large items in the perishable group are dairy and poultry products. In the fluid-milk markets, rather elaborate procedures have been developed for stabilizing supplies and prices. The problems of imbalance currently are mainly in the cheese and butter segments. Butter production has been adjusted in such a way that, with prices at their present level (about 80 percent of parity—for butterfat in cream), the amounts acquired by the Government are much smaller than in 1953 and 1954 when the level of price support was higher. The heavy CCC holdings of a few years back have been considerably reduced but largely by abnormal methods of sale. As of June 30, 1957, CCC stocks were about 92 million pounds and are expected to be about the same at the end of June 1958. In other words, the situation seems to be roughly in balance at the current level of prices if abnormal sales are continued at about the levels of 1957-58. However, the prevailing level of price is not regarded as satisfactory in the areas where main reliance is on the returns from butter.

The butter produced is being used, but there are strong indications that a shortening of supplies and raising of prices would merely hasten and accentuate the shift to butter substitutes and would probably be to the long-run disadvantage of butter producers. Price supports maintained at a higher level would have the same effect and, in addition, would give rise to costly and wasteful accumulations of butter.

For cheese, the problem is similar to that for butter. As of June 30, 1957, CCC stocks of cheese amounted to some 210 million pounds. CCC holdings are expected to be down to about 100 million pounds by June 30, 1958. Here, also, the prospect of reduced holdings is heavily dependent on abnormal methods of disposal, and the situation cannot be regarded as in balance for either butter or cheese at present levels of price. The situation is similar in respect to dried milk, though that product arises more generally as a byproduct of the fluid-milk industry and does not play so vital a role in the returns to dairy farmers as do butter and cheese. CCC's dried-milk holdings amounted to 180 million pounds as of June 30, 1957, and are expected to be reduced to

about 170 million pounds by June 30, 1958, again, however, only through heavy reliance on abnormal methods of disposal.

Nearly half of the total milk output is used as fluid milk. The proportion so used is increasing. More than 25 percent is manufactured into butter, and about 10 percent is made into cheese. Butter and cheese are the principal outlets for amounts that may be regarded as surplus production in terms of satisfactory prices to farmers. For many areas, these products constitute the only outlet. However, there is little evidence that either a sharply reduced supply designed to raise prices or substantially higher price supports would contribute to continuing improved returns to farmers. The availability of substitutes makes it probable that any marked increase in the level of prices would merely accelerate the shifts already occurring and might mean an eventual return to competitive prices but with a smaller market for the product, or very heavy accumulation of Government stocks that would have to be moved rather quickly under heavy subsidies.

For those unable to operate at a profit at about current levels of price, a shift to other types of production or other occupations appears to be about the only solution, unless the Government chooses to provide some sort of continuing subsidy. The growing demand for fluid milk will help some. In some areas, increased efficiency and farm consolidation, possibly with Government assistance, may be a logical approach. For some of the poorer, small-farm areas, land acquisition and new types of land and labor resource use may be worth considering.

The above comments indicate that the imbalance that exists in the cheese and butter industries cannot well be stated in quantitative terms except in relation to some more current and more realistic price criterion than the parity formula provides. It is possibly more in the nature of a situation in which growth should be checked until the rising demand associated with population increase, changes in food habits, and promotional efforts can give a more healthy tone to the markets. Direct action to raise prices is almost certain to be self-defeating and will complicate the problem rather than solve it.

Poultry and poultry products

The other large industry to be considered is poultry. Here, the tendency is for production to outrun demand at prices that can be considered satisfactory to producers. It is complicated by the fact that production is carried on in many small units, some of which are sidelines on farms mainly engaged in other types of production, and that the industry is one that is rather easily entered by people with small capital or limited labor resources. Currently, the prices of eggs, chickens, and turkeys are running at something in the order of 70 percent of parity.

Here, as in most of the other perishables, such imbalance as exists does not appear as accumulated surpluses but rather in the level of prices received. Ordinarily, the entire output is used and desired by the consuming public. Price supports provided during the war and postwar years were mainly on dried eggs and led to costly and wasteful accumulations in the years after the abnormal war and postwar demand had eased off. The industry makes rather quick adjustments but usually at a relatively low level of prices.

There does not appear to be any practical way of controlling production or supporting prices except through the operation of the free

market. Temporary and serious gluts can be relieved to some extent by price-supporting purchases, and that procedure has been used to some extent since the early years of the Roosevelt administration. High prices for beef and pork tend to give strength to the poultry meat industry, but egg prices are difficult to support for any length of time except as there is some large outlet for eggs such as existed in the war years. Production control is virtually impossible because of the nature of the industry. Income-supplementing payments also present almost insuperable difficulties because of the quickness with which the industry's output can be expanded. It seems reasonable to conclude that severe and persistent imbalances will not plague the industry except as reflected in its tendency to supply the Nation's needs at prices lower than are generally regarded as satisfactory. No plan seems currently available whereby prices could be kept at more satisfactory levels and, so far as is known, the industry has not proposed or sought continuing Government action to control production or maintain prices.

Other perishables

The other important group of products is that generally referred to as fruits, vegetables, and specialty crops. It is too diverse for detailed examination in the space available here and few generalizations are warranted. Genuine and continuing surpluses tend to be the exception rather than the rule, except in semiperishables such as raisins, prunes, walnuts, and similar products. Marketing agreements are used to some extent but mainly as a price-stabilizing device rather than as a price-raising mechanism. Government purchases and export subsidies have been used rather extensively, especially for the semiperishables, in ameliorating the effects of war and postwar disruptions of established export markets.

For the annual crops such as lettuce, carrots, melons, and so on, adjustment of output tends to occur rather quickly, as it does in the poultry industry. However, serious market gluts may occur in some years and are especially difficult to deal with. On the whole, the prices of commercial vegetables have tended to be at fairly high levels, in terms of parity, in recent years. Fruits have been lower but not at levels that indicate severe distress. As in the case of poultry products, production control has appeared impractical and has not been widely advocated. Government purchase and holding is clearly unworkable and ordinary types of price support are not the answer. Some rather general proposals for supplemental payments to producers of perishables have been made but not carried through to practical application or considered in light of the countless problems of grading standards, effects on the markets, production response, and so on. The very grave difficulties encountered in the years just prior to 1950 in the efforts to support the price of potatoes, and the enormous cost of the program, are illustrative of these difficulties.

In general, the producers of these products have benefited from shifts in dietary habits, the rapid growth of population, and the possibility of quick adjustment, except for the tree, vine, and bush crops. For the annual crops, serious and long-continued imbalances are not likely to arise even with advancing technology except as there are major disturbances in the economy as a whole.

LONGER TERM AND MORE GENERAL IMBALANCES

For the longer run and in a more general sense, such imbalances as exist or are in prospect arise from rapid technological advance and the tendency for agriculture to maintain capacity and output that result in disadvantageous terms of trade with other parts of the economy. This aspect is being discussed by other participants in these hearings. At least two important and difficult problems are posed. Will a continuance of the rapid transfer of human resources out of agriculture offset such disadvantage as exists or enable agriculture to maintain its present position or improve it? Secondly, is it desirable or feasible to encourage a shift out of agriculture of a much larger portion of that part of the agricultural labor force which gets a very low return for its services and contributes little to overall commercial farm output? If not, can the situation of this group be materially improved "in place" and without contributing to a further imbalance between farm output and demand?

With respect to the first of these, the principal variables are the acreage in crops, the rate of technological advance, the investment in agriculture, the size of the farm labor force, and the ability of foreign markets to absorb such surpluses as may arise. Broadly speaking, there has been little change in the total acreage in crops over the past 30 years. The increase of more than 50 percent in farm output that has occurred since 1929 has come about almost wholly through higher production per acre rather than through increase in the number of acres cultivated, except for an increment of some 70 to 75 million acres of cropland released by the shift from horsepower to machine power.

The potential for a continuing increase in yield per acre undoubtedly exists but almost certainly will not be fully exploited. It depends heavily on the level of investment, particularly in such things as fertilizers and equipment. The rate of investment in these will depend to some extent on the prospect for profit therefrom and the financial resources of farmers. Crop production per acre moved up from 85 (1947-49=100) in 1939 to 100 in 1942.⁶ It then fell off and, except for the good years 1946 (101) and 1948 (106), did not again reach 100 until 1952. The trend in 1952, 1953, and 1954 was slightly downward (103, 102, and 101). There were, of course, much more spectacular increases in yield for some crops, notably cotton, corn, and potatoes. However, such striking changes as those brought about by the shift from horses to tractors, the introduction of hybrid corn, and the heavier use of fertilizer are not likely to be continuous at the same rate. Some of the yield increase for important cultivated crops can be accounted for by shifts from poorer to better land or the sloughing off of the less productive acres.

It is not possible to substantiate in a meaningful way such imbalance as there may be in the number of workers engaged in agriculture. In broad terms, some 60 to 70 percent of the farms could produce a volume of commercial products comparable to that now being supplied. The other 30 to 35 percent includes the low-income portion of the farm operator group and also a good many part-time farmers and other who cannot be regarded as potential full-time, effective

⁶ Agricultural Statistics, 1955, p. 452.

farm operators. Neither is it safe to assume that all small-scale, full-time, low-income farmers could become fully efficient urban workers if they were to transfer out of agriculture. Perhaps the most realistic approach is to regard this group as a special problem which should have its own special types of study and program. Whether its numbers are decreased or increased will not affect materially the balance sought with respect to the main body of suppliers of commercial agricultural products.

If that view is taken, we can address ourselves more directly to the primary production-demand balance in commercial agriculture. For the more productive two-thirds of the farms, a farm work force some 4 or 5 percent smaller than that now employed would constitute a rough balance with prices at about the levels of 1952 (100 percent of parity), provided the inputs of land and capital were reduced accordingly. This is in terms of current levels of efficiency and technology. Over the past dozen years, output per man-hour in agriculture has been increasing at a rate of something in the order of 3 to 4 percent per year. Total farm employment has been declining by about 2 percent a year, and the number of people eating out of civilian food supplies has been increasing at a rate of about 1.6 percent a year.

Thus, crudely stated, something in the nature of a rough balance in these key rates, in terms of existing relationships between farm and nonfarm prices, seems to have been achieved, but it is dependent on a continuing reduction in the size of the farm labor force, a continuing high rate of population growth, and a continuing high level of economic activity. If a shift that will result in better terms of trade for agriculture is to be achieved—say, a price balance similar to that of 1952—it will apparently require a somewhat accelerated rate of transfer of working force out of agriculture together with some extensification and a lower rate of capital input, or an increased volume of exports, or both. A mere reduction in the labor force, if offset or more than offset by increased mechanization, may not reduce output but could perhaps hold it to a rate such that demand would tend to catch up.

PROSPECTIVE DOMESTIC DEMANDS FOR FOOD AND FIBER

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Domestic requirements for food and other farm products are expected to expand around 20 percent in the next decade and possibly around 50 percent in the next two decades. These gains are a little more rapid than anticipated growth in population. With rising consumer incomes, domestic use per person, assuming approximately current prices, would increase by around 3 percent from 1956 to 1965 and around 8 percent by 1975. The projected rise in food use of livestock products from the high 1956 level is relatively small. On the other hand, increases projected for crops are fairly large from the relatively low consumption rate in 1956.

Population growth of 37 percent from 1956 to 1975 would account for most of the increase in requirements. Growing incomes and trends in consumption habits would add some to per capita use of farm products and would likely modify the kinds of products consumers buy. While prices of farm products in general have relatively small influence on total domestic use of farm products, variation in relative prices of individual products influences consumption of many livestock products, some fruits and vegetables, and probably cotton. Domestic use of grains for food, potatoes, fats and oils, and tobacco apparently is influenced very little by price changes, particularly at the farm level. Trends in consumption habits also reflect less manual labor, developments in nutrition, medical findings, food and clothing fads, and many other factors.

MAJOR ASSUMPTIONS

In appraising prospective demand and growth for any industry one pertinent and undisputed fact should be kept in mind—the future is unknown. Yet we can indicate probable trends as well as approximate the magnitude of changes in requirements for major groups of farm products. Such an appraisal requires fairly specific assumptions for population growth, consumer income, and relative prices, as well as a knowledge of economic relationships and trends in past years.

Population has grown fast during the 1950's—estimates for recent years exceed the highest projections made a few years ago. The number of persons reaching 18 years of age will rise rapidly in the period 1960-65, adding to the labor force and probably to the number of marriages and new family formations. Around 1965, a substantial increase in the number of women 20 to 34 years old will begin. This is the most prolific age group. With a continuing prospect of fairly rapid population growth, population assumed for 1965 (1931½

million) is up 15 percent from 1956; for 1975 the assumed level of 230 million is 37 percent above 1956.¹

We were producing about twice as many goods and services on the average in 1951-55 as in 1925-29. Population was up more than a third, and consumer buying power, after adjustment for higher prices, increased 55 percent between these periods. The economy will continue to grow in the next two decades, possibly even faster than in the past, if employment is maintained. The size of the economy by 1975 could easily double the 1951-55 average if past trends in productivity continue. With rising output per man and rapid population growth, real consumer incomes per person in 1975 may be around 40 percent above 1956; projected incomes for 1965 are about 16 percent higher than 1956. Such expansion of the economy assumes peace and a high level of employment (table 1).

TABLE 1.—Population, production, and income, selected periods 1925-56 and projections for 1965 and 1975

Item	Unit	Average 1925-29	Average 1951-55	1956	Projected	
					1965	1975
Population ¹	Millions.	118.9	159.7	168.2	193.4	230
Labor force (including military) ²	do.	47.7	67.3	70.4	-----	93
Employment including military ²	do.	45.6	65.1	67.8	-----	89
Gross national product ^{2,3}	Billion dollars.	98	358	415	-----	725 610
GNP in 1947-49 dollars ²	do.	138	301	332	-----	-----
Consumer disposable income ^{2,3}	do.	78	248	287	-----	530
Per capita income ^{2,3}	Dollars.	653	1,550	1,706	-----	2,305
Per capita income in 1947-49 dollars ²	do.	880	1,363	1,468	1,700	2,030

¹ Population of continental United States as of July 1, including Armed Forces overseas.

² Data for the 1925-29 average are based on unofficial estimates of the gross national product and the labor force.

³ Projected levels of the gross national product and consumer income shown assume 1951-55 average prices unless otherwise specified.

The general price level was assumed at about the 1956 average. But two levels of prices were assumed for farm products: The first level assumed approximates current levels with minor adjustments. A lower level was also assumed for major export crops, feed grains, and livestock products, in order to illustrate probable effects of a substantially lower price on domestic use and exports. The lower level reflects approximately current world prices for major export crops (table 2).

¹ Census projections for 1975 range from 207 million to almost 229 million.

TABLE 2.—Assumed levels of prices received for major export crops, feed grains, and livestock

[Dollars per unit]

Commodity group	Unit	Average 1951-55	1956	Assumed levels	
				I ¹	II ²
Wheat.....	Bushels.....	2.06	1.98	1.85	1.25
Corn.....	do.....	1.49	1.30	1.40	1.05
Cotton, American Upland.....	do.....	.34	.32	.30	.25
Soybeans.....	do.....	2.73	2.40	2.40	1.90
Cattle.....	Hundred- weight.....	20.38	15.00	19.00	14.50
Hogs.....	do.....	19.42	14.50	17.50	13.25

¹ The 1st level (I) is fairly close to current levels for farm products as a whole.

² The 2d level (II) approximates current world prices for major export crops and feed grains with livestock prices related through historical product-feed price relationships.

Methodology used in a long-run appraisal must be kept simple. Although there has been a renewed interest in the theory of economic growth, most formal theories are greatly oversimplified. A complete economic framework for the economy or any major segment would require consideration of more economic, social, and political factors and relationships than the human mind can encompass. The analytical tools used for this appraisal of growth in requirements for agricultural products are simple demand analyses for major groups of products. Many projected details are based largely on qualitative judgments. Although the range of error limits cannot be specified, projections for many groups of products are considered accurate enough to aid in major policy decisions relating to agriculture.

DEMAND FOR FARM PRODUCTS

We are interested in changes in demand for products of the farm. But consumers do not buy farm products; they buy food and clothing at supermarkets, department stores, and restaurants. The farm product is an incidental raw material of many consumer goods. Some foods are highly processed and most are packaged, and all must be assembled, shipped, and made available at urban distribution outlets. Thus, retail purchases of farm products include many services of processing and distribution. In 1956 and 1957, for example, the farmer received only about 40 cents out of the consumer's retail food dollar. And in most years he probably receives only about a third of the dollar the consumer spends for food, clothing, tobacco, and other products that contain farm commodities. The relatively small share of the value of the final product that goes to the farmer complicates the problem of appraising changes in demand at the farm level.

Consumption per person

Although the consumption of farm products changes relatively little in response to changes in prices and consumer income, expenditures for food at retail stores and restaurants tend to increase about in proportion to income. A 10-percent increase in income leads to about 10 percent larger outlays for food. This means an income elasticity of expenditures around 1.0. When both incomes and expendi-

tures are adjusted for price-level change, real consumption increases about 4 to 5 percent with a 10-percent increase in real income—an income elasticity of 0.4 to 0.5. Consumption at the retail level is a “quantity” which includes the farm product as well as the real component of marketing and processing services necessary to move this product into consumption. At the farm level, a 10-percent increase in real incomes of consumers would increase consumption of farm products per person by only 1½ to 2 percent. Likewise, a 10-percent drop in relative prices may increase per capita use by only 1½ to 2 percent.² Under conditions assumed for 1975, domestic use per person is projected to levels around 8 to 12 percent above 1956.

Total requirements

A summary of projected requirements for major groups of livestock products and crops indicates that the domestic market for farm products under conditions assumed for 1975 may be in the range of 48 to 53 percent above 1956. The actual increase from 1925–29 to the 1951–55 average, approximately a quarter century, was 45 percent.³ The projected range for 1975 is due to the difference in price assumptions. Although price assumption II averages 20 to 25 percent below assumption I, little variation in domestic use of food would be expected. These projections imply a price elasticity of demand around –0.15 at the farm level.⁴ It may average twice as large for the nonfoods which consist mainly of cotton, wool, tobacco, fats and oils, and some grains. Projected requirements for nonfoods other than feed by 1975 may range 55 to 65 percent above 1956 (table 3).

TABLE 3.—Population and domestic utilization of farm products, selected periods 1925 to 1956 and projections for 1965 and 1975

[Indexes 1956=100]

Item	Average, 1925-29	Average, 1951-55	1956	Projected, 1965		Projected, 1975	
				I ¹	II ²	I ¹	II ³
Population.....	71	95	100	115	115	137	137
Domestic utilization.....	64	93	100	118	123	148	153
Per capita.....	91	98	100	103	107	108	112
Food.....	64	93	100	118	122	147	152
Per capita.....	90	98	100	103	106	107	111
Nonfood.....	69	99	100	119	129	154	165
Per capita.....	97	104	100	104	112	113	121
Exports ⁴	66	74	100	74	84	74	96
Imports.....	80	99	100	121	123	148	150
Farm output required.....	62	92	100	111	116	136	146

¹ See footnote 1, table 2.

² See footnote 2, table 2.

³ Exports assumed for projections at 1951-55 average for the higher price level; for the lower price level, exports approximate detailed projections prepared by the Foreign Agricultural Service.

² See Demand for Farm Products at Retail and the Farm Level, by Rex F. Daly, paper presented at the joint meetings of the American Statistical Association and the Econometric Society, September 12, 1957, at Atlantic City, N. J.

³ Percentage increases for all products combined are larger than for either crops or livestock products. In combining crops and livestock products, quantities used for feed and seed are deducted in order to avoid counting the feed as well as the livestock products produced with the feed. Feed and seed make up half of all crops and, with further efficiencies in feeding, requirements rise less than for livestock products and also less than other crops. As a result, projected requirements for all crops combined and for all livestock products, each rise less than the increase for all farm products.

⁴ The data in this report are based on utilization of farm products at the farm equivalent level. See Supply and Utilization of Farm Commodities, Agriculture Handbook, No. 91. USDA, November 1955.

A population increase of 37 percent from 1956 to 1975 would account for most of the increase in requirements. Based on assumed conditions for 1975, however, per capita consumption would likely range around 8 to 12 percent above 1956. Per capita use of food would be from about 7 to 11 percent higher, and for nonfoods 13 to 21 percent higher. Rising consumer incomes, price changes, and other factors that affect preferences have a relatively small influence on per capita use of farm products as a whole. The weight of food and the calories consumed per person have changed little in the last quarter century. But shifts from grains and potatoes to some other vegetables, fruits, meats, and other higher-cost foods result in an upgrading of the diet as well as some increase in resources needed to produce the diet. Such shifts in consumption contributed to the rise of around 8 percent in the price-weighted index of per capita consumption from 1925-29 to the 1951-55 average. With rising incomes, many of the trends in our eating habits will continue, possibly at somewhat moderated rates, in the next 10 to 20 years.

Exports in the 1951-55 period averaged around a 10th of farm output. If exports were assumed to hold around current levels, projected total requirements for farm products would rise less rapidly than domestic use. For purposes of illustration, exports were assumed at the 1951-55 average for the higher price assumption. Although down materially from 1956, such exports probably would require a continuation of export programs to move these amounts at the higher price level. The somewhat higher level of exports assumed for the lower price assumption does not quite match quantities being exported in 1956 and 1957. They do approximate detailed projections prepared by the Foreign Agricultural Service.

Requirements for domestic use and exports, as assumed above, would total in 1975 around 40 to 45 percent above 1956 as compared with 48 to 53 percent for domestic use only. Imports in 1951-55 provided, on the average, about a 10th of domestic use. They provided all of our consumption of coffee, tea, cocoa, bananas, and many other less important commodities as well as most of our sugar and wool. If imports are deducted from total utilization for domestic use and export, output needed to match projected requirements would range from about 35 to 45 percent above 1956 output.

There was a relatively small net stock accumulation during 1956, but previously accumulated stocks of cotton, wheat, and feed grains are large. Any substantial liquidation of these stocks will require some adjustment in production. Thus, the indicated rise in production needed to meet requirements overstates output needs, especially for the next few years.

LIVESTOCK PRODUCTS

Consumption of livestock products in general is more responsive to price and income changes than that of most other farm products. Food uses of livestock products accounted on the average for approximately 70 percent of total food use during 1951-55. Nonfood animal products—mainly wool, tallow, greases, and some products for feed—are largely byproducts of livestock production. Both exports and imports comprise a relatively small part of total utilization.

Consumption per capita

Consumption of livestock products was at a high level in 1956 owing partly to the cyclical high in supplies of beef and rising consumption of poultry. Thus, compared with 1956, the projection for red meats (beef, pork and lamb) in particular looks conservative. Yet, even modest increases from the 167 pounds for 1956 would result in a high level of meat consumption (table 4).

TABLE 4.—*Per capita food consumption of livestock products, selected periods 1925 to 1956, and projections for 1965 and 1975*

[Indexes 1956=100]

Commodity group	Average, 1925-29	Average, 1951-55	1956	Projected, 1965		Projected, 1975	
				I ¹	II ²	I ¹	II ²
				Meat animals.....	82	92	100	101	107	108	114
Dairy products.....	93	99	100	102	106	105	108
Poultry.....	54	91	100	105	109	114	118
Eggs.....	91	104	100	99	99	99	99
Total.....	83	95	100	102	106	107	111

¹ See footnote 1, table 2.

² See footnote 2, table 2.

Per capita consumption of red meats in the 1951-55 period averaged only 12 percent above 1925-29 as relative prices increased a fourth during the period. In comparison, consumption of poultry increased more than two-thirds with expanding demand. Rapid technological developments in the feeding and production of broilers and turkeys resulted in a decline of more than a third in relative prices for poultry. Cheaper poultry, of course, facilitated the big increase in consumption. The projected rise in red-meat consumption, while moderate, implies somewhat higher relative prices. The preference for beef probably will expand more rapidly than for pork, especially if we continue to produce a fat hog. Although further increases in poultry consumption are expected, gains are not expected to match those of recent decades.

The pattern of milk utilization has shifted substantially in the last 2 to 3 decades with a sharp decline in use of milk for making creamery butter. In 1925-29 butter consumption per person averaged 17 to 18 pounds; consumption in recent years has been about half as large. Consumption of whole milk, skimmed milk, and fluid milk products with low fat content has increased. Thus, per capita use of total milk solids (fat and nonfat) has increased moderately over the last quarter century and probably will rise further in the next two decades. Prospective demand for milk fat is expected to continue less promising than for other milk solids because of the tendency of processors as well as consumers to substitute lower cost fats.

Consumers have materially reduced their consumption of eggs in recent years. Per capita consumption in 1950 to 1952 averaged about 390 eggs per person. Consumption was down to 369 eggs by 1956 and 356 is the estimate for 1957. Thus, experience of the last decade gives no basis for expecting a rise in egg consumption; we may do well to arrest the downtrend of recent years.

Domestic requirements

A small rise in per capita consumption and projected population would result in domestic requirements by 1975 for livestock and livestock products around 45 to 50 percent above 1956. Requirements increased 44 percent in the quarter century preceding the 1951-55 period (table 5).

TABLE 5.—*Domestic utilization of livestock products, selected periods 1925-56 and projections for 1965 and 1975*

[Indexes, 1956=100]

Item	Average, 1925-29	Average, 1951-55	1956	Projected, 1965		Projected, 1975	
				I ¹	II ²	I ¹	II ²
Domestic utilization.....	64	92	100	116	121	144	150
Food.....	58	90	100	117	122	146	152
Meat animals.....	58	88	100	116	123	147	156
Dairy products.....	66	94	100	118	122	143	148
Poultry.....	38	87	100	121	125	156	161
Eggs.....	64	99	100	114	114	136	136
Nonfood.....	116	104	100	107	111	120	126
Exports.....	43	65	100	69	69	62	62
Imports.....	83	112	100	135	135	161	161
Production required.....	63	90	100	114	119	140	146

¹ See footnote 1, table 2.

² See footnote 2, table 2.

Nonfood uses of livestock products in 1951-55 averaged a little more than a tenth of total livestock production. Feed and hatching eggs, which are used in the production process, accounted for more than half of total nonfood uses. The downtrend in livestock products used for feed, mainly dairy products, is expected to continue, but at a slower rate. A substantial increase will be needed in eggs for hatching, and requirements for wool are projected to rise with population.

Both exports and imports of livestock products are relatively small. In the 1951-55 period, average exports were about equal to imports, and they approximated 3 percent of total output. Projections for 1965 and 1975 assume a small net import of livestock products. As a result, a production increase of around 40 to 45 percent from 1956 to 1975 would match the projected increase of 45 to 50 percent in domestic requirements.

CROPS

Demand for crops is derived in large part directly from requirements for livestock products. However, consumer purchases of food, tobacco, and clothing as well as utilization in paints, soaps, and other industrial products also provide major domestic markets for crops. In 1951-55 use of crops for feed and seed represented about half of total domestic use.⁵ Food accounted for about 36 percent and the other nonfood crops—mainly cotton, tobacco, and some oils and grains—made up the remaining 14 percent of total domestic use of crops.

⁵ Feed and seed are deducted from crop utilization and supply before combining with livestock to get a total for all products. Since feed use rises less than food and other nonfood uses, usually the increase for all farm products combined is greater than for crops as a whole or livestock products.

Food consumption

Consumption per person of all food crops combined has varied little during the last quarter century. Individual crops, however, have responded to changes in relative prices, incomes, and popular consumption habits. The average person today consumes much less of such foods as cereals, potatoes, and dry beans than he did 25 years ago. Consumption of these foods apparently is influenced little by price changes, and consumers tend to eat less flour, cereals, and potatoes as their incomes rise. Lighter work and widespread concern about obesity also have contributed to reduced consumption. These declines have been largely offset by increased consumption of fruits and vegetables. With rising incomes consumers probably will further reduce their consumption of the cereal-potato group of commodities. But declines are expected to moderate. Potato consumption fell from an average of 144 pounds per person in 1925-29 to 104 pounds for the 1951-55 period; wheat consumption dropped from 254 pounds to 181 pounds. The "potato chip" and "french fry" outlets, despite nutritional considerations, apparently have bolstered consumption of potatoes in recent years (table 6). The smaller declines projected for the next two decades could be further moderated if support should develop for the arguments now being advanced by some nutritionists with respect to the use of fats, particularly some types of animal fats and solid-type vegetable fats.

TABLE 6.—Per capita consumption of food crops, selected periods, 1925 to 1956, and projections for 1965 and 1975

[Index 1956=100]

Commodity group	Average, 1925-29	Average, 1951-55	1956	Projected, 1965		Projected, 1975	
				I, ¹	II ²	I ¹	II ²
Potatoes, sweet potatoes, grains, dry beans, and peas.....	147	106	100	96	96	92	92
Coffee and tea.....	78	103	100	118	119	131	132
Other ³	101	103	100	108	110	111	113
Fruits and vegetables.....	103	105	100	112	113	115	117
Oil crops.....	78	101	100	103	104	107	108
Sugar.....	120	101	100	100	101	99	100
Total, food.....	109	104	100	106	107	109	110
Food use, excluding imports ⁴	114	106	100	106	107	108	108

¹ See footnote 1, table 2.

² See footnote 2, table 2.

³ All crops other than the potatoes-grains group and coffee, tea, and cocoa.

⁴ Excluding imports of coffee, tea, cocoa, bananas, and sugar.

Consumption of fruits (especially citrus) and such vegetables as tomatoes and the leafy, green, and yellow vegetables has tended to increase with rising incomes and relatively lower prices. Nutritional considerations also have encouraged increased consumption of citrus and leafy, green, and yellow vegetables. The projected increase in consumption of fruits and vegetables from the recent 1951-55 average is relatively small. This group combines many major commodities, such as apples, cabbage, and dry onions. Consumption of these commodities, apparently, is not very responsive to price and income changes.

Per capita use of oil crops is expected to rise, but much less rapidly than the gain of nearly a third in the last quarter century, a period in which consumption of vegetable oils expanded rapidly. Per capita use of coffee and tea increased nearly a third from 1925-29 to 1951-55 and probably will continue upward under economic conditions assumed for 1975.

For all crops combined, the above trends indicate a small rise in per capita use of domestically produced crops. The gain from the reduced 1956 levels is relatively large, but projected levels for 1975 are only slightly above the 1951-55 average.

Nonfood use

Nonfood crops, other than feed and seed, consist mainly of cotton, tobacco, and oils, as well as some grains. Cotton and some of the oils which compete with synthetics are probably fairly responsive to price and income changes. An appraisal of prospective requirements for cotton is complicated by competition with synthetic fibers and likely price policy. In this appraisal, cotton prices were assumed at two levels: The higher is close to the average for 1956; the lower approximates current world prices. This range was assumed in order to indicate possible variations in domestic use and export. Some increase in per capita use of cotton is expected in the economic framework assumed for 1975, and the increase could be sizable under the lower price assumption. The higher projected increase assumes that cotton would regain a larger share of the market for fibers (table 7).

TABLE 7.—Per capita consumption of nonfood crops, selected periods, 1925-56, and projections for 1965 and 1975

[Index 1956=100]

Commodity group	Average, 1925-29	Average, 1951-55	1956	Projected 1965		Projected, 1975	
				I ¹	II ²	I ¹	II ²
				Cotton.....	104	106	100	107	120	117	128
Tobacco.....	80	108	100	104	104	116	116
Other nonfood, excluding feed and seed.....	82	98	100	98	108	111	121
Total.....	92	104	100	104	113	115	123

¹ See footnote 1, table 2.

² See footnote 2, table 2.

Some further rise in per capita use of leaf tobacco is expected, though the gain may be slow for several years as manufacturers make substantially more products from a pound of leaf. Medical developments may continue to influence consumption. Nonfood uses of oils and grains are also expected to rise, and they could rise substantially under the low-price assumption.

Feed requirements

Feed comes primarily from hay and pasture, the four major feed grains—corn, oats, barley, and sorghum grains—as well as from other grains and from such byproducts as the mill feeds, oilseed cake and meal, and some animal proteins. Feed requirements for crops in the aggregate were based on projected output of livestock products. It was assumed that feeding efficiency may improve by possibly a tenth

in the next two decades. This would result in an increase in total feed use by 1975 of around a third to 40 percent from 1956. Projected requirements for feed increase by considerably more than during the past quarter century when the big decline in horse and mule numbers released feed for other livestock. But the decline in horse and mule numbers is about completed.

Crop requirements and output

Domestic requirements for crops projected under conditions assumed for 1975 range around 40 to 45 percent above 1956. This compares with an increase of 27 percent from 1925-29 to the 1951-55 average. For the same period, the increase in requirements for feed and seed, which make up about half the total, was only 20 percent, as the reduction in horse and mule numbers released feed for other animals. Food use increased 29 percent, and other nonfood uses increased more than 50 percent.

Requirements for food crops projected for 1975 total about 50 percent larger than in 1956, and the variation associated with the two price-level assumptions was small. The increase in domestic nonfood uses, under conditions assumed for 1975, range from around 55 to 65 percent above 1956. The relatively wide range in the projections reflects the expected greater use of nonfood products at the lower price level (table 8).

TABLE 8.—Domestic utilization of crops, selected periods, 1925 to 1956, and projections for 1965 and 1975

[Index 1956=100]

Item	Average, 1925-29	Average, 1951-55	1956	Projected, 1965		Projected, 1975	
				I ¹	II ²	I ¹	II ²
Food, total.....	77	99	100	122	123	149	151
Grains and potatoes ³	104	100	100	110	110	126	126
Coffee and tea.....	55	98	100	136	137	179	180
Other crops ⁴	71	98	100	125	126	152	154
Fruits and vegetables.....	73	99	100	129	130	158	160
Food excluding major imported crops ⁵	81	100	100	122	123	147	148
Nonfood, other than feed and seed.....	65	99	100	119	130	157	168
Feed and seed.....	81	97	100	110	115	131	137
Total, domestic.....	77	98	100	116	120	141	146
Exports ⁶	71	76	100	76	88	76	104
Imports.....	80	97	100	118	121	145	148
Production required.....	75	96	100	107	113	128	136

¹ See footnote 1, table 2.

² See footnote 2, table 2.

³ Includes grains, potatoes, sweetpotatoes, dry beans, and peas.

⁴ Other than the grain-and-potato group and other than coffee, tea, and cocoa.

⁵ Excluding coffee, tea, cocoa, bananas, and imports of sugar.

⁶ Exports assumed for projections at 1951-55 average for the higher price level; for the lower price level, exports approximate detailed projections prepared by the Foreign Agricultural Service.

Export of crops in 1951-55 averaged about 12 percent of total crop production and the large exports in 1956 were around 15 percent of production. In order to complete the picture, exports were assumed at the 1951-55 average for the higher price assumption. Exports this large would very likely require continued export programs. Under the lower price assumption exports approximate those estimated for major commodities by the Foreign Agriculture Service. These assume

exports above the average for 1956 with a large movement of cotton, some grains and oils. Imports of crops—mainly sugar, coffee, tea, cocoa, and bananas—are expected to rise somewhat more rapidly than the population as they have in the past.

With assumed exports included in utilization, the rise in total requirements would be around 32 to 40 percent above 1956 compared with the projected rise of 40 to 45 percent in domestic requirements. After deducting the imported portion of requirements, the required increase in crop production is around 28 to 36 percent above the record 1956 crop. This projection reflects the small stock accumulation in 1956 but makes no allowance for working down substantial carryover stocks of cotton, wheat, and feed grains.

PROJECTIONS OF FOREIGN DEMAND FOR SELECTED UNITED STATES AGRICULTURAL PRODUCTS, 1965 AND 1975

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SUMMARY

Over the next two decades it appears that foreign commercial dollar demand¹ for most major United States agricultural commodities will increase substantially compared with dollar exports of recent years. For some agricultural commodities, however, foreign demand may decline from the record high total exports of 1956-57, when about 40 percent of the total was financed under special Government programs such as Public Law 480.

These conclusions are the result of a special study made by the Foreign Agricultural Service at the request of the Subcommittee on Agricultural Policy of the Joint Congressional Economic Committee.

Prospective foreign demands in 1965 and 1975 for the major United States farm-export commodities are compared with the average of total exports in 1950-51 through 1954-55, and with total and dollar rates in 1956-57 in table 1.

TABLE 1.—*Projections of foreign demand for selected United States agricultural products, 1965 and 1975*

Commodity	Unit	Exports ¹			Projections of foreign demand	
		1950-51 through 1954-55	1956-57		1965	1975
			Total	Dollar sales ²		
Cotton.....	Million bales ³	4.0	7.6	4.4	6	7
Tobacco.....	Million pounds.....	474	510	436	420	440
Wheat.....	Million bushels.....	330	546	170	260	310
Rice, milled.....	Million hundred-weight.....	13.8	26.3	4.8	10	12
Feed grains ⁴	do.....	160	136	80	210	285
All fats and oils ⁵	Million pounds.....	2,882	4,950	3,648	5,500	7,500
Oranges in terms of, fresh.....	Million boxes.....	12.4	14.5	14.5	20	28
Apples and pears, fresh.....	do.....	3.0	2.8	2.8	7	14
Canned fruit, deciduous.....	Million cases, 24/2½.....	2.0	4.7	4.7	10	11
Raisins.....	Thousand short tons.....	61.6	48.8	48.8	70	80
Prunes.....	do.....	38.5	60.0	60.0	50	55
Total (1950-51 and 1954-55)=100. ⁷		100	161	90	136	168

¹ Year beginning Jan. 1 for tobacco, lard, and tallow; June 1 for deciduous canned fruit; July 1 for wheat, feed grains, and fresh apples and pears; Aug. 1 for cotton and rice; Sept. 1 for raisins and prunes; Oct. 1 for other fats and oils; and Nov. 1 for oranges. While there were significant shipments under various aid and relief programs during this period they were not all tabulated and therefore separate dollar sales cannot be shown. The breakdown is, however, shown for 1956-57.

² Does not include sales, grants, donations or barter under Public Law 480 or sales under sec. 402 of Public Law 665.

³ Running bales.

⁴ Includes corn, oats, barley, and grain sorghums.

⁵ Includes oil equivalent of oilseeds.

⁶ Based on export returns of 10 months for fats and oils; 9 months for oranges; and 11 months for raisins and prunes.

⁷ Valued at average 1952-54 export prices.

¹ The term "foreign commercial dollar demand" as used herein means the quantity foreign countries are prepared to buy for dollars. This will hereafter be referred to as foreign demand.

The table shows these significant trends:

(a) *Foreign demand in 1965 and 1975 compared with dollar exports in 1956-57.*—A substantial increase is in prospect for cotton, wheat, rice, feedgrains, fats and oils, and most fruits. Tobacco demand probably will not change much.

(b) *Foreign demand in 1965 and 1975 compared with total exports (dollar and Government financed) in 1956-57.*—A substantial decrease is in prospect for cotton, wheat, tobacco, and rice. Large increases are expected for feedgrains, fats and oils, and most fruits, however, and by 1975 the total foreign demand for these products is expected to exceed slightly the record volume of 1956-57.

As indicated on page 121 these estimates are based on the assumption that there will be no special programs such as Public Law 480 in 1965 and 1975. This is not to argue that there may not be a continuing need in many parts of the world for assistance in relief and rehabilitation. For example, a recent analysis of import requirements for United States agricultural commodities of countries not having sufficient dollar exchange and experiencing chronic food deficiencies, disclosed that nearly \$500 million worth of agricultural commodities might be required yearly over the next 5 years. The extent to which these needs may be met would materially affect the conclusions of this report, particularly with respect to exports of wheat, cotton, and rice.

Foreign demand in 1965 and 1975 will be affected materially by two groups of forces:

On the one hand there will be continued keen competition for United States products in foreign markets. There will be a growing tendency to regionalism. The agricultural technical revolution which is accelerating in the developed countries of the world, particularly in Western Europe, will result in a marked increase in agricultural production. In the underdeveloped countries there will be a continued stress on agricultural self-sufficiency and some increases in agricultural exports as a means of financing economic development. Despite these efforts there will be a continued dollar shortage for the purchase of agricultural commodities in many underdeveloped countries.

On the other hand, there are strengthening factors in the foreign demand outlook for United States farm products in 1965 and 1975. These include the rapid growth of world population, the upsurge of industrialization, increasing per capita income and the general desire of all nations to improve their standards of living.

The estimates of foreign demand in 1965 and 1975 contained in this report must be recognized merely as judgments or projections developed on the basis of a set of reasonable assumptions after giving considerations to a number of past relationships. In evaluating the extent to which these past relationships will continue, attention was given to prospects in the general field of production technology and agricultural policy. Foreign demand for agricultural products is a complex function of many variables which are extremely difficult to predict. Actual exports, of course, will depend upon the extent to which the assumptions materialize.

The general assumptions used in making these estimates were :

1. No large-scale war or preparation for war, but continued international tension, with defense expenditures in the most important countries at current ratios to national income.

2. No major depression; near-full employment in the industrial countries, economic development in underdeveloped countries to accelerate. No major inflation on a world scale, but general price levels tending upward. Continued substantial growth of real per capita income in most areas.

3. Population growths for the next 2 decades as forecast by the United Nations demographic experts at annual compound rates of one-half percent for West Europe, $1\frac{1}{8}$ percent for the Soviet Union and European satellites, $1\frac{5}{8}$ percent for the Far East, $1\frac{3}{4}$ percent for Africa and West Asia, and over 2 percent for Latin America.

4. Continuation of present policies of agricultural protection in importing countries and agricultural promotion in exporting countries.

5. Export supplies from the United States to be available at competitive prices as at present.

6. No sales for foreign currency or under Government aid programs.

The method used in making the estimate was to consider and give weight to such factors as growth in population, changes in income, prospects for agricultural output in the various regions of the world, and elasticity of demand for various farm products. In each case, emphasis was placed on three basic questions: (a) Prospects for total requirements; (b) prospects for internal competition in the form of domestic production in each area; (c) prospects for external competition, that is, production for export in the principal exporting countries.

The tentative conclusions on foreign demand developed by this method were then adjusted by taking into account a number of important factors that affect international competition. These factors included quality, specific consumer habits, needs or preferences, location in relation to market, technical aspects of production in various areas, and general judgments as to the comparable levels of production costs and competitive strengths and weaknesses as modified by Government policy.

The outlook for the individual commodities is as follows:

COTTON

Foreign demand for United States cotton should move upward gradually during each of the two decades, despite continued competition from synthetic fibers and foreign cotton. The major reason for the increase is that consumption outside the United States will go up faster than production.

World cotton consumption will continue to increase moderately through 1975. This is due to population growth and rising standards of living that will result in a slight increase in per capita textile consumption. World cotton prices, since the United States became competitive, have slowed down the expansion of synthetic fiber production and should allow cotton to get at least an equal share of the expected increase in overall fiber consumption.

Some uptrend in foreign cotton production will resume, possibly beginning in 1958. World production has been relatively stable since 1954-55. However, some countries are moving ahead with economic development based mainly on agricultural expansion which includes plans for more cotton production. Some two-thirds of the world production increase expected by 1975 will be absorbed in the producing countries, for example, India, U. S. S. R., China, and Turkey. Countries likely to add most to the competition in world trade are Mexico, Syria, Iran, Sudan, and Nigeria.

World trade in cotton, which totaled 13 million bales in 1955-56, will increase moderately to about 16 million in 1965 and may reach 18 million by 1975.

Of this, the United States should get about 40 percent (which is the same share we had in the 5 years before World War II). This should result in foreign demand for a little over 6 million bales in 1965 and nearly 7 million in 1975. This level compares with a prewar (1934-38) average export of 5.0 million running bales, a low of 2.2 million in 1955-56, and a recent high of 7.6 million in 1956-57. In comparing the figures it must be recognized that the 1956-57 exports included a little over 3 million bales financed under Public Law 480 and section 402 of the Mutual Security Act, and also covered a period when depleted cotton inventories in importing countries were being rebuilt.

The distribution of the foreign demand for United States cotton over the next two decades should remain about the same as in 1956-57, that is, about 60 percent in Western Europe, 30 percent in the Asian markets and the remainder in Canada, Eastern Europe, Latin America, Australia, and Africa, in that order of importance.

TOBACCO

Foreign demand prospects for United States tobacco are not bright, assuming that United States tobacco will be available for export at prices not less than the United States support level. High returns per acre and a continuing drive to cut dollar expenditures will likely continue to give a big push to foreign tobacco production throughout the next 20 years.

Production in most competing areas is expected to continue to increase. African production, particularly the British commonwealth areas, will cut further into United States markets. A number of Asian countries will try to produce tobacco for export and may be selling small amounts of low-quality leaf in 1975. Oriental production will continue upward. Consuming countries will attempt to increase domestic crops insofar as possible.

Europe's per capita consumption will continue to rise, though at a slower rate than in recent years. The United States share in that market, however, is expected to decrease.

Total world consumption is expected to increase from 7.2 billion pounds (dry weight) in 1955 to about 8.6 billion in 1965 and 10.3 billion in 1975. Most of this increase will come from local production. World imports are expected to increase from 1.6 billion in 1955 to around 1.7 billion in 1965 and to 1.8 billion in 1975.

The United States share of total world trade, under the stated assumptions, is expected to drop from 32 percent in 1955 to 25 percent

in both 1965 and 1975. This will mean a reduction in foreign demand for United States tobacco from 510 million pounds (dry weight) in 1956-57 to about 420 million pounds in 1965 with some regain to about 440 million in 1975.

The increase from 1965 and 1975 reflects the fact there is a limit to the amount of neutral tobaccos that can be introduced into various blends. It is believed that after 1965 this limit will have been reached and United States tobacco will thereafter share in increased tobacco consumption.

WHEAT

The long range foreign demand outlook for United States wheat is less encouraging than for most other crops.

Foreign demand will do well to total 260 million bushels by 1965. During the following 10 years production in importing countries may increase at a slower rate, world trade should increase, and foreign demand for United States wheat may expand to a level of around 310 million bushels by 1975. These projections are somewhat below the export levels of recent years, such as the 549 million bushels in 1956-57, when exports were greatly augmented by special Government programs. If only the 1956-57 dollar exports of 170 million bushels are used as a base, the projections show a substantial increase in the years ahead.

World production and consumption of wheat probably will increase through 1975 at a slightly lower rate than the increase in world population. Most of the production increase is expected in Europe and the underdeveloped countries so that world trade in wheat, while continuing to expand, is not expected to expand as much as production and consumption.

Trade prospects in the importing countries briefly are these: Western Europe's production is expected to expand through increased yields and per capita consumption to decline. As a result foreign demand for United States wheat by 1975 is likely to total less than half that of 1955-56. Consumption in Africa will outrun production providing a significant outlet for United States wheat by 1975. Demand for United States wheat in Japan and the Far East is expected to remain fairly constant with other exporting countries gradually taking over an increased share of the expanding trade.

Competition prospects from exporting countries are as follows: Argentina is expected to continue its return to the role of a major exporter. With the expansion of wheat acreage and the technical improvements taking place in U. S. S. R. and Eastern Europe, the Communist countries will likely have some net exports of wheat by 1975. Australia's production increase should about keep up with population growth, resulting in stable exports.

For the world as a whole, the tendency will be for wheat production to exceed demand at reasonable prices. This will mean tough going for dollar wheat, that is Canada and the United States. Canada's production is likely to decline somewhat from the high levels of recent years due, in part, to shift to more feed grains and general farming, and also to recent buildup of wheat stocks.

RICE

A marked increase is expected in foreign demand for United States rice. However, exports still will be lower than recent total shipments, most of which was sold for local currencies. Most of the increased demand will be in Latin American countries and Japan.

Major factors limiting demand will be price, shortage of dollars in importing countries, and large supplies available in soft-currency countries.

World rice production and consumption are expected to rise 20 percent in the decade 1955 to 1965 and another 15 percent in the following decade. World trade is expected to go up by at least that rate and possibly faster in the second decade.

Foreign demand for United States rice in 1965 is expected to be about 10 million hundredweight and in 1975 to be around 12 million. This is lower than total United States exports (including Government financing) of 12.8 million hundredweight in 1955-56 marketing year and 26.3 million in 1956-57. Excluding Public Law 480 exports and those financed under section 402 of the Mutual Security Act, leaves dollar sales in fiscal 1955-56 of about 5.4 million hundredweight and in fiscal 1956-57 about 4.8 million. The unusually large exports in recent years have been largely the result of United States financed shipments to Far Eastern countries.

It should be noted that these projections assume United States export prices to be, as at present, at levels which will result in United States rice being noncompetitive in some areas of the world.

FEED GRAINS

Prospective foreign demand for United States feed grains is good. By 1965 foreign demand is expected to be twice the fiscal 1951-55 average exports of 100 million hundredweight and by 1975 to be almost 3 times as large.

Most of the increase in foreign demand will be from Western Europe which already takes about 80 percent of world imports. With a rising standard of living, Western Europe is emphasizing livestock production. Most of this expansion is expected in nongrazing animals, particularly poultry and hogs. European production of feed supplies cannot keep pace with this increased demand and therefore the prospects are for more imports. There will also be some increase in demand for United States feed grains from other regions where increased consumption will result largely from population growth.

United States feed grains must compete with expanding supplies of grains from other surplus-producing countries of Latin America, Africa, Middle East, and Oceania. Nevertheless, this expanded production abroad is not expected to equal the increased demand and there should be an important increase in demand for United States feed grains even though dollar shortages continue. Argentina may be expected to supply the import requirements of neighboring South American countries and provide some increased quantities of all grains for the European market. South Africa's corn exports will be increased. Some increase in exports, particularly of barley, may be expected from Canada, Australia, and countries of the Middle East.

FATS, OILS, AND OILSEEDS

Foreign demand for United States fats, oils, and oilseeds is expected to increase substantially throughout both decades under study. The projections indicate that demand will be up 12 percent in 1965 and up about 50 percent in 1975 compared with the record exports of the last 2 crop years. Including soybeans and flaxseed in terms of oil, the projections indicate a demand for about 5.5 billion pounds in 1965 and 7.5 billion pounds in 1975 compared with actual exports of about 4.9 billion in 1956-57. If these projections are compared with last year's dollar sales of about 3.6 billion pounds, the increase is still more striking.

The expected increase in demand for fats, oils, and oilseeds will result from continued expansion in world consumption of both fats and oils and protein feeds. World fat consumption is expected to rise about 40 percent by 1975 from the present recent level of about 55 billion pounds. In many populous underdeveloped countries, consumption per person averages only around 10 pounds compared with 65 pounds in the United States. Consumers in such countries will spend more for fats and oils as their income rises, and exports from several of these countries probably will decline.

In Europe—the most important consuming area—consumption will likely increase somewhat faster than production with the United States and Africa supplying an increasing portion of the total.

Asia will probably see the most dramatic change. Once a major export source of copra, peanuts, palm oil, and soybeans, Asia for some years has been consuming increasing portions of its production. By 1975 it will probably have ceased to be a net exporter and may well have become a net importer. Only copra and perhaps palm oil will likely be coming out of the area in quantity.

As to the relative role of various sources of fats and oils in United States exports, lard and tallow will likely decline. These will find increasing competition from expanding livestock production in Europe, which is the principal market, particularly for lard, and further, the trend is away from lard to vegetable-oil-based products such as margarine. Soybeans and soybean oil, on the other hand, are expected to play an increasing rôle in meeting the foreign demand.

In recent years United States exports of oilseeds, particularly soybeans, have increased at a rapid rate due to the increasing demand for protein feeds as well as oils, largely in Western Europe. This expansion in export demand for proteins is expected to continue for the next two decades, as foreign countries develop and expand livestock production. The demand for United States oilseeds will be further strengthened by the declining availability from several countries which have been major suppliers.

FRUIT

Substantial increases in foreign demand for United States fruits is expected. Demand for United States citrus is expected to increase from about 14 million boxes annually to approximately 26 million during the next 20 years. Oranges, principally in the processed forms, will account for most of the citrus increases and will continue the upward trend of recent years. Marketwise, the greatest increases

are expected in Canada and Western Europe, currently the best customers for United States fruit.

Apple and pear exports are now at relatively low levels compared with the prewar average of 12.6 million boxes. This is largely a result of very rapid expansion of production of these fruits in Western Europe. Thus, while projected demand for United States apples and pears shows substantial gains over the next 20 years with exports climbing from 3 million boxes in 1955 to about 14 million in 1975, much of the growth will be a regaining of lost markets. Demand for United States apples and pears in Latin American countries, on the other hand, should show a substantial increase, climbing from a half a million boxes prewar to about 5 million in 1975.

Foreign consumption of canned deciduous fruit will continue its upward trend and the United States will continue as the leading producer. Demand for United States supplies are expected to increase threefold from the present low level of exports with most of the shipments going to Canada and Western Europe.

The United States will continue as the world's leading producer and exporter of raisins and is expected to maintain its share of an expanding market. World prune consumption has been trending downward for many years. Future demand for United States prunes may be below the relatively favorable exports of 1956-57.

SOURCES OF EXPANDED AGRICULTURAL PRODUCTION

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It is extremely important that we appraise accurately the capacity of American agriculture to expand production. With an additional 35 to 50 million mouths to feed during the next 20 years and far more than that in the next 50 years, with higher incomes to reinforce demand for both appetizing and nutritious foods and with long-run prospects for international tension, we must not make any mistakes about the ability of the agricultural economy to deliver. Further, we must do what is required to insure that that ability is utilized.

We should note that what kind of an agricultural economy we have is important from sociological, political, and esthetic standpoints. What kind of an economy we have is determined in large part by how it is organized for production. Thus, it is important that we be prepared to evaluate the consequences of adopting alternative ways of organizing to get the necessary expansions in farm production.

THE NEED FOR EXPANDED PRODUCTION

According to a number of agricultural economists, farm output will have to expand between 25 and 40 percent in less than 20 years, with the required expansion in livestock production exceeding that required in crop production.² Roughly speaking this required expansion in production exceeds in absolute terms any expansion experienced in a comparable period of time since 1870.

According to Strauss and Bean, American farm production doubled from 1870 to 1895.³ More land, more capital, improved technology and more labor were used. Specialization made possible by improved transportation systems undoubtedly contributed to this expansion.

It took 30 years for the next comparable absolute expansion in production. More but less fertile land and more capital were used. At the same time significant technological advances occurred. Mechanical power, gasoline as well as steam, was used increasingly and other machines were improved. Probably, total man-hours worked did not change very much in the 1895-1925 period. Rotations were improved, liming played an important role, legumes became an important source of nitrogen and new crop varieties were developed with the land-grant colleges playing an important role in originating and fostering tech-

¹ This testimony was prepared under Michigan Agricultural Experiment Station project 442.

² Carl Heisig (this panel).

³ L. H. Bean and Frederick Strauss. *Gross Farm Income and Indices of Farm Production and Prices in the United States, 1869-1937*. USDA Technical Bulletin 703, 1940.

nological changes. As in the previous period, secular increases in land values provided equities to finance the adoption of new technology and expand production.

It only took 17 years to bring about the next comparable expansion in production. By 1942 agricultural production was roughly four times as great as in 1870. This expansion was based on the use of much more capital, but less land and labor. The reduced use of land and labor was made possible by land- and labor-saving technological advances such as commercial fertilization, irrigation, hybrid corn, and improved crop varieties which permitted land to be utilized more effectively and machinery which reduced labor requirements. The shift to mechanical power continued—land which had produced feed (fuel) for horses was freed to produce products for sale. Though we seldom overlook the transfer of land from producing horsepower to producing products for sale, we often fail to note that land and other resources were shifted from producing fuel (feed) inefficiently to specialize in producing other products effectively. The importance of increased efficiency resulting from this and other forms of specialization has never been measured accurately; indeed, many analyses appear to attribute increases in efficiency from this source to technological advance⁴ because, perhaps, of the difficulty encountered in trying to differentiate the impacts of the sources. Other forms of specialization which were important in the 1925–42 period include geographic specialization in fruit and vegetable production, the specializations of the nonfarm sector in fertilizer production and turning over of many marketing services performed by farmers to nonfarm agencies able to perform the services more satisfactorily.⁵

Since 1942, farm output has increased enough for us to anticipate that by 1960 farm output will be five times as great as in 1870. This expansion is being accomplished with less and less labor, about the same amount of land but with great expansions in the use of substitutes for land such as fertilizers and irrigation. Crop varieties are also being controlled and a higher proportion of what is grown is being harvested thanks to disease and insect controls and better harvesting and storage methods. Still further, livestock are being improved steadily as converters of feed to livestock products. This improvement in genetic ability is supported increasingly with improved rations and antibiotics.

Specialization, too, continues to be an important source of increased productive efficiency. The nonfarm economy now produces (1) virtually all sources of the power units used in farming including the fuel, (2) many marketing services formerly produced by agriculture, (3) much of the fertilizer now applied and (4) is steadily demonstrating its efficiency in processing and mixing feeds.

The current expansion of agricultural production is being furthered by increasingly competent farm managers.

⁴ See, for instance, T. W. Schultz, *The Economic Organization of Agriculture*, McGraw Hill Co., Inc., New York, 1953, pp. 99–125; Glenn L. Johnson, *Agriculture's Technological Revolution, United States Agriculture: perspectives and prospects*, Columbia University, New York, 1955, pp. 27–44; T. W. Schultz, *Reflections on Agricultural Production, Output, and Supply*, *Journal of Farm Economics*, pp. 748–762; and Willard W. Cochrane, *Farm Price Gyration—An Aggregative Hypothesis*, *Journal of Farm Economics*, vol. 29, May 1947, pp. 383 ff.; and Walter W. Wilcox and Willard W. Cochrane, *Economics of American Agriculture* (Prentice-Hall, Inc., New York), 1951, ch. 24.

⁵ For a preliminary attempt to handle the influence of specialization more adequately, see Glenn L. Johnson, *Supply Functions—Some Facts and Notions*, to be published by the Iowa State College Press in a book tentatively entitled "Agricultural Adjustment Problems in a Growing Economy."

Since the early forties, the receipt of capital gains (due to inflation) have reduced materially the problem of financing expansion in production. From 1939 through 1956, it is estimated that agriculture benefited from capital gains, due to price increases alone, to the extent of about \$85 billion. In the same period, total net income of agriculture was only a little more than three times this figure. Moreover, on June 1, 1956, all farm assets were valued at only \$170 billion. It is clear that capital gains received by agriculture since 1942 have been important in financing both specialization and the adoption of new technology in expanding output.

The rate of expansion in production called for between now and 1975 ranges from 1 to 2 times that accomplished in any 18-year period since 1870. Thus, there can be no doubt about there being a serious need to expand farm output. Carl Heisig and James Bonnen will testify at these hearings that the agricultural economy has the ability to bring about the needed expansion in production. Bonnen will indicate that surpluses will probably be with us for at least 10 years.

Though there appear to be some reasons for being somewhat more cautious in this regard when we expand our thinking for 30 to 50 instead of only 10 or 20 years into the future there appears to be little doubt about the ability of agriculture to bring about the expansion in production.

However, getting the necessary expansion in production beyond the next 10 years and continuing this rate of expansion beyond that will, it appears, require positive effort. Past expansions in production do not appear to have been automatic and preordained; instead positive action has been required to provide transportation systems, capital, new technology through publicly supported research and a general economic and political environment conducive to efficient competitive adjustment. Beyond 10 years ahead, the future does not look any more automatic than the past. Thus, the advisability of using different means of expanding production needs to be considered in detail.

SOURCES OF EXPANDED PRODUCTION

The above brief history of United States farm production expansions suggests that the possibilities be considered of—

- Bringing more land into cultivation;
- Using substitutes for land;
- Improving crop varieties;
- Utilizing crops more effectively;
- Using labor more effectively;
- Increasing managerial capacity;
- Encouraging or, at least, not retarding competitive economic adjustments within agriculture;
- Using capital more effectively; and of
- Speeding up the necessary flows of capital into agriculture.

This list does not concentrate technological advance under one heading; instead, it is considered under a number of headings where its details can be grasped with some specificity and where its interrelationships with other considerations (such as specialization and capital availability) can be seen.

Land and investments to increase the availability of land.—The development of new land and land reclamation are not likely to con-

tribute significantly to expanded production in the next 15 to 20 years. At least Carl Heisig will testify that only about one-sixth of the expansion required in crop production by 1975, to say nothing of the expansion in livestock production, is likely to come from this source. This, however, does not mean that we are running out of land resources to develop. My own State of Michigan, for example, has 4½ million acres of organic soils only 100,000 acres of which is really developed. In addition we have much underdeveloped mineral soil which would be farmed intensively if located in, say, the Scandinavian countries.

Substitutes for land.—Commercial fertilizer and irrigation water are two of the principal substitutes for the natural productivity of land. Another substitute is organic matter and soil structure which can be developed under proper land management. The more than two-fold expansion in fertilizer use which occurred from 1942 to 1955 is continuing. At Michigan, or elsewhere, we are experimenting with the possibilities of going to intensive rotations and continuous corn supported with heavy commercial fertilization—the possibilities appear very promising. Between 1939 and 1954, land under irrigation increased from about 18 to over 29 million acres. Over 5 million acres of the increase came in the Southern States. There are no reliable data on the aggregate impact of potential increases in organic matter and improvements in soil structure. Though the separate impact of these factors on production has not been evaluated, their influence along with that of improved crop varieties has been studied and will be presented below.

Improving crop varieties.—Besides the use of more land and land substitutes, crop yields have increased steadily with the use of superior seeds and production practices. These include hybrid corn, disease-resistant small grains, improved grasses and legumes, etc. Though no separate overall evaluation of the yield increasing potential of these has been made, it is clear that they are highly important.

Heisig reports that the Agricultural Research Service, working with physical and natural scientists, has developed estimates of the yield impacts of adopting what is presently known about increasing yields through the use of land substitutes and the yield increasing factors discussed in this section. The conclusion is that crop production can be expanded on less than the presently used quantity of land to produce our requirements in, say, 1975. Bonnen reports that these same factors should be expected to maintain agricultural surpluses through 1965 under a rather reasonable set of assumptions.⁶

More effective physical utilization of crops.—The extent to which crops, once grown, are utilized depends on losses in harvesting, processing (including feeding), and storage. Though necessity of economizing on labor often justifies high harvesting losses in connection with mechanized harvesting, such losses are often offset by the timeliness made possible through use of the same machines.

Improved rations, feeding practices and the use of antibiotics continue to present a major opportunity for effective utilization of feeds in livestock production. The ARS estimates presented by Heisig indicate that such possible efficiencies in the utilization of

⁶ James Bonnen (this panel).

feedstuffs might decrease land requirements for feedstuffs by as much as 40 million acres. Research on such possibilities continues to be done. Recent Iowa State College research on forage-grain substitution in milk production provides the basis for substantial increases in productive efficiency by showing how to adjust rations to changes in hay, grain, and milk prices. A recent conference on feed utilization by dairy cows at Michigan State University promises to lead to further research of this type. Other current research of this nature deals with pork and poultry production. Tentative plans exist for inaugurating such work for beef, also.

Chief among the means of improving the utilization of feeds by livestock is improvement in the genetic ability of animals. Cows capable of producing over 7,500 pounds of milk per year when fed 1 pound of grain for each pound of milk are capable of attaining much more favorable ratios of milk to grain than are lower capacity animals.⁷ Our existing inventory of good breeding stock and artificial insemination make it possible to increase the quality of our dairy herds many times more rapidly than formerly. There is really no excuse for a heifer calf being born from anything but a high-quality sire these days. But we have only started to make progress in this direction—the future probably holds technologies which will permit the proportions of heifer calves to be controlled while ovum transplants may increase the number of calves produced by outstanding dams thereby greatly increasing our ability to evaluate breeding stock and to multiply the superior ones. The outlook for continued technological improvement in feed utilization is good.

Labor-saving technology.—Much of the technological advance which has occurred in agriculture has been labor saving. In isolation, such technology primarily makes it possible to produce as much despite outmigrations of labor; however, its effect when combined with land saving and yield-increasing technology (for both crops and livestock) is to increase output.

Almost all studies of American agriculture show low earnings to labor. This is true whether labor returns are computed residually or estimated functionally with techniques of the type developed by Senator Douglas in collaboration with Professor Cobb and whether the studies are conducted for individual farms or for the economy as a whole.⁸ There is some evidence that, for any level of technology, capital can be substituted for labor only up to a limit beyond which the workload per man becomes unacceptable. Further, it appears that the earning power of labor at this limit is generally so unsatisfactory that some combination of capital and labor earnings is required to produce levels of living comparable with those enjoyed by equally industrious and reliable persons working in industry. If this is true further advances in laborsaving technology are required to remedy the situation.

To my knowledge, no account has been taken of this need in the ARS studies reported by Heisig, in Daly's work or in the Bonnen and

⁷ George E. Schuh, *The Supply of Fluid Milk in the Detroit Milkshed as Affected by Cost of Production*, Michigan State University Agricultural Experiment Station Technical Bulletin 259, 1957.

⁸ E. G. Strand and E. A. Heady, *Productivity of Resources Used in Commercial Agriculture*, U. S. Department of Agriculture Technical Bulletin 1128, 1955.

Black work. These studies seem to be based on an unstated assumption that the rate of advance in laborsaving technology will continue fast enough to produce capital and/or labor earnings high enough to maintain farm production in the face of rising nonfarm levels of living without increases in farm product prices. While there is much evidence to suggest that such advances will occur, it seems inadvisable to take them for granted or to assume that they will come automatically. Among the important current developments in this area which need to be encouraged is the work of agricultural engineers (in both land-grant colleges and industry) on materials handling, "systems analysis," as well as the time and motion work of agricultural economists.

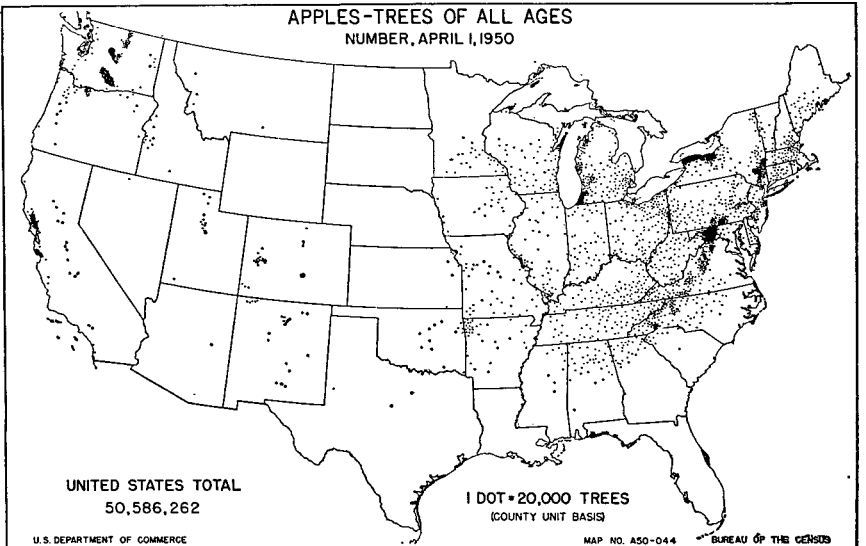
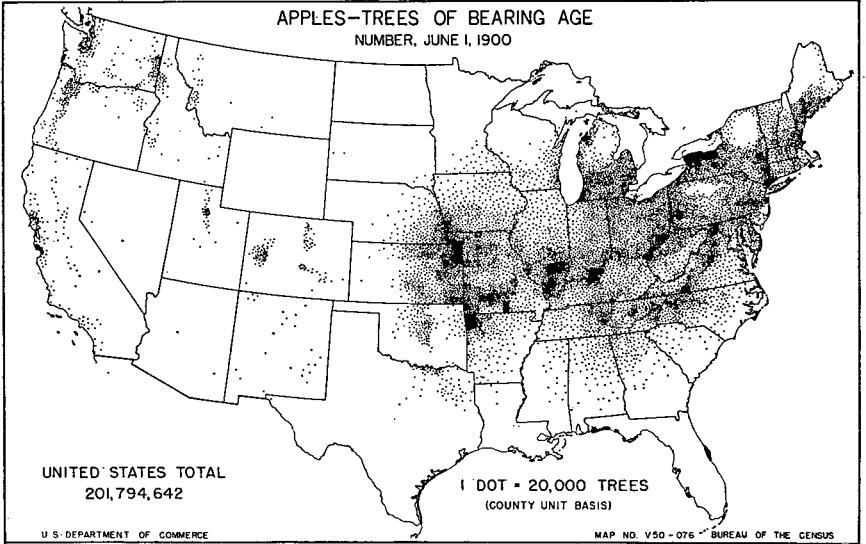
The dairy industry alone must handle well over 50 million tons of milk, feed (grain, hay, pasturage, silage), water, manure, and urine per year. The dairy industry receives around \$4 a ton for handling and, in some cases, producing this quantity of material. Clearly, labor efficiency is important in dairying. In the case of the dairy industry, the potential for improvement is great. Research at my home institution indicates that 40 hours per cow per year is possible. By contrast, it is estimated the Michigan farms are using between 70 and 120 hours per cow per year, depending on kind of barn, productive capacity of cows, and size of herd. Continued development of such laborsaving technology appears to be necessary for expanding production without price increases in the long pull.

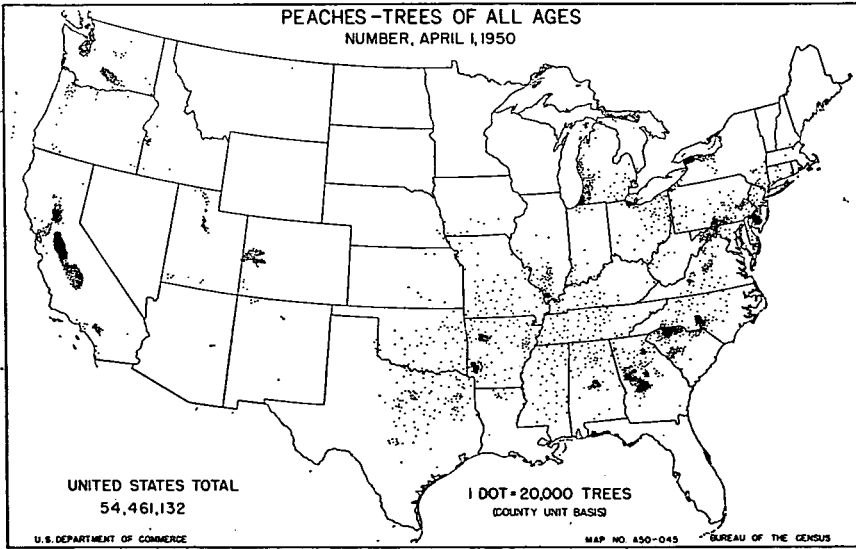
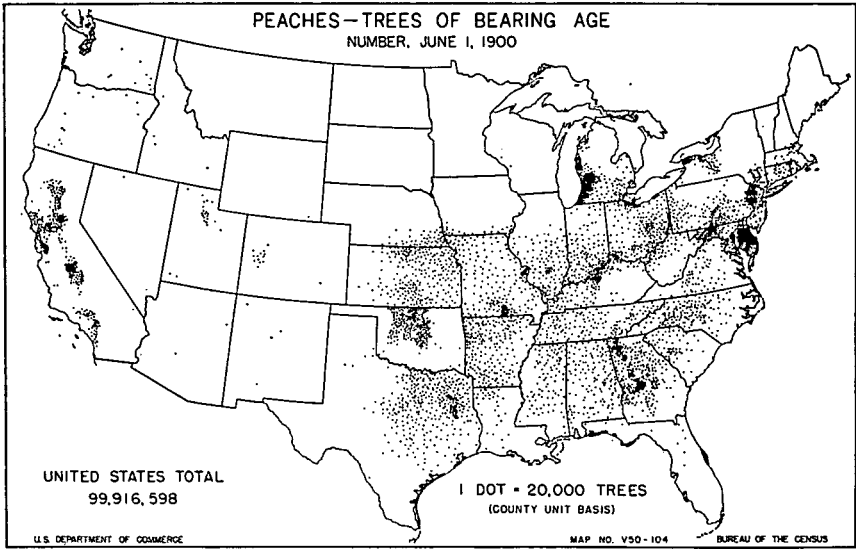
Increased managerial capacity.—One of the most elusive sources of increased production is the increased managerial ability of farmers. In addition to furnishing farmers with more and better technological and economic information, the USDA-Land Grant college system has carried out extensive research and educational programs to develop managerial ability. Farmers have been taught to keep better accounts and records. They have also been taught methods of analyzing records as a basis for adjusting business operations. In addition, they have been taught how to analyze better all types of information and to appraise the consequences of alternative courses of action as a basis for their decisions. General education, wider experiences, and better communications also contributed to the ability of farm managers to see problems, observe and acquire information, analyze that information, make decisions, and accept responsibility for those decisions. The typical commercial farmer of 1955 is much more of a businessman than his counterpart of 1910 or even 1925. The increasing tendency of commercial agricultural production to concentrate in the hands of large farmers suggests a continued improvement in the average farm manager.

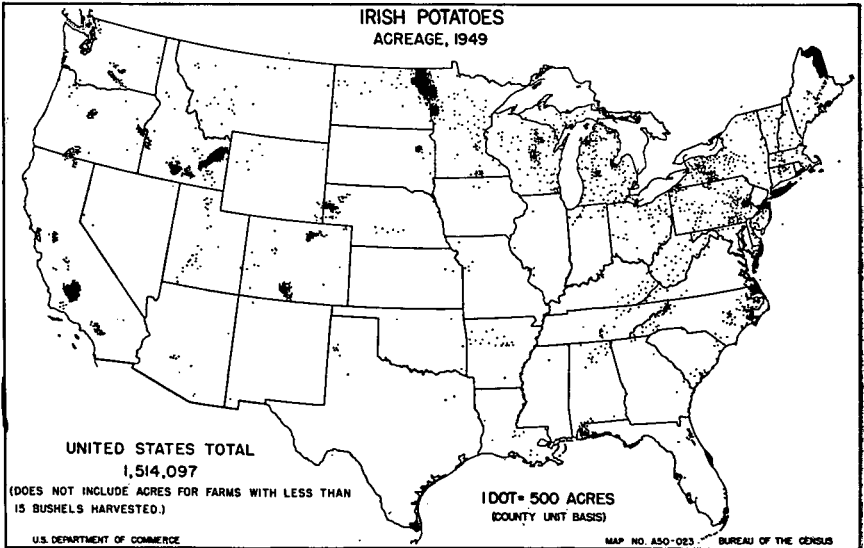
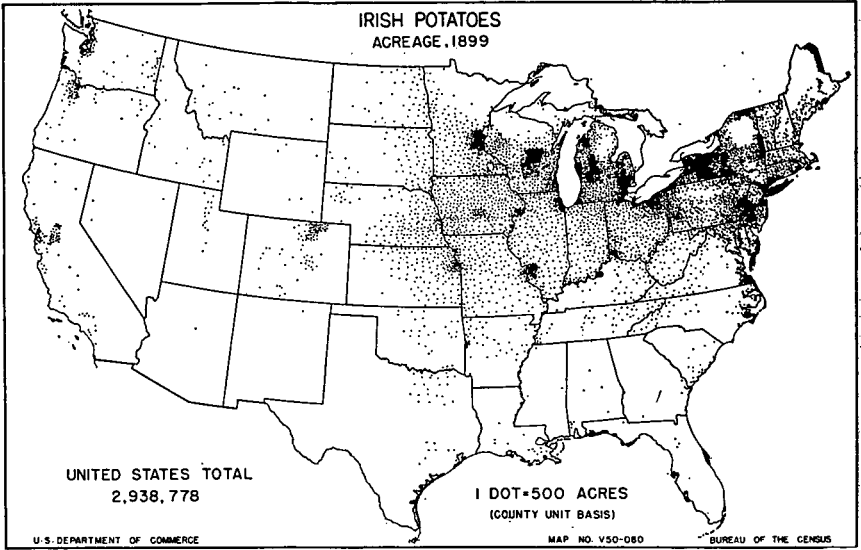
Competitive reorganization of the agricultural economy.—Neither past nor prospective changes in the productive capacity of American agriculture can be understood solely in terms of changes in the total quantity of resources used or in terms of the ratios at which they are converted into individual farm products. It is also necessary to know how the use of resources shifts absolutely or proportionately between alternative products within agriculture. When resources are shifted from a less to a more productive use, output increases even if the total quantity of resources used does not change. This can be true even when technological change does not occur.

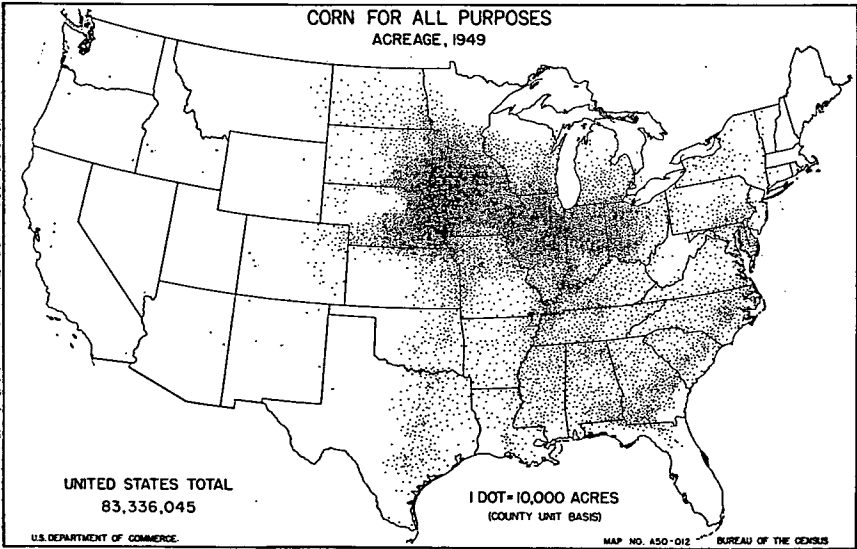
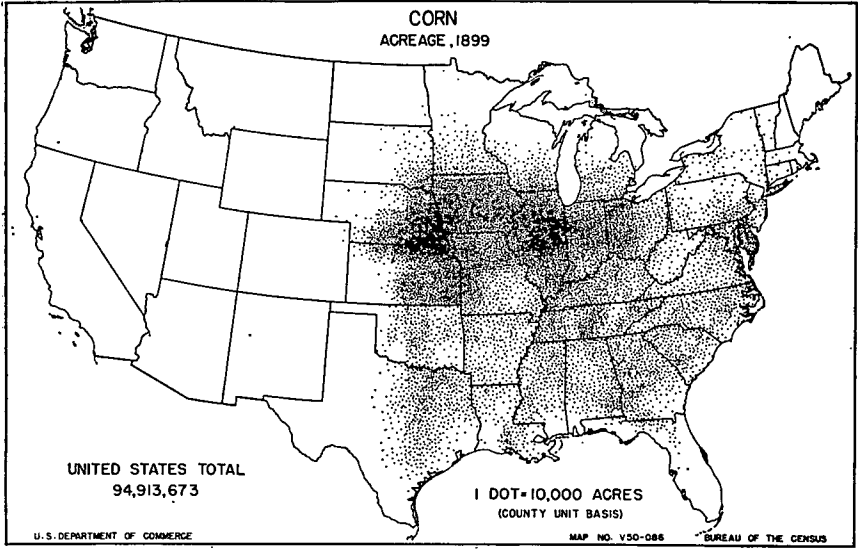
American agriculture has and is continuing to drop activities in which it uses resources ineffectively. Dropping the production of horses and horse feed and reemploying the resources formerly used for these purposes to produce fat stock for market was an important source of increased productivity. Another example is dropping the production of peddling and food processing services to concentrate on the production of crop and livestock products. Still another example is found in supporting services such as machinery repair, liming, feed mixing, spraying, etc., much of which is now being turned over to commercial agencies. The recent tendencies toward vertical integration in the broiler and fat-stock industries are examples of this type of specialization.

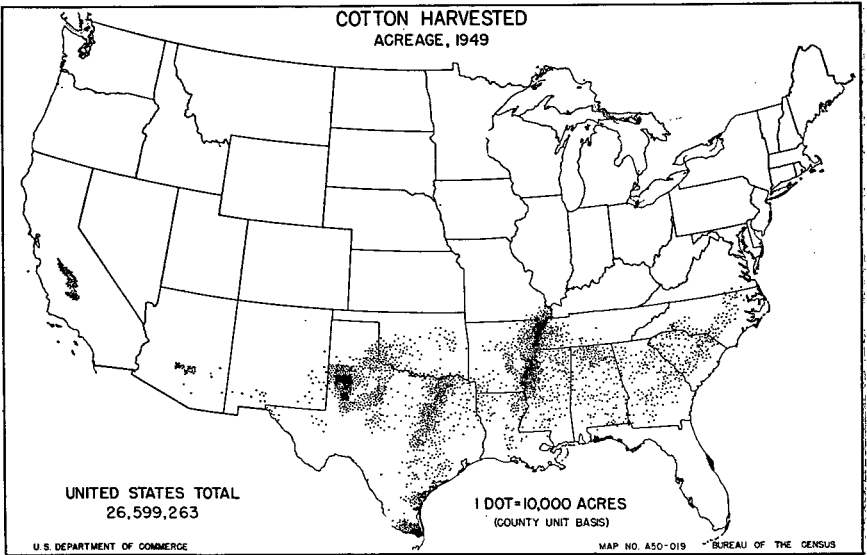
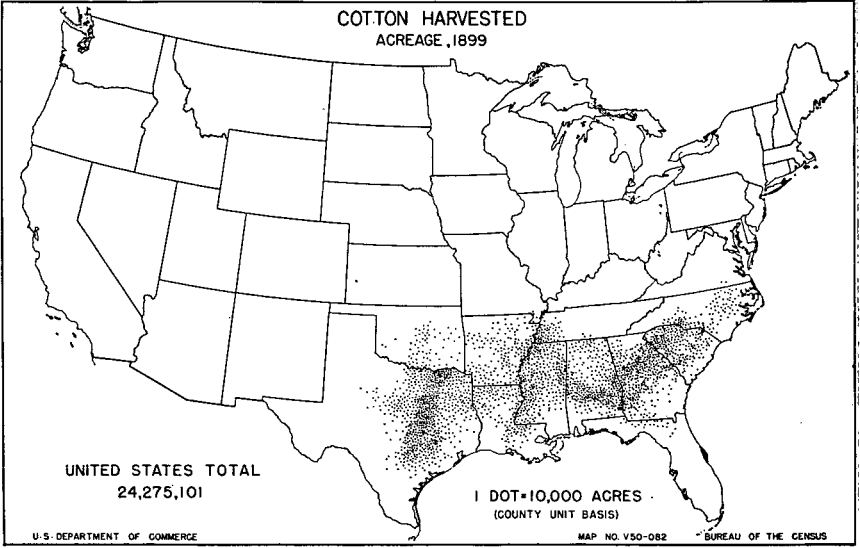
Similar increases in productive efficiency and output are attained when a farming region drops products produced ineffectively and re-employs its resources in the production of products for which it has a comparative advantage. Scatter diagrams published in connection with the 1950 census are presented here to show some important geographic specializations which have occurred since 1900.

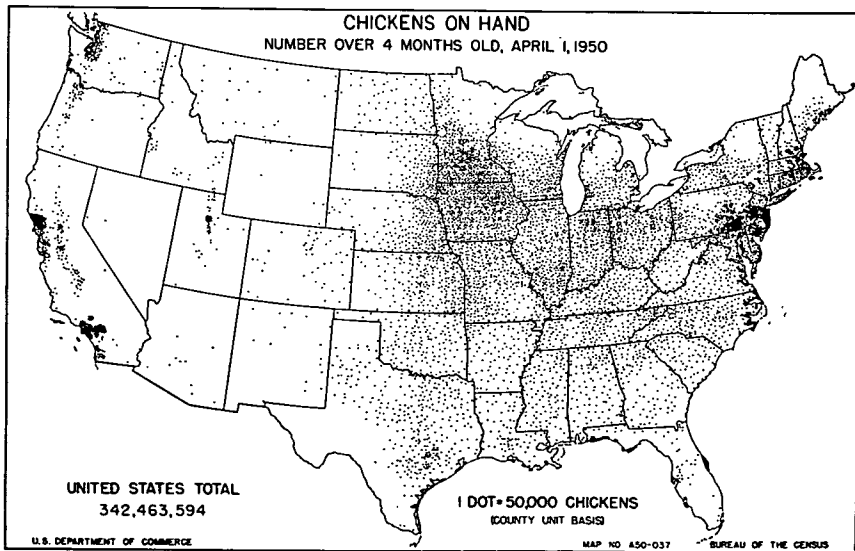
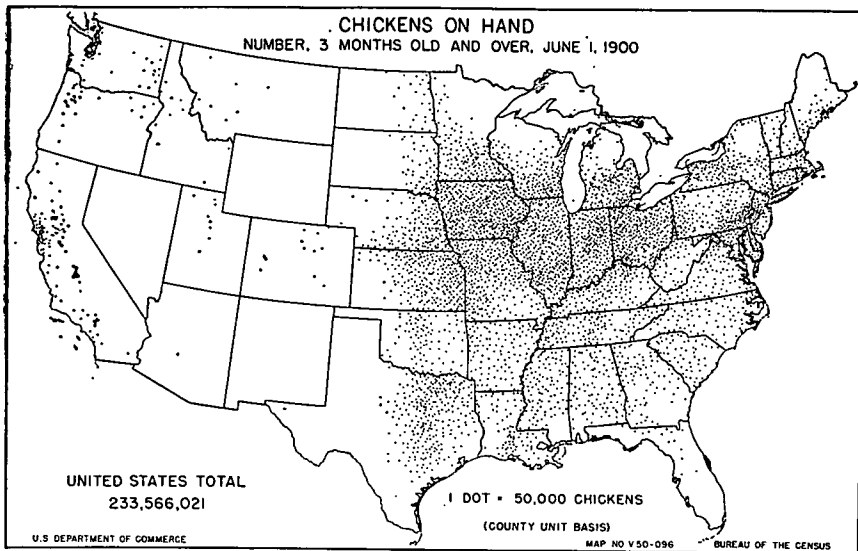












Similarly, total production of the farm economy increases without corresponding increases in resources employed or technological advance being necessary when individual farms specialize in efficient lines of production after dropping less inefficient lines. Professional and academic farm management men have noted increasingly in recent years, the advantages of specialization. Modern fertilization practices and machinery are reducing the advantages of crop diversification. There is now less need for rotations to maintain fertility and distribute the labor load over the year. The trends toward specialization of individual farms can be expected to continue if the capital positions of farmers permit them to acquire the necessary capital.

Another type of competitive adjustment theoretically capable of increasing farm output without increasing the amount of resources used is increase in size of farm, provided economies to scale exist. Most cross-sectional studies of actual operating farms of different sizes but employing similar technology fail to reveal significant economies to scale. On the other hand, budgeted and linear programmed plans for farms show economies to scale. The difference appears to reside in failure to reflect managerial limitations in mechanical budgets and programs. In practice, movements to larger scale operations generally involve technical advance; thus, many of our new, large farms are more efficient than our older small ones.

Some agricultural economists have compared agricultural production to a ratchet jack—they say that it moves up at every opportunity, but fails to contract and that the upward movements are determined largely by opportunities to adopt new technologies. Hathaway's testimony before panel A of these hearings shows that agricultural production has, in fact, been somewhat responsive downward to depressions. This downward responsiveness of agricultural production to adverse economic conditions indicates, again, that the necessary expansions in agricultural production are not automatic.

The competitive adjustments discussed in this section depend on the ability of farmers to finance such adjustments as well as on their profitability. The recent expansion of farm production to its present level occurred in a very favorable capital and price environment. Minimum prices under the Steagall amendment lent stability to farmers' price expectations. The restrictions on competitive adjustments which had grown up in the thirties were dropped and never fully reimposed leaving farmers free to specialize while capital gains provided the wherewithal with which to both specialize and adopt new technology.

At this point in this discussion, we observe that the technological advances discussed in earlier sections and the competitive adjustments discussed in this section interact in such a way as to make it virtually impossible to study them separately.

Capital requirements.—It is hard to anticipate total capital requirements for the agricultural industry in the years ahead. There is an increasing emphasis on capital saving as well as land and laborsaving technology. As larger farms generally have lower capital requirements per acre and per unit of output than smaller farms, questions as to how farms will be distributed by size groups in the years ahead are relevant. Carl Heisig's testimony points up the steady increase in number of commercial, full-time farms selling over \$5,000 worth of products and the steady decrease in commercial, full-time farms selling less than that amount.

When small farms are liquidated or become part-time and/or rural residences, the capital equities of their owners and/or operators tend to leave agriculture. On the other hand, the development of a large-scale farm employing new technologies requires much capital. Thus, even if capital-saving technology and the shift to larger farms leave total capital requirements unchanged for agriculture, important flows of capital both into and within agriculture are required to bring about the required expansions in agricultural production.

Sources of capital for expanding agricultural production.—Money equities in agriculture provide the basis for assembling physical capital. These equities fluctuate with (1) savings from earnings (including Government payments) or dissavings and (2) capital gains or losses resulting from price changes. The total amount of money available to farmers also depends upon the amount of credit which these equities will support, that credit originating in both private and semisubsidized public institutions.

Savings from gross income (earnings and Government payments) along with capital gains accounted for most of the new physical capital used in farming over the fifty-year period since 1900 according to Tostlebe⁹ except during the World War I period. Loans and bank credit were about half as important as savings prior to World War I, very important during that war and since then have not exceeded 20 percent of the contribution of farm savings.

The role which capital gains have played in agricultural capital formation, though never studied systematically, must be significant. Such gains provide a basis for credit and free income from earnings for investment. Table I presents the magnitude of capital gains in agriculture for the period 1910 to date in comparison with net income of farm operators and total rent to nonfarm landlords.

TABLE I.—*Net farm income and capital gains or losses (due to price changes) occurring to farm operators and landlords, United States, 1910 to 1956*

[Billions of dollars]

Year	Total net income of farm operators	Total net rent to nonfarm landlords	Capital gains or losses ¹	Total	Year	Total net income of farm operators	Total net rent to nonfarm landlords	Capital gains or losses ¹	Total
1910.....	4.2	0.3			1934.....	2.9	.3	2.4	5.6
1911.....	3.3	.3	0.5	4.1	1935.....	5.3	.3	1.4	7.0
1912.....	4.4	.3	.9	5.6	1936.....	4.3	.4	1.9	6.6
1913.....	3.7	.3	1.6	5.6	1937.....	6.0	.4	1.2	7.9
1914.....	4.1	.4	-.8	3.7	1938.....	4.4	.3	-1.6	3.1
1915.....	4.2	.4	2.4	7.0	1939.....	4.5	.4	-.7	4.2
1916.....	4.5	.5	4.3	9.3	1940.....	4.6	.4	1.1	6.1
1917.....	8.2	.8	7.7	16.7	1941.....	6.7	.6	5.5	12.8
1918.....	8.8	.9	5.8	15.5	1942.....	9.9	.9	6.5	17.3
1919.....	9.0	.9	10.9	20.8	1943.....	11.8	1.0	6.6	19.4
1920.....	7.8	.5	-10.5	-2.2	1944.....	11.8	1.0	5.6	18.4
1921.....	3.3	.3	-10.4	-6.8	1945.....	12.4	1.1	5.3	18.8
1922.....	4.3	.4	-.3	4.4	1946.....	14.9	1.4	11.7	28.0
1923.....	5.0	.4	-1.3	4.1	1947.....	15.5	1.4	12.3	29.2
1924.....	4.8	.5	.1	5.4	1948.....	17.7	1.3	1.7	20.7
1925.....	6.7	.5	-.1	7.1	1949.....	12.9	1.1	-4.2	9.8
1926.....	5.9	.4	-2.0	4.3	1950.....	13.7	1.2	16.2	31.1
1927.....	5.7	.5	.2	6.4	1951.....	16.1	1.3	13.2	30.6
1928.....	6.0	.5	.4	6.9	1952.....	15.1	1.5	-5.6	11.0
1929.....	6.1	.5	-.7	5.9	1953.....	13.3	1.2	-5.8	8.7
1930.....	4.3	.3	-7.4	-2.8	1954.....	12.7	1.2	2.4	16.3
1931.....	3.3	.1	-9.7	-6.3	1955.....	11.9	1.1	2.6	15.6
1932.....	2.0	.1	-8.5	-6.4	1956.....	11.6	1.2	8.2	21.0
1933.....	2.6	.2	2.0	4.8					

¹ See Hathaway (panel A).

⁹ Alvin S. Tostlebe, *Capital Formation and Financing in Agriculture, 1870-1950*, The National Bureau of Economic Research, Inc., New York, 1954.

A real unanswered question is: How much of the expansion in agricultural production which occurred from 1939 to 1956 was made possible by the receipt of capital gains? Stated alternatively, the question is: How much of the expansion in production from 1939 to 1956 could have been financed out of earnings and through credit channels in the absence of capital gains? Stated futuristically, the question is: Will enough capital formation occur at the right places at anticipated price relationships in the next 20 years to finance the needed expansions in production?

Summing up

1. While present ability to produce farm products will almost automatically keep us in a surplus situation for several years, the longer run (20 to 50 years) picture calls for major expansions in farm production. While positive action is probably required to get this necessary expansion, there appears to be little doubt about our ability to bring them about.

2. Present short-run (0-20 years) forecasts of the ability of American agriculture to produce turn largely on "key guestimates" by agricultural scientists of our ability to increase crop yields and feeding efficiency.

3. Past economywide appraisals of the role of technological advance in expanding production have probably confounded the effects of various forms of specialization with the effects of technological advance and attributed the effects of both to technological advance.

4. The extent to which capital gains and favorable incomes have enabled farmers to expand production has not been handled adequately in past analyses. The same appears true of the various analyses of agriculture's ability to expand production in the future.

5. It appears that "guestimates" as to the ability of agriculture to expand production are based on hidden assumptions that the possibilities for financing new land and labor-saving technology of improving management and for specialization are about the same as in recent years.

6. If the contribution of technology to past increases in output has been overestimated and current estimates of output-increasing effects of the present stock of technology are overestimated, we may have a greater need to produce technological advance than is commonly felt. This applies particularly in the 20- to 50-year period and to land-saving technology. The continued need for more labor-saving technology is attested to by the low average and marginal returns for farm labor. (See pp. 131-132.)

7. In addition to a somewhat greater need for technological advance particularly 20 to 50 years ahead than commonly anticipated, the above analysis suggests that our ability to expand production may depend on:

A. Improving (in both the short and long run) financial structures for agriculture to permit expansion of production through specialization, adoption of technology, and increases in farm size.

B. Encouraging forms of specialization and, as a corollary, refraining from interfering with specialization through price support, allotment, and production-control activity.

C. Continued development of the managerial capacity of individual farmers.

8. The number of sources which contribute to output expansion is large; further, they can be employed in various combinations. Some combinations would tend to keep the ownership of farm resources in the hands of farm people; other combinations would tend to place much of the ownership elsewhere. Some combinations would lead to large family farms, others to large nonfamily farms, while still others could lead to many small holdings.

9. In view of (8) above, political leaders and agriculturalists have some important evaluations to make in determining which of the alternative ways will be used in expanding farm production. This problem is discussed in the remaining major section of this testimony.

EVALUATION OF ALTERNATIVE WAYS OF EXPANDING OUTPUT

Some of the means of getting the necessary expansion in farm output over the next 25 to 50 years involve institutional adjustments and political action; most of the remainder involve the ongoing adjustments which occur in a fairly free, competitive economy. Both institutional and competitive adjustments have been important in getting past expansions in production; both appear important in the future. However, the important choices do not appear to involve taking one or the other of these roads to the exclusion of the other. Instead, the problem appears to be one of selecting the "best combination" of means from both of these approaches.

Regardless of what combination of means is used, it appears that some people will benefit and others will be hurt. Production expansion by efficient producers lowers prices and hurts the inefficient. Production of new technology benefits those in position to employ it and harms those who are not. Subsidized public credit benefits its users, but costs the taxpayer who provides the subsidy. The same is true of public education, tax-supported research, and other services. Similarly, crop allotments, production controls, and price supports distribute both benefits and damages among the populace.

The problem of defining the "best combination" of alternatives involving benefits to some and damages to others is unsolved in the science of economics. Thus far, economists have not devised methods of measuring benefits conferred on one person in terms of damages imposed on another. Without such measurements, it cannot be determined in a measurable scientific sense whether total welfare or, to use an old rather vague phrase, "the greatest good for the greatest number" has been increased or decreased.

In the ethereal world of static competitive economic theory which provides the intellectual underpinning to support the idea of a free, competitive, enterprise economy, this problem is now avoided by assumptions which prevent changes in the theoretical system which would benefit one person at the expense of another. These assumptions commonly involve unchanging institutional arrangements, technology, asset-ownership patterns, wants, tastes, preferences, etc. These drastic assumptions confine the ability of this theoretical system to indicate changes in total welfare to time periods so short that the operation of the economy itself does not change technology, asset-ownership patterns, institutions, etc. This subcommittee of the Joint Economic Committee of Congress is concerned with long spans of time

in which these things do change; indeed, the subcommittee is concerned with changing those things which the competitive economic theorist assumes constant in order to preserve his meager ability to make statements about welfare. Both the competitive adjustments of the free-enterprise system and political adjustments in our institutional framework, it appears, need to be evaluated in terms of still more fundamental criteria. In our society, as the members of this subcommittee know full well, such judgments are reached in political and social processes. Somehow or another, society, including the body politic, works through and is worked on by its leaders to reach conclusions on such matters. In reaching such conclusions many things are considered, including "facts" served up by scientists, the political power of affected groups, ideals, the opinions of respected leaders and organizations, customs, and traditions, to name only a few.

The problem of deciding "how to expand production how much" involves many criteria. Some of these are:

1. Our responsibility to future generations;
2. Our need to be able to back up our Nation in its international endeavors with ample supplies of foods;
3. The set of values associated with the family-farm idea—individuality, self-expression, agricultural fundamentalism, thrift, frugality, independence, etc.;
4. Equality, long expressed somewhat inadequately, perhaps, in the parity idea;
5. Freedom;
6. Justice.

(Though equality, freedom, and justice are involved in the family-farm idea they also occupy a place in their own right in the American scene.)

These are some of the relevant criteria (and the subcommittee is more aware of these and other criteria than a college professor) to be considered in deciding how and what kind of support is to be given to—

1. Development of technical research;
2. Developing financial structures to support expansions of production through specialization and adoption of new technology.

Similar criteria will be relevant in judging what kind of financial structures should be developed, what kind of financial structures should be prevented from developing, how large farms should be permitted or encouraged to become and what kinds of specialization should be encouraged and prevented.

AMERICAN AGRICULTURE IN 1965

James T. Bonnen, Michigan State University

This paper will present the general results of research which I am doing in cooperation with Prof. John D. Black, of Harvard, and will discuss its implications for the future organization of American agriculture. The research involves an attempt to measure the impact of changing technologies and shifting consumption patterns upon the balance between production and the consumption of agricultural products. The results are embodied in a model of American agriculture constructed for the year 1965. Portions of the model and its implications are presented in this paper.¹

Any such description of the future is built upon assumptions, many of which by their nature cannot be known in advance. The conclusions of the model for 1965 depend upon these assumed conditions. Thus, we are not engaged here in prediction, since some of the most important unknowns must be assumed. In interpreting the results of the model and its discussion one must keep clearly in mind the following set of assumed conditions.

	1955 ¹	1956 ¹	1965	Percent change, 1955-65
1. Population (millions).....	165.3	168.2	\$ 190.3	+15.1
2. Total labor force (millions).....	68.9	70.4	\$ 79.2	+14.9
3. Armed Forces (millions).....	3.0	2.9	\$ 3.0	-----
4. Workweek (hours).....	\$ 39.8	\$ 39.5	\$ 38.0	-4.5
5. Gross national product (billions of 1955 dollars).....	390.9	401.3	564.0	+44.3
6. Gross national product per capita (1955 dollars).....	2,364.8	2,385.9	2,963.7	+25.3
7. Growth in gross national product/man-hour over the decade (percent per annum), 2.75.				
8. It is assumed that no major war will occur over the decade, but that present international tensions will continue.				
9. A continued high level of economic activity is assumed. In short, we assume that there will be no fluctuation in the business cycle great enough to cause unemployment of more than 4 percent of civilian labor force.				
10. No change in the basic tax structure and no rationing or Government allocation of materials is assumed.				
11. Average weather conditions are assumed.				
12. The price, production, and consumption base assumed is that of 1955. The general level of all prices is assumed to remain constant over the decade.				

¹ Except as noted, for historical data, see the Economic Report of the President, Council of Economic Advisers, Washington, D. C., Jan. 23, 1957, pp. 126, 140.

² Meyer Zitter, Revised Projections of the Population of the United States, by Age and Sex; 1960 to 1975, Current Population Reports, Bureau of the Census, Oct. 20, 1955, series P-25, No. 123.

³ Gertrude Bancroft, Projections of the Labor Force in the United States, 1955 to 1975, Current Population Reports, Bureau of the Census, series P-50, No. 69, October 1956.

⁴ Projected on the basis of assumed world conditions and manpower expectations.

⁵ An average of the monthly data reported in Current Population Reports, Bureau of the Census, series P-57, Nos. 151-174, but adjusted by the technique outlined by Gerhard Colm in The American Economy in 1960, Planning Pamphlet No. 81, National Planning Association, Washington, D. C., December 1952, p. 119.

⁶ Assumes a continuation of the linear trend from the period 1945-55.

¹ It is neither possible nor appropriate to present the model in any great detail. This research is soon to be published by the National Planning Association under the title "A Balanced United States Agriculture in 1965." An explanation of the manner in which the model was constructed can also be found in a paper by the present writer, A Long Run Model: Economic Adjustment to a Decade of Structural Change, 1955-65, Agricultural Adjustment Problems in a Growing Economy, Iowa State College Press (now in press). The author wishes to acknowledge the helpful criticism of his colleagues, D. E. Hathaway and L. V. Manderscheid, in reviewing a draft of this paper.

THE FUTURE BALANCE BETWEEN CONSUMPTION AND PRODUCTION

One question of direct concern to these hearings is answered very clearly by the model. Surpluses, or at least the pressures of incipient overproduction, will be with us through 1965 and probably longer if the assumptions of our model hold true. This annual farm surplus reflects a structural imbalance between output and the consumption of agricultural products. The imbalance is chronic and fundamental in nature, not transitory.

In 1955, about 9 percent of total agricultural production was in surplus of normal consumption needs.² From 1949 through 1956, except for the period influenced by the Korean war, production averaged 8 percent more than consumption needs.³ Assuming no more effective resource adjustment or production control than we have experienced in the post-World War II period, our model indicates that this structural imbalance or surplus of production will most certainly grow, and could easily double by 1965. Actually, we have been able to dispose of a large part of the surplus, but only through extraordinary governmental measures, such as extensive export subsidy, free donation and barter abroad, and highly accelerated welfare program distributions of food at home. Efforts such as these will not solve the surplus problem; they may temporarily relieve some of the pressure on farm incomes, but extraordinary measures will not permanently improve farm income and eliminate the flow of surplus production. Export dumping is not a desirable approach, for it creates more problems for our Nation abroad than it solves at home. Free, or nearly free, donations, consumption promotion campaigns, and advertising are, at best, temporary palliatives.⁴ We will not and cannot "eat our way out" of surplus problems by 1965.

The largest structural imbalances occur in wheat, cotton, and feed grains, with oil seeds, dairy products, and tobacco also producing significant and fairly continuous but smaller surpluses. An indication of the size of the annual economic surplus in these commodities can be seen in table I below. This table is calculated from some recent research done under the direction of Dale E. Hathaway of Michigan State University.

² That is to say, in 1955, 8.88 points of the 112 index of farm marketings and home consumption (1947-49=100) were removed from the market by CCC operations. Thus, $8.88 \div (112 - 8.88) = 8.61$ percent. See John F. Stollsteimer, *Effects of Government Loan and Purchase Programs Upon Domestic Market Supplies of Farm Products in the Postwar Period* (unpublished master of arts thesis), Michigan State University, East Lansing, Mich., 1957, p. 108, table 26.

³ *Ibid.*

⁴ There are other good reasons for expanding domestic-welfare programs in food.

TABLE I.—Annual surplus as a percent of the index of farm marketing and home consumption minus Commodity Credit Corporation purchases¹

Commodity group	1955	1956	1949-56 ²	1953-56
Food grains ³	63.2	51.8	50.1	63.5
Feed grains ⁴	35.9	34.	34.9	35.9
Cotton.....	41.1	34.7	20.4	31.9
Oil seeds ⁵	8.6	8.7	9.9	10.2
Tobacco.....	17.5	1.6	5.9	7.0
Dairy products.....	3.3	3.0	4.0	5.0
Livestock (excluding dairy) ⁶	0	0	0	0
All farm products.....	8.6	7.2	8.0	8.3

¹ The figures in this table are computed by dividing annual gross CCC removals by the index of Farm Marketings and Home Consumption after adjusting the index approximately to the level of total unsubsidized domestic and export consumption by subtracting gross CCC removals. The data for the table come from John F. Stollsteimer, *Effects of Government Loan and Purchase Programs Upon Domestic Market Supplies of Farm Products in the Postwar Period* (unpublished M. A. thesis), Michigan State University, East Lansing, Mich., 1957.

² Excludes the years significantly influenced by the Korean war. This varies by commodities, but in variably involved the year 1952 and also usually 1951.

³ Food grains include wheat, rye, and rice, but only wheat is of any significance in surplus calculations.

⁴ Feed grains include corn, oats, barley, and grain sorghums. CCC removals as a percent of total feed grain production run 11.45 percent in 1955, 9.15 percent for the period 1949-56, and 10.45 percent over the period 1953-56.

⁵ Oil seeds include peanuts, soybeans, and flaxseed.

⁶ In no calendar year have CCC removals of livestock products totaled as much as 1 percent of farm marketings and home consumption.

The major adjustment problem associated with the overproduction of wheat is concentrated in the hard wheat varieties and thus for all practical purposes is limited to the wheat producing area of the Great Plains. From the end of World War II on, the annual carryover of hard red wheats grew steadily and since 1953 has exceeded 1 year's normal domestic and export needs.

Cotton production has been under intermittent but increasing surplus pressure ever since the end of the economic recovery period following World War II. The annual carryover of cotton in the last 2 years has averaged about 1 year's normal domestic and export needs.

The limitation of wheat and cotton acreage through acreage allotments and marketing quotas has resulted in a shift of wheat and cotton land to feed-grain production.

The acreage shifted to feed grains has been almost entirely limited to the minor feed grains, since acreage controls have also been applied to a large part of the corn crop. In both relative and absolute size the largest shift of former cotton and wheat acreage has been into grain sorghums and is centered in the southern Great Plains. The shift from wheat and cotton has resulted in increased oat and barley acreages in some regions, although for the whole of the United States only barley has expanded in acreage. It is clear that the adjustments to overproduction in wheat, cotton, and the feed grains are highly interrelated. Shoving the surplus from one to the other may help some farmers, but it must necessarily impair the income and resource position of others and certainly does not solve the national problem of chronic overproduction in agriculture.

We need to keep in mind in appraising surplus problems that an 8 percent or an even greater annual production surplus would be used up quickly if our assumed condition of no war did not hold. Another "Korea" would absorb most if not all such excess capacity, and in the occurrence of a total war certainly almost any excess capacity would be a welcome asset.

AN EQUILIBRIUM IN 1965

The most important form in which the model for 1965 has been cast is in terms of an equilibrium of agricultural production and consumption. For this equilibrium a few assumptions must be made in addition to those already indicated. These are as follows:

1. It is assumed that the controls and administrative action which are necessary to attain an equilibrium are undertaken, are in general accepted by farmers and farm organizations, and are effective.

2. Existing excess stocks are assumed to be liquidated by 1965.⁵

This first assumption is heroic, if not totally unrealistic in the light of experience in agricultural policy over the past three decades. However, the reason for analyzing 1965 agriculture in terms of an equilibrium of production and consumption is that equilibrium is a publicly stated and continuing rational goal of major importance in an era of chronic production surplus.

What changes must be made in agricultural inputs such as land and labor before an equilibrium is attained? What changes in consumption patterns, crop yields, and livestock feeding efficiencies condition the equilibrium of agricultural output and consumption?

Cotton, tobacco, and wool consumption per capita are all expected to decline. (See table 2.) And of the major foods, only livestock products, fruits, and vegetables exhibit increases in per capita consumption. The greatest declines, of course, occur in the grains and potatoes. Potato consumption per capita declines so far as to result in a lower total domestic civilian consumption of potatoes.

TABLE 2.—Per capita consumption pattern changes between 1955 and 1965

Commodity	1955 ¹	1965	Percent change
Dairy products.....pounds..	707	672	-5.0
Beef and veal.....do.....	91.4	98	+7.2
Pork.....do.....	66.8	67.5	+1.0
Lamb and mutton.....do.....	4.6	4.6	0
Chicken.....do.....	20.9	27.5	+31.6
Turkey.....do.....	5.0	6.2	+24.0
Eggs.....eggs.....	366	387	+5.7
Wool.....pounds.....	2.63	2.5	-4.9
Wheat.....do.....	174	150	-13.8
Corn.....do.....	44.5	41.0	-7.9
Potatoes.....do.....	107.6	85	-21.0
Sugar.....do.....	97.6	97.5	-0.1
Edible fats, and oils ².....do.....	45.5	45.5	0
Cotton.....do.....	26.5	25	-5.7
Tobacco.....do.....	11.94	10.5	-12.1

¹ USDA.

² Includes butter, lard, beef fats, corn oil, peanuts, edible olive oils, and edible vegetable oils such as cottonseed and soybean.

⁵ When allowing for excess stocks, an ultimate arbitrariness cannot be avoided in the definition of "excess," in the economic process of disposal, or in its timing; consequently, the assumption is selected for its simplicity. Adjustments for more complex assumptions can be applied to the final model, if desired.

The per capita consumption of all food is expected to increase by about 4 percent. This, combined with the projected increase of slightly more than 15 percent in population, will result in a 20-percent increase in the total consumption of all food over the decade 1955-65.

Technology, specialization, and other organizational changes are the primary sources of past improvements in agriculture's productive efficiency. We have every indication that, given the assumed conditions of our model, this will also be true over the coming decade. The research for this model of American agriculture involved a comprehensive inventory not only of the new technologies and organizational changes now practical, but also of those now only in an experimental stage. An analysis of their impact is a major basis for the model estimates of 1965 crop yields and livestock efficiency of feed utilization. (See tables 3 and 4.)

TABLE 3.—Increases in crop yields expected by 1965 under conditions of the projected equilibrium

Commodity	1955 yield per acre ¹	Projected 1965 crop yield per acre	Percent change, 1955-65
Wheat..... bushels.....	19.8	22	+11.1
Corn..... do.....	40.6	50.5	+24.4
Oats..... do.....	38.3	43	+12.3
Grain sorghum..... do.....	18.9	27	+42.9
Tobacco..... pounds.....	1,466	1,700	+16.0
Cotton..... do.....	417	550	+31.9
Potatoes..... hundredweight.....	160.6	195	+21.4
Peanuts..... pounds.....	928	1,350	+45.5
Soybeans for beans..... bushels.....	20.1	25	+24.4

¹ USDA.

TABLE 4.—Increases in the efficiency of feed utilization expected by 1965 under conditions of the projected equilibrium

	Percent change, 1955-65
Dairy	+5
Beef	+12
Hogs	+8
Lamb	+5
Chickens	+10
Turkeys	+10
Laying hens.....	+5

Many of the estimates involve substantial increases and, in aggregate, provide a rough indication of the increased efficiency with which we are likely to be using land resources by 1965. The combined indexes of crop yields and the efficiency of feed utilization show an increase of between 25 and 30 percent over the decade. Increases twice as large as this are physically possible. However, if consumption grows only 20 percent, while yields and feed utilization efficiency expand 25 to 30 percent, it is obvious that we shall have to reduce land and other resource inputs or face increased overproduction. This is all the more obvious when you take into consideration the already existing large surplus stocks and the current excess production capacity of about 8 percent per annum which we face at the start of this decade of rapid growth and adjustment. Thus, if there were no adjustments in resource inputs, an 8-percent excess of capacity combined with an increase of 25 to 30 percent in yields and efficiency of feed utilization

would result in an output of food products 15 to 20 percent in excess of 1965 consumption levels.

Our equilibrium model gives us some indication of the changes that would be necessary in order to eliminate this imbalance of consumption and output. The cropland-use pattern necessary to such an equilibrium can be seen in table 5 below. From additional materials, an estimate of the general land-use pattern has been constructed in table 6. The largest relative adjustment necessary in harvested acreage is in cotton production, where an equilibrium will involve a 35-percent decline in harvested acreage. Tobacco and potatoes also involve large relative reductions in acreage. The greatest absolute acreage reductions are required in feed and food grains. Hay acreage would have to be up about 5 million acres by 1965. Open pasture and range should expand by about 10 percent, or 50 million acres. The total harvested acreage will have to be reduced about 11 percent for an equilibrium. These are, of course, acres of average-quality land, and the analysis also assumes fixed proportions of resource inputs except as altered by changes in efficiency. Thus, other resource inputs must also be reduced if the equilibrium is to be attained.

TABLE 5.—*Harvested crop acreage adjustment for a 1965 equilibrium*¹

[Thousands of acres]

Crops	1950	1955	1965	Acre change, 1955-65 ²	Percent change, 1955-65
Food grains.....	65,250	51,272	41,957	-9,315	-18.2
Wheat.....	(61,610)	(47,285)	(38,345)	(-8,940)	(-18.9)
Feed grains.....	142,625	146,203	³ 126,144	-20,059	-13.7
Corn.....	(81,818)	(79,530)	(68,349)	(-11,181)	(-14.0)
Potatoes.....	1,696	1,414	1,108	-306	-21.6
Cotton.....	17,843	16,928	² 11,023	-5,905	-34.9
Tobacco.....	1,599	1,495	³ 1,100	-395	-26.4
Total.....	229,013	217,312	181,332	-35,980	-16.6
Other crops.....	109,298	115,582	116,332	+750	+6.5
Total harvested acreage...	338,311	332,894	297,664	-35,230	-10.6

¹ The 1950 data are from Agricultural Statistics, 1954, USDA, Washington, D. C., 1954, p. 443. The 1955 data are from Crop Production, 1956 Annual Summary, USDA, Washington, D. C., December 1956, pp. 3-4.

² Average quality land.

³ Preliminary estimate in process of revision.

The farm labor force averaged 6.7 million persons in 1955 and should be down to at least 5 million by 1965 for an equilibrium level of production to be attained. A labor force as low as 4.5 million is not inconceivable if the pressures upon agricultural income continue to be intense and if the nonfarm economy remains vigorously prosperous over the decade 1955-65.

TABLE 6.—United States land by uses

[In millions of acres]

Land use	1950 ¹	1955 ²	1965	Percent change between 1955 and 1965
Land in farms:				
Cropland.....	409	399	366	-8.3
Cropland used for pasture.....	70	66	80	+21.2
Open pasture and graze.....	415	460	497	+8.0
Woodland pastured.....	135	121	145	+19.8
Woodlands not pastured.....	85	76	90	+18.4
Other uses.....	45	36	30	-16.7
Total.....	1,159	1,158	1,208	+4.3
Land not in farms:				
Grassland pasture and graze.....	215	173	165	-4.6
Woodland pastured.....	185	189	160	-11.1
Woodlands not pastured.....	201	238	210	-11.8
Other uses.....	144	165	161	+3.9
Total.....	745	746	696	-6.7
Total land area of United States.....	1,904	1,904	1,904	0

¹ Agricultural Statistics, 1953, USDA, Washington, D. C., 1953, p. 550, and Supplement of Major Use of Land in the United States, USDA, Washington, D. C., September 1953, pp. 61-62.

² Major Uses of Land in the United States, Summary for 1954, Agriculture Information Bulletin No. 168, USDA, Washington, D. C., January 1957, p. 5.

The number of farms in the United States can be expected to decline from the 1955 level of 4.7 million to at least 4 million and possibly as low as 3.8 million. This implies an increase in the average size of farm from 246 acres in 1955 up to around 300 acres. By the same calculation cropland per farm would increase from 85 acres in 1955 up to about 94 acres. Open pasture and cropland used for pasture would increase from 112 acres in 1955 to around 148 acres per farm in 1965.

The model for 1965 provides some information on capital changes, although this is limited to qualitative factors and direction of change estimates. Clearly the necessary capitalization per farm will continue to grow under the pressures over the next decade. Some of the expansion in capital per farm will come in land acquisition to expand the scale of operations and in improved buildings and facilities as these become more specialized and as such innovations as continuous process handling of materials become common to the American farm. The greatest relative expansion is likely to occur in machinery and equipment as happened over the last generation when, as a result of the mechanization of American agriculture, this was the most rapidly expanding major sector of capital requirements.

The total capitalization of agriculture will probably continue a slow but steady growth. This will be true even though the rather significant decline in the number of farmers, as people leave farming, will certainly entail the movement of resources including capital out of agriculture.

The growth of capitalization in total per capita and per farm is a dimension of the increased capacity of agriculture to produce. The expansion of capital has allowed for or been involved in not only the adoption of new technologies but also, more importantly in recent years, the major specializations of resource use and other organiza-

tional innovations. An example of this specialization is found in the great production organization changes that have taken place in the broiler industry along with drastic changes in capital and credit structure and in the traditional organization of management functions. This type of specialization now appears to be spreading into other livestock enterprises, primarily in hogs and feeder cattle.

There is a serious adjustment problem which results when capital resources expand while there are large annual surpluses of production. When faced with surplus problems we have usually restricted acreage through acreage-allotment controls. The effect of this upon the individual farmer has been in many instances to provide him with an incentive to invest in other inputs in order to attain higher yields from his limited acreage. This, we are fairly certain, explains a large part of the significant increases in cotton and tobacco yields in recent years. The interesting thing is that since the start of the post-World War II control programs the greatest increases in yield have come in the smaller tobacco farms and in the older and relatively less efficient areas of cotton production. Thus, supporting prices and restricting acreages has in most instances resulted in a better income and asset position than would otherwise have obtained; but at the same time it has allowed—indeed induced—the farmer to turn this additional income into more fertilizer, greater irrigation facilities, equipment, and other yield-increasing inputs. This is a dilemma since the attempt to limit production through acreage reductions results in increased efficiency and thus greater capacity to produce. A response such as this is potentially the largest in the farms and regions operating at levels of technology and organization that fall well below the maximum currently available. This type of response to acreage controls is most evident in situations where controls have been applied to all major crops or have combined with an area's natural limitations to restrict income alternatives to the point that intensification of cultivation on the limited acreage is practically the only way that an individual farmer has of adding to his income.

Any attempt to redress the structural imbalance by moving large amounts of one resource, such as land, out of agricultural production is doomed to failure. Other resources are simply substituted for land; and with higher yields production remains at high levels or increases still further. The soil-bank technique and acreage controls by themselves are no solution. It has been estimated from the model that a minimum of between 50 to 60 million acres would have to be taken out of crop production permanently before such efforts could result in anything close to an equilibrium of production and consumption in 1965. And, even then, there are reasons to doubt both the political feasibility and the economic effectiveness of such techniques when employed by themselves and to such an extreme. Much the same may be said of proposals that see a solution in moving only labor out of agriculture. Labor has been moving off the farm at a fantastic pace over the past decade, yet production has increased even more rapidly. The substitution of capital for labor and land has been a characteristic feature of agriculture's technological and organizational revolution. Any effective effort to reduce production must involve the simultaneous transfer of some combination of labor, land, and probably capital resources to nonagricultural pur-

suits. This, I believe, implies a degree of control in agriculture which hitherto we have been unwilling to accept.

From the national point of view it makes economic sense to push agriculture's excess capacity into the production of commodities for which long-run demand remains strongest and which appear to have the greatest potential expansion of consumption per capita. Products from the feed-livestock economy fit this description and, in addition, tend to utilize more farm resources per pound of food produced. However, the capacity of the feed-livestock economy to absorb excess resources from the rest of agriculture is not unlimited. The suggestion sometimes made that the entire surplus problem could be absorbed by the livestock economy has been tested using the model of this paper.⁶ The model indicates that only about a quarter of the annual production surplus could be absorbed without serious consequences to the feed-livestock industry. Certainly no other sector of American agriculture has even this potential capacity of expansion and resource absorption.

THE IMPACT OF CHANGED ASSUMPTIONS

Under conditions different from those assumed for our model it is possible that overproduction might be even larger than has been indicated; on the other hand, it is also possible that the United States could be facing a relative shortage of agricultural products in 1965. These would be extreme occurrences but either is an analytical possibility. Changes in certain of the assumptions have significant impacts upon the results of our model.

If, in place of a steady growth in gross national product and continued full employment, we experience a depression of moderate to major proportions, a far more extreme farm income crisis would develop, since the pressure of falling demand would be added to the already great pressures of recent productivity increases. It also is most likely that the increase in yields and general agricultural productivity would not be as great as that estimated for the 1965 equilibrium.⁷ The nature and characteristics of a reaction such as this are not clearly understood as yet, but severe and sustained declines in farm prices usually reduce, if they do not bring to a halt, internal capital accumulation and the possibilities of large capital gains in agriculture. Rapid internal accumulation of capital and significant capital gains have characterized American agriculture during the periods of its most rapid growth in productivity and production. Thus, in a moderate to severe depression of some sustained number of years, both organizational and technological innovations of a capital-using nature might be deferred.

We are also on the verge of important changes in capital organization particularly in the sources of capital for agriculture. In broiler production, specialization and vertical integration have been accompanied by injections of large amounts of capital into the production

⁶ James T. Bonnen and Lawrence W. Witt, What Is American Agriculture Geared to Produce? Proceedings of the Sixth Annual National Institute of Animal Agriculture. Purdue University, Lafayette, Ind., April 1956, pp. 49-63.

⁷ Evidence of this type of reaction to the business cycle is presented by Dale E. Hathaway in his paper, Agriculture and the Business Cycle, which is also part of these hearings.

of broilers.⁸ This capital has come from sources external to the farm, primarily feed companies, and has transferred large portions of the management function off the farm proper. In the broiler industry management and investment decisions are now made not just on a larger scale of operation but are made for a combined unit of vertically related production processes which had previously been separate management units. It is not completely clear just what the impact of this will be upon capital expansion during depressions and upon the rate of adoption of improved organization and technology. However, volume-increasing, cost-reducing innovations have been made at a far faster pace in recent years than would otherwise have been the case without vertical integration, and there are reasons to believe that this would also be true even in the face of a sustained depression. In fact the pressures of a depression would probably rapidly increase the dominance of vertically integrated firms in any industry where the process of vertical integration had begun. The pace at which vertical integration develops in the feed-livestock economy is problematic but there are indications that it could be quite rapid. And it will without doubt significantly alter the traditional capital access structure of agriculture and the patterns of innovation and investment response to varying economic conditions. Also, as we have previously indicated even with low or falling farm prices, attempts to restrict acreage as in recent years would tend to result in intensified cultivation (where income alternatives are limited) and thus higher yields. Severe depression would likely also result in a slowing down in population growth.

Certainly I think we can say that over a general depression we would much more likely be plagued by over supply than shortages and this would particularly be true if the agricultural economy began the depression in a condition of excess productive capacity.

It is less certain that this would be one's conclusion if agriculture was in the midst of a depression while the rest of the economy continued to be prosperous. If we experienced conditions generally similar to that from 1921 to the great crash of 1929, the productive capacity of agriculture would probably as in a general depression grow much less rapidly than anticipated in our equilibrium model for 1965. The important difference would lie in the fact that consumption per capita and population would continue to grow as long as the general economy was prosperous and expanding. It might be possible to absorb present excess capacity by 1965 if over the intervening period the general economy continued to grow and agriculture was severely depressed.

Population growth is difficult to anticipate accurately if past failures of demographic estimates are any indication. A higher population than the one accepted in our model would, of course, result in an increase in the total consumption of agricultural products. If the population ranged 5 million higher than our assumed total of 190.3 million in 1965, the total consumption of food production would increase by 23 percent over the decade rather than 20 percent. On the other hand, if population were to fall about 5 million short of our assumption, total food consumption would probably expand by only around 17 percent rather than 20 percent. There are a number of reasons why these other

⁸ Vertical integration is the combining into one management unit the successive stages in the production process which stretches from raw material to consumer.

population estimates might hold for 1965 rather than the one which we have assumed, although on the basis of present knowledge it is believed that variations from the model's estimate would involve departures from other of the assumptions. For example, a severe depression would doubtless tend to reduce the birthrate, although by 1965 the effect would not be too great, perhaps a reduction down only to the 185 million level.

A war, of course, tends to reduce population through the cumulative effect of casualties and due to deferred births. The effect of this too would not be very great by 1965 if one thinks in terms of previous wars, but the impact on population of a thermonuclear war could be quite tremendous. Quantitatively, one can only speculate, but a 10 to 20 percent direct loss of population would not be an unreasonable estimate. Possibilities of higher populations for 1965 would revolve around such factors as (1) a lower average age of marriage for females, (2) a further decline in the death rate, (3) psychological-social reactions to such things as higher levels of living, greater security (with respect to health, employment, old age, and retirement problems), and (4) the changing characteristics of population density and location involved in such changes as the suburban movement and any general decentralization of industry and commerce and consequently of population. It should be remembered too that significant departures from the assumed 3-million-man armed forces would have some effect on productivity and consumer demand. A fundamental relaxation of international tensions would undoubtedly result in a reduction in American Armed Forces, although probably to no lower than 2 million men. If the cold war became significantly warmer, the size of the Armed Forces might grow to 3.5 million or so, but little larger short of an all-out war. Changes in the size of the Armed Forces have more impact on nonfood demand than on food and probably a greater effect on the national output of goods and services than on demand.

We have assumed no all-out war. A major war any time in the next 10 years would alter the conditions for economic growth and adjustment to the extent that the estimates made here would have little meaning. All resource allocation problems would have to be reevaluated. A major war, even a limited war, would lift the demand for food and fiber to an extent that even the present large excess stocks and production surpluses would become a blessing.

The evaluation of organizational and technological change in agriculture and the assumed 2.75 percent annual rate of growth in gross national product per man-hour do not include any allowance for a number of potential innovations, the rapidity of development and ultimate impact of which we have no way of evaluating. These include such possibilities as (1) applications of atomic energy which may or may not come to fruition by 1965, (2) the use of solar energy as a source of power, heat, and light, (3) application of a fully realized switching theory to production processes, (4) artificially induced rain, (5) artificial photosynthesis, (6) high-protein foods from plankton "farms," (7) the economic production of fresh water from sea water, (8) the use of gibberellins as growth regulators in plants, (9) new methods of food preservation being developed through the application of microwave and radiation techniques, and (10) a low-cost liquid, milk concentration process. There are many

others. A few of these, plankton "farms" and artificial rain, have only the slightest possibility of being realized on any scale at any time while others such as atomic and solar energy applications seem to involve only a matter of time, however long, before they are in general use as sources of energy. It is not possible at present to know, even in the most general terms, the extent and impact of vertical integration upon agriculture. Some slight allowance has been made for vertical integration in the estimates of livestock feed utilization efficiencies, but a rapid pace of vertical integration would result in very much larger estimates, particularly for hogs.

CONCLUSION

If you had to bet at present on what will actually happen by 1965, I believe you would have to accept surplus stocks and a continued imbalance between production and consumption as the most likely occurrence. The major imponderables in the situation are war, depression, and explosive organizational and technological innovations that are impossible to anticipate accurately today. The path which agriculture and the general economy take through these present and future problems is as important to what happens as the problems themselves.

LONG-TERM ADJUSTMENTS IN COMPOSITION OF FARM PRODUCTION AND IN PRODUCTION INPUTS

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Other contributors to this panel have already discussed the prospective nature of domestic and foreign demand for agricultural products during the next decade or two¹ and the potential sources of greater farm output that appear to be available to meet the growing needs of an expanding population.² In this paper, the discussion will be directed toward an appraisal of the direction and general degree of adjustments in major crop and livestock items that will likely be needed to balance output with market demands by about 1975, in view of possible increases in availability of cropland, increases in crop yields, and possible changes in efficiency of feed use by livestock. The implications of these adjustments on land use, size, and number of commercial farms, use of labor and other production resources will be explored. Recognizing that the course of events cannot be predicted over a period as long as a decade or two, it is still possible to give some clues as to likely direction and degree of changes in future demand and production needs in agriculture. Also, we have some understanding and measurement of the forces that have affected and shaped the structure of American agriculture in recent years, so that we can anticipate to some extent the kind of changes that may be expected in the years ahead.

PROJECTIONS OF FARM OUTPUT NEEDS

The analyses of future market requirements and production potentials made in the United States Department of Agriculture have been primarily concerned with the longer term situation centering about 1975,³ whereas the analysis presented by James Bonnen has been in terms of a shorter look ahead to about 1965. Although the assumptions differ somewhat, the primary difference between the two analyses is in the time period considered. Under the specific assumption with regard to growth in the economy and the upward trend in population made in the study by the United States Department of Agriculture discussed by Rex Daly, the volume of farm output needed in 1975 may be 35 to 45 percent greater than the record output of 1956, if a population of 230 million (approximately the high estimate of census projections) is assumed.⁴ The projected

¹ See Rex Daly and Raymond Ioanes (this panel).

² See Glenn L. Johnson (this panel).

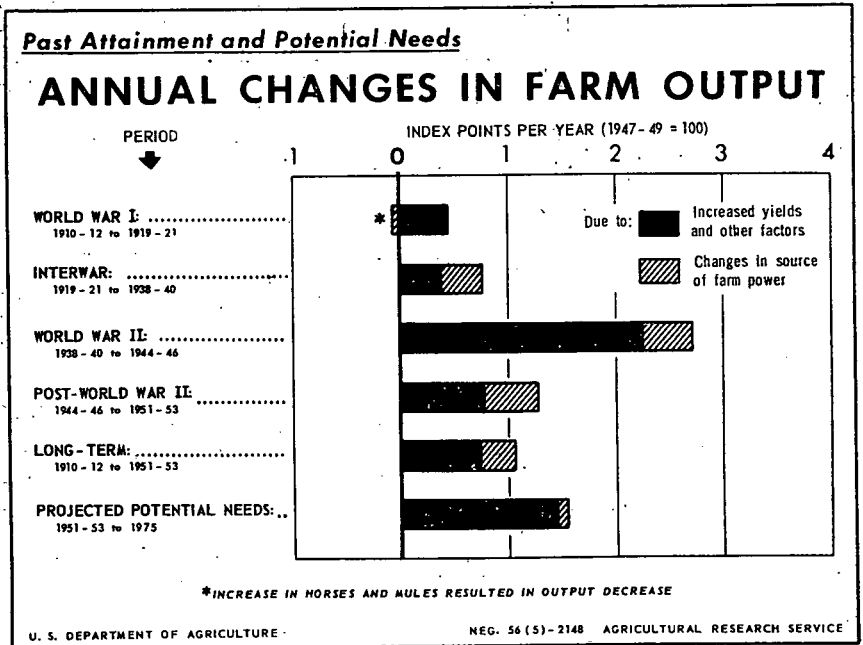
³ As used in this paper, "longer term" refers to a period about 20 years ahead.

⁴ The basic studies relating to these projections are reported in *Farm Output—Past Changes and Projected Needs*, by Glen T. Barton and Robert O. Rogers, U. S. Department of Agriculture Information Bulletin 162, August 1956, and in *The Long-Run Demand for Farm Products*, by Rex F. Daly, *Agr. Econ. Res.*, vol. 8, No. 3, July 1956.

needs indicate about 40 to 45 percent more livestock production and perhaps 30 to 40 percent more crop production than in 1956. Because of our current surplus situation, the increases in output indicated as needed by 1975 will need to come more in the second decade than in the first.

How large are the increases projected as needed by 1975 relative to past performance? Compared with past trends in farm output, the job ahead appears to be substantial. Annual increases required in farm output between 1951-53 and 1975, assuming a population of 210 million, may be half again as large as occurred during the 40 years from 1910-12 to 1951-53 and about a fifth greater than the annual increase that has occurred from the end of World War II to 1951-53 (fig. 1). Again the increase needed will be greater in the later part of the period than in the earlier part. It should be noted that much of the annual increase in output in years past came from the release of some 70 million acres of cropland and large quantities of other resources for production of agricultural commodities for human use as tractors and motor vehicles were substituted for horses and mules. In terms of other available means of increasing output, the job ahead thus becomes about double the annual increases attained in the long-run and since World War II with a 210-million population projection, and somewhat greater with a 230-million population.

FIGURE 1



The problems of agricultural adjustment will encompass not only the attainment of an approximate balancing of total output with market demand; but also the balancing of individual commodities. We might achieve overall balance and still have chronic surpluses of one

or more commodities. As has been indicated in other papers, the projected needs for crop and livestock production vary considerably among different commodities. The substantial increases in need by 1975 for feed grains, hay, and pasture are a reflection of the projected increased needs for livestock production. Projected needs for feed grains by 1975 are below the quantities produced in 1951-53 before allotment programs were in effect. Unless exports of cotton expand materially above recent levels, an increase of about 10 to 15 percent in the quantity of cotton produced above production in the preallotment years of 1951-53 may be sufficient.

CROPLAND NEEDS

Obviously, these projected production needs for crops and livestock by about 1975 would require large additional acreages of cropland if this were the only way to meet them. The record of the past and the availability of improved technology not yet adopted by farmers indicate that our chief means of getting the production needed in 1975 probably will be through increases in crop yields and improved efficiency in the feeding and care of livestock. Some increases in acreage of cropland are expected to occur during the next generation from irrigation, drainage, and land-clearing developments, and large additional acreages are available for development if there should be economic justification for such development. "Adding together the estimated acreages of new land in authorized development programs, or otherwise likely to be developed if current rates of development and conversion continue, results in a probable total of 40 million acres of new cropland by 1975. Current trends indicate that about 10 million acres of cropland and rotation pastureland probably will be used to meet the expanding needs of urban and industrial growth, roads, reservoirs, airports, and similar uses. Accordingly the net increase in acreage of cropland probably will be about 30 million acres. Possibly half or more of this increase will come about through transfer of some of the best soil areas now in permanent grassland pasture to the cropland rotation."⁵ Relating this increase in acreage of cropland to the projected increase in farm output suggests that, at most, only about a sixth of the additional crop and pasture production needed by 1975 may be supplied by expanding the acreage of cropland. This fortifies the conclusion that our major reliance for meeting production needs in 1975 will be on yield increases and adoption of improved technology and farm practices.

LAND-USE ADJUSTMENTS

Economists in the Agricultural Research Service, working with physical and natural scientists, recently developed estimates of the average yields farmers are likely to attain by 1975 from application of presently available technology, such as increased use of fertilizer, improved varieties, and other improved practices, based on past experience and the future economic conditions assumed. Attention has been given also to the probable gains in efficiency in use of feeds by livestock.

⁵ Agricultural Land Resources, by Hugh H. Wooten and James R. Anderson, U. S. Department of Agriculture, Agriculture Information Bulletin No. 140, June 1955.

Although in the past, gains in efficiency of feed use have been small except in the case of broilers, livestock specialists are constantly working on the problem, and significant improvements in feeding efficiency can be expected. An increase of perhaps as much as 10 percent may be reached by 1975 on the basis of technology now known. To the extent that these improvements in feeding efficiency develop, the acreage needs for feed grains, soybeans, hay, and pasture will be lessened. For instance, an increase in feeding efficiency of 8 percent would mean that we would need 35 to 40 million fewer acres of cropland equivalent for production of livestock feed and pasture than would be necessary if no improvements in efficiency of feed use occurred.

When these economic attainable yields by 1975 and an assumed increase of 8 percent in feeding efficiency are related to the projected requirements for a 230-million population level, we get the following general picture of change in composition of land use by 1975:

1. Harvested acreages of corn, other feed grains (barley, oats, and grain sorghums), and soybeans in total—perhaps 5 million acres less than in 1956.
2. Wheat and cotton—around 5 million acres more than in 1956.
3. Hay—5 to 10 million acres more.

These groups of crops account for around 90 percent of the harvested cropland. In terms of average cropland equivalent, pasture requirements might increase by about 20 to 25 million acres, even after allowing for attainable increases in pasture outturn per acre. Acreages of vegetable and fruit might need to increase somewhat less than population increases. Although these crops do not require large acreages, they account for considerable farm income and are heavy users of farm labor.

It should be pointed out that within reasonable limits feed grains can be substituted for roughage in meeting our projected needs for livestock feed in 1975. In other words, the actual composition of acreages might well be a larger acreage of feed grains and fewer acres of hay and pasture.

On balance, it appears that the output needs of 1975 can be met through these methods, but substantial adjustments in crop acreages would be required. Over the longer term, then, our production problems may continue to be centered around the need for adjusting the pattern of production to changing market outlets, rather than on an all-out effort to raise our production capacity. These projections, of course, assume conditions of peace and relatively full employment in the general economy.

The land use adjustment problem would appear to revolve mainly around the major problems of (1) developing farming systems in the major wheat and cotton areas that can prosper with not much more than present total acreages of these crops and without the necessity of control programs, (2) some moderate shifting of land use away from feed grains, and (3) a significant expansion in acreages of hay and pasture. These changing needs may involve some major shifts in types of farming in some areas and considerable realignment of the pattern of production in many areas during the next decade or two. For instance, even though no significant change in acreage requirements would be anticipated in total for producing our cotton require-

ments, a considerable shifting of production might well occur toward a greater proportion of the production in the higher yielding or the lower cost areas such as the delta, the high plains and irrigated areas of the Southwest, and less in the older or more hilly cotton areas of the Southeast and Midsouth.

ADJUSTMENTS IN USE OF OTHER RESOURCES

The adjustments necessitated by changing technology and market requirements are not likely to be confined only to changes in crop patterns and in land use. Many other kinds of adjustments have taken place in years past and can be expected to continue in the years ahead.

The revolution that has occurred in American agriculture during the last 15 or 20 years is a familiar story—farm output in 1956 and 1957 more than a third greater than in 1940, produced on a slightly smaller area of cropland, with one-fourth fewer farmworkers, and on fewer, but larger, farms. Farmers have made great changes in the combinations of land, labor, and capital resources used in production as they have mechanized their farms, adopted other new technologies, and improved their organization and management operations.

These substitutions in use of resources have been made possible by technological developments and improvements in sources of power, machines, equipment, and farm supplies that were available at prices that made it profitable to farmers to substitute their use for farm-produced power, farm labor, and land. Full employment and the increasingly higher nonfarm wage rates have pulled labor from farm areas to industrial employment with consequent upward pressures on farm wages. Many commercial farmers have learned that it is cheaper to buy machinery and other industrially produced goods than to use human labor to accomplish the farm production job. But this process has meant increasing commercialization of agriculture, higher cash operating costs, higher capital requirements for farm investment, and greater financial risks in farming.

A powerful force toward substitution of machinery and other factors for labor has been the changing price relationships between farm wage rates and industrially produced farm inputs. The greatest changes in these relationships took place during World War II and the early postwar years. From 1940 to 1947, wage rates increased by 250 percent, but prices paid for power and machinery and for fertilizer increased less than 50 percent. This differential change was a prime factor in encouraging substitution of these production inputs for high-priced labor wherever possible. In addition, technological improvements greatly increased the productivity of labor and encouraged their adoption even on farms where hired labor was not important.

Compared with the war period, these price relationships have shifted relatively little during the last decade. With a high level of employment in the general economy, we can expect that the drastic change that occurred during World War II will continue into the indefinite future. To the extent that all farmers have not yet adjusted to this situation, and where new opportunities become available to farmers, we can thus expect this process of substitution of industrially

produced farm inputs to continue in future years. The rate of substitution probably will take place at a slower pace during periods like the present when farm production is pressing on prices, but will accelerate when production is in better balance with market requirements, and farm prices and incomes are more favorable.

CHANGES IN SIZE OF FARMS

The forces of technological improvement and increasing efficiency, changing cost-price relationships, investment requirements, and availability of off-farm employment have all combined to increase the average size of commercial farms in the United States, and to reduce the number of farms needed to supply available market outlets. Numbers of commercial farms have declined in each census period for the last 20 years. At the same time, part-time and residential farms have increased in numbers as available job opportunities for off-farm employment have increased.

Recent USDA estimates indicate that numbers of commercial farms declined from 4,265,000 in 1939 to 3,100,000 in 1954 (table 1). The decline in numbers occurred in those classes where value of sales (in 1954 dollars) was less than \$5,000 per farm. The decline from 1939 to 1954 was 20 percent for class IV farms with sales of \$2,500 to \$4,999 and 57 percent for class V and VI farms with sales of \$250 to \$2,479. The data in table 1 suggest that under conditions of the last 15 years or so, farm sales of at least \$5,000 are required to maintain stability in farm numbers in view of both income alternatives outside agriculture and the generally rising levels of living. Of the 3.4 million farms in classes IV, V, and VI in 1939, about 400,000 had moved up into the higher income groups by 1954, about 1.8 million were still in these classes, and about 1.1 million had been converted to part-time or residential units or the families had left agriculture.

TABLE 1.—Number of commercial farms, by economic classes, United States, 1939-54

Economic class of farm	Value of sales ¹ (1954 prices)	1939	1944	1949	1954	Percentage change, 1939-54
Class I.....	\$25,000 and over.....	60,000	91,000	103,000	134,000	+123
Class II.....	\$10,000 to \$24,999.....	252,000	347,000	381,000	449,000	+78
Class III.....	\$5,000 to \$9,999.....	585,000	723,000	721,000	707,000	+21
Classes I, II and III.....	.....	897,000	1,161,000	1,205,000	1,290,000	+44
Class IV.....	\$2,500 to \$4,999.....	1,015,000	976,000	882,000	811,000	-20
Classes V and VI.....	\$250 to \$2,499 ²	2,353,000	1,804,000	1,378,000	999,000	-57
Total commercial farms.	.....	4,265,000	3,941,000	3,465,000	3,100,000	-27

¹ Value intervals in earlier years adjusted to 1954 prices received by farmers.

² Excludes farms on which operator worked off the farm as much as 100 days, or where income of family from off-farm sources exceeded sales from the farm.

Source: Family Farms in a Changing Economy, U. S. Department of Agriculture, Agriculture Information Bull. No. 171, March 1957.

Classes V and VI farms comprised 60 percent of all commercial farms in 1939, but only 32 percent in 1954 (fig. 2). Classes I, II, and III farms made up only 21 percent of all commercial farms in 1939, but by 1954, they had increased to 42 percent. In actual num-

bers, they increased from 897,000 in 1939 to 1,290,000 in 1954, when they accounted for 79 percent of the total value of sales from farm marketings. Class IV farms (sales of \$2,500 to \$4,999) declined in numbers by 20 percent but constituted about one-fourth of all commercial farms throughout the period. This group had 12 percent of the value of farm sales in 1954.

As farmers acquire tractors and new machines, and make other investments, they learn that they have the potential to handle larger acreages of land with the same family-labor supply than was possible with the smaller or more inefficient equipment. The marginal cost of handling this larger acreage is relatively low once the investments in machinery have been made. Consequently, we have seen consolidation of farm units into fewer but larger farms. Although this process has been going on for many years, there is evidence that it has become even more important in the last few years (fig. 3). Purchases of farmland for farm enlargement have increased each year since 1950, from 22 percent of all purchases in that year to 33 percent in 1956.

FIGURE 2

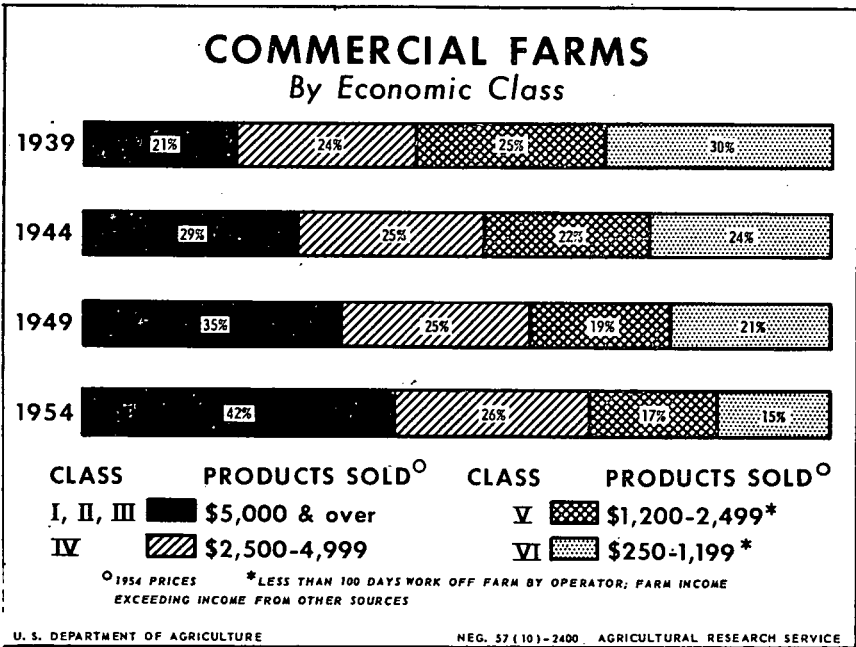
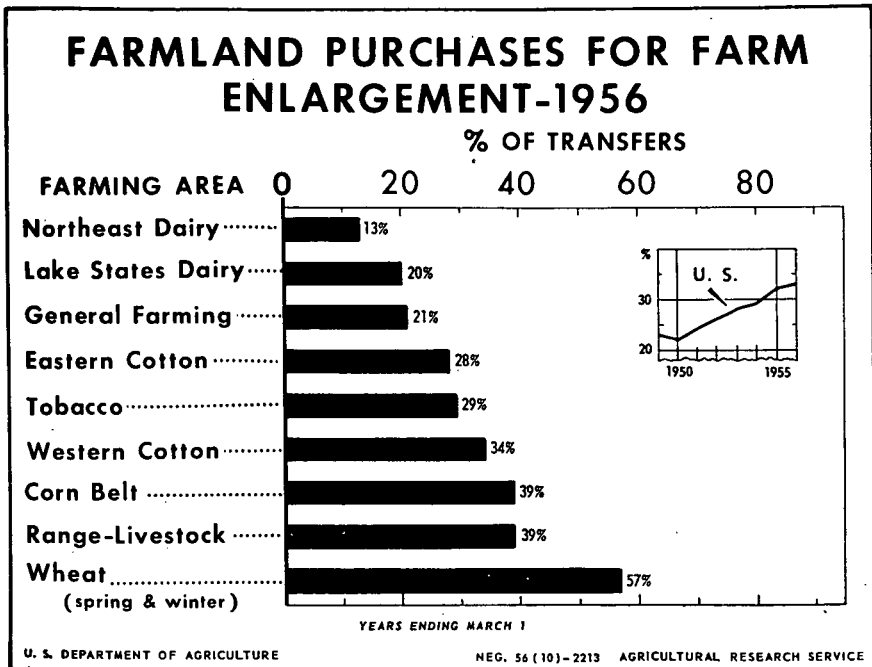


FIGURE 3



Obviously, more and more farmers are exploiting the possibilities of improving their incomes by adding more land so they can better adjust their operations to available machinery and other resources. These opportunities are no doubt greatest where mechanical processes for handling farm jobs have been most highly developed. The chart indicates that the highest percentage of purchases for farm enlargement—57 percent—is in the wheat region. The smallest percentages of purchase of land for farm enlargement are in the dairy areas of the Northeast and the Midwest, but even there the percentages are significant. These trends of the last few years suggest strongly that farm enlargement can be expected to continue and that significant changes will occur in future years in the number of farms and farm families in commercial agriculture.

REDUCTION IN NUMBER OF COMMERCIAL FARMS AND IN FARM LABOR

The forces that operated to bring about this reduction in numbers of commercial farms are obviously difficult to assess in terms of how far they will continue into the future. We can be sure that there are still many farms, particularly in the small-size categories, on which resource combinations have not yet been adjusted to take full advantage of the technological developments that are available to provide these farm families with acceptable income levels. We can surely expect that these forces will continue to operate in future years and that further downward adjustments in numbers of farms will occur, even though total requirements for agricultural products will gradually increase.

If the average rate of decline in numbers of commercial farms of 1.4 percent per year that occurred during the 25-year period of 1929-54 should continue during the next 20 years, we might expect about 2.2 million to 2.3 million commercial farms in 1975. Full-time commercial farms might well be rather small in numbers in the present class IV, V, and VI farms, and concentrated rather largely in the three higher income groups. The larger volume of farm output required in 1975 at current price levels might average \$15,000 to \$16,000 gross value of sales per farm with 2.2 to 2.3 million commercial farms, compared with an average of around \$8,000 for the 3.1 million commercial farms in 1954. Such a development should provide the basis for much more adequate incomes for considerably larger numbers of commercial farms than the approximately 1.3 million in classes I, II, and III, which may be considered to have a generally favorable income potential.

Much of the previous analysis has implied a further reduction in the farm labor force. Most of the increased production is expected to come from higher yields. With modern methods and machines, relatively little additional labor is needed to handle larger yields, and this likely will be more than offset by greater adoption of labor-saving methods and techniques. With greater emphasis on production of livestock, seasonal underemployment of farmworkers will tend to decline. Because of the rapid increase in technology, the number of workers per farm since 1939 has remained remarkably stable at 1.8 per farm, despite large increases in the average size of farm and in output per farm. Indications are that the relation between farms and farmworkers will not change significantly in the next decade or two. This means that the decrease in number of farmworkers will be about proportional to the decline in number of farms.

INCREASED CAPITAL REQUIREMENTS

Capital investment requirements for commercial farms have increased sharply during the last 15 years as farms have become larger, machinery and equipment needs have increased, and general inflation has occurred. The total volume of assets per farm in the form of real estate, machinery and equipment, crops held for sale, livestock, and demand deposits used for farm production, has increased about 60 percent at constant prices since 1940. At prevailing prices in both years, the average value of assets per farm increased 340 percent from 1940 to 1956.

Capital investments for various types of commercial family-operated farms in 1956, and changes from 1940, are shown in table 2. These types of farms vary widely in size and net returns to the operators, but the operator and his family supply most of the labor. Average investments on these family-operated farms in 1956 were from 3 to more than 4 times as much as in 1940. On those types of farms where operations are largely mechanized, such as wheat farms and cash-grain farms of the Corn Belt, one man can handle large acreages of land with appropriate machinery. Average investments on such family farms run from \$75,000 to more than \$100,000. Where mechanization is less well adapted and greater amounts of labor are required per acre, as on cotton and dairy farms, average investments are lower.

TABLE 2.—Average value of capital investment per farm, selected types of commercial family-operated farms, 1940 and 1956

Type of farm and location	1940	1956	Percentage 1956 of 1940
	<i>Dollars</i>	<i>Dollars</i>	<i>Percent</i>
Dairy farms, Central Northeast.....	9, 600	30, 000	312
Corn Belt farms:			
Hog-dairy.....	15, 440	43, 260	280
Cash grain.....	31, 470	92, 110	293
Cotton farms:			
Southern Piedmont.....	4, 760	16, 290	342
High Plains, Texas (nonirrigated).....	12, 540	38, 250	311
Spring wheat farms, Northern Plains.....	10, 830	45, 200	417
Winter wheat farms, Southern Plains.....	13, 763	76, 540	407
Wheat-pea farms, Washington and Idaho.....	35, 970	155, 680	433
Cattle ranches:			
Northern Plains.....	21, 670	69, 900	323
Southwest.....	35, 780	130, 640	366

Source: Farm Costs and Returns, Commercial Family Operated Farms by Type and Location, U. S. Department of Agriculture, Statistical Bulletin No. 197, November 1956 and U. S. Department of Agriculture, Information Bulletin No. 176, June 1957.

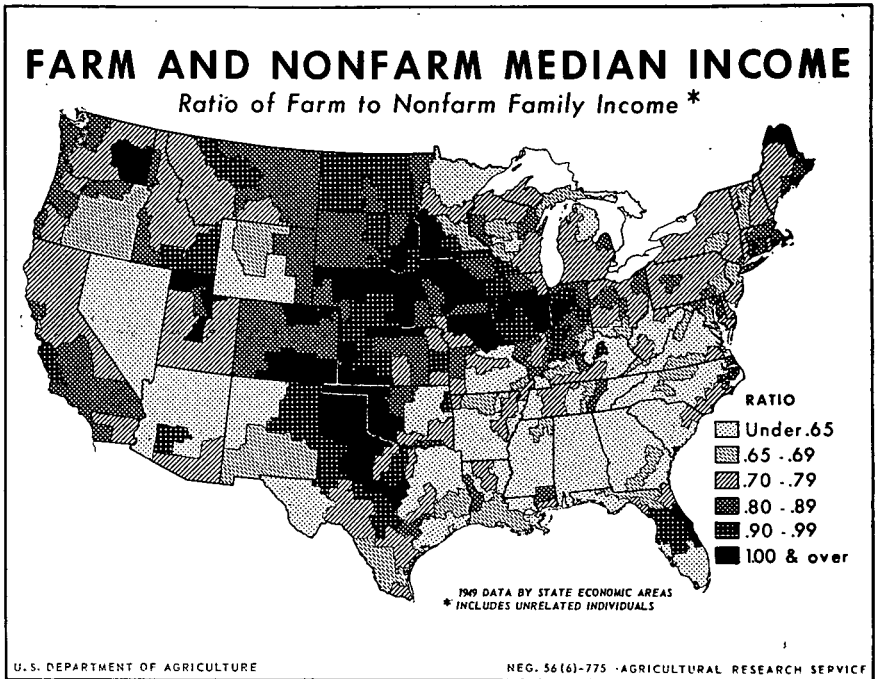
With the trend toward fewer and larger commercial farms, farm families will be faced with increasingly difficult problems of acquiring control of the necessary resources to engage in commercial farming on a profitable basis. A farmer with limited financial assets will have particularly difficult problems. If opportunities for able farmers with small means to engage in full-time farming are to be kept widely available, it may be necessary to broaden credit facilities and revise lending practices or to develop new forms of tenure arrangements in future years. Problems of transferring farms from one generation to the next, and of providing opportunities to the beginning farmer, can be expected to increase as financial investment requirements for individual farms become larger.

On an aggregate or total investment basis, the problem may be quite different. On a constant-dollar basis, land and capital assets per unit of farm output have declined about 10 percent in the last 15 years for agriculture as a whole. The decline for commercial farms probably has been greater. With less favorable farm incomes during recent years, farmers and research workers are giving more attention to innovations that are capital-saving in nature. That is, when new investments in buildings, machinery, and equipment are made, farmers tend to adopt those that give promise of producing the highest output with the least investment requirements. Emphasis of this kind over the next decade or two can result in further decreases in investment requirements per unit of output, so that in total the capital requirements for a considerably larger output may need to increase only moderately from current levels. What happens to land values in the next decade or two may have most to do with the dollar value of farm assets, on both an individual farm basis and in total. If farmers and others continue to capitalize into land values the major part of increases in income, and if nonfarm buyers continue to bid up prices, then land values can be expected to increase considerably even with a stable price level. On the other hand, if increases in income are used mainly to raise the levels of living of farm families, then the pressure for increases in land values will be less.

OFF-FARM EMPLOYMENT OPPORTUNITIES

The problems of improving farm incomes and adjusting farm size and agricultural resources to proper accommodation of farm families are complexly interwoven with opportunities in agriculture versus opportunities in off-farm employment. Time does not permit much exploration of these relationships. The nature of the problem and some indication of the growing points of adjustment are revealed, however, by a comparison of incomes of farm and nonfarm people in different areas. In those areas in which technological improvements have been most effectively adapted and adopted by farmers, where farm investments per worker have been greatest, and where farm resources per farm family are largest, the ratios of farm to non-farm income in 1949 were highest (fig. 4.) Ordinarily, in those areas in which the ratios of farm to nonfarm income are lowest, we find that technological improvement has been least, investment and resources per worker are smallest, and productivity levels are lowest. Those areas with a ratio of farm to nonfarm incomes of less than 0.65 usually coincide with what have been termed "the low income areas" in agriculture. They represent a great need for further improvement in the future incomes and in adjustment of resources for a large segment of farm people. The fact of a low ratio of farm to nonfarm income suggests the possibility for accelerated off-farm employment to improve income. When such employment results in land being released, it can provide opportunity for those who remain in farming to add to their land base to obtain farm units of sufficient size to permit more efficient use of modern machines and improved management. These changes and adjustments are underway. As they are realized in future years, they will provide the basis for a more general sharing throughout agriculture of the fruits of technological advance and improvement.

FIGURE 4



GENERAL CONCLUSIONS

In summary, the following changes can be expected under peacetime conditions of full employment and with increased emphasis on adjustments in use of resources: (1) The possibility of sufficient increase in demand during the next generation to provide a better balance between production and market requirements. But the current problems of unbalance may continue to be acute, at least during the next 5 to 10 years. (2) We can expect a continuation of the trend toward greater commercialization in agriculture, with high cash costs of farming and high investment requirements per farm and per farmworker. (3) Agricultural products probably will be supplied by fewer but larger farms, with a continuation of the trend toward farm consolidation. (4) We can anticipate a continued movement of low-income farm people into nonfarm jobs and a consequent increase in amount of resources used and of agricultural incomes of those who remain in agriculture.

It is possible to be fairly optimistic about the longer range outlook for farming if we can manage to work our way out of the current surplus situation and reestablish a reasonable balance between output and market demands. No one can know how rapidly new innovations may be developed and how technological advance will affect production response. It is possible that production may continue to press on market outlets for many years, with consequent pressure on farm prices and incomes. Many difficult problems of adjustment still lie ahead. The question is not so much whether we can produce food

enough, but whether we can obtain the necessary readjustments in agriculture at reasonable cost and with net incomes in agriculture comparable to those in other occupations. We need much more research directed toward improving our knowledge of needed and profitable adjustments in farming, and of the probable impacts of economic change on the number and kind of future opportunities in agriculture. The sharply higher investment requirements in agriculture that have occurred in the past and that may be expected to increase in the future raise particularly serious problems for young men of ability but little financial backing who want to gain a foothold in farming.

III. ADJUSTMENT PROBLEMS FACED BY COMMERCIAL
FARMERS IN MAJOR GEOGRAPHIC AREAS

(PAPERS FOR PANEL C)

ADJUSTMENT PROBLEMS FACED BY COMMERCIAL FARMERS IN MAJOR GEOGRAPHIC AREAS

ADJUSTMENT PROBLEMS FACED BY COMMERCIAL FARMERS IN THE NORTHEAST

L. C. Cunningham, Cornell University

At the outset of this paper, I wish to commend the Subcommittee on Agricultural Policy in its present inquiry into the broad national problem of adjustments in farming for—

(1) including regional analyses along with those of national scope, and

(2) treating the problems of commercial farms separate from those of part-time and residential farms.

Actually, the farm problem is composed on the one hand of groups of problems concerned with different farm commodities produced principally by commercial farmers in various regions of the country and on the other hand of groups of problems that deal with people living in rural areas but not actively engaged in commercial farming. Solutions to the farm problem must sooner or later be sought for these groups of problems. Certainly these distinctions help to clarify the issues.

SPECIALIZED FARMING

Farming in the Northeast is highly specialized in several lines of production, with dairying as the major farm enterprise. The climate and soils are favorable for pasture and hay production. With the nearness to large centers of population, most of the dairy production is used as fluid milk and cream. The production of fresh eggs and vegetables and fruit are important in contributing to the farm income of the region. Generally, these products are produced on specialized farms.

Over the years, northeastern farms have shifted toward the production of these perishable and bulky foods and away from the high-value-per-pound products like wool and beef. The freedom to make such shifts among different farm enterprises to take advantage of natural and economic conditions is an essential feature of American farming.

Except for some products for short periods of time, farmers in the Northeast, in contrast to corn, cotton, and wheat farmers, have produced for the markets, not for Government storage. Prices of their major products have been free to clear the markets.

Commercial farms of the region have become increasingly specialized in two ways. Usually only 1 or 2 major products are produced, and many of the jobs formerly done on the farms are now hired.

Milk hauling is an example. A generation ago, most dairymen hauled their own milk, but now most of the milk is hired hauled.

CHANGES IN FARMING

Farmers' production problems in this region are in the nature of continuing shifts in choice of farm enterprises, in number and size of operating units, and in ways of controlling costs, particularly of mechanization. These problems can best be solved in an economy of reasonably free market prices and a minimum of governmental regulation. A major marketing problem is fluid milk.

MARKET ORDERS HELPFUL

After many years of concerted effort through collective bargaining had indicated that the job could not be done by farmers' cooperatives alone, Government was called in to administer minimum producer prices for fluid milk. The market orders for the New York milkshed provide the means for overcoming the lags in price movements with changes in the supply of and demand for milk, and for protecting producers against violent price fluctuations. This role by Government has been generally successful in the Northeast.

FEWER FARMS

One of the most important adjustments taking place in northeastern agriculture is the concentration of farming into fewer and larger operating units. Family farms continue to dominate the picture, but they have changed from self-sufficient to commercial operations. More than ever before, modern commercial farms depend on nonfarm consumers for their market and on nonfarm industry for the goods and services used in production.

In 1930 there were nearly 350,000 commercial farms—those from which the farm families derived their major source of income from farming—in the region. By 1954 this number had declined to nearly 200,000 (table 1). That is, for every 5 such farms in 1930, 3 remained in 1954.

The number of part-time and residential farms in the region rose during the thirties and early forties, but has since declined moderately. At present there is 1 such farm for every 2 commercial farms. The inclusion of these small part-time units in the statistical averages of net farm income and other descriptive series of data tends to cloud the issues.

TABLE 1.—Number of commercial, part-time, and residential farms, northeast region, 1930-54

Year	Commercial farms	Part-time and residential farms
	<i>Thousands</i>	<i>Thousands</i>
1930.....	345	110
1940.....	290	127
1945.....	257	171
1950.....	233	152
1954.....	205	122

Source: McElveen, Jackson C. Family Farms in a Changing Economy, U. S. Department of Agriculture, Agriculture Information Bulletin No. 171, 1957.

The decline in number of farms in the region is expected to continue. This adjustment tends to be slowed up by acreage allotments, base-rating plans, and other rigid governmental regulations.

Despite the shift to larger farms that has already taken place, there still remain many units that are too small to compete successfully in present-day farming. According to the 1954 census of agriculture, 11 percent of the farms in the Northeast had fewer than 10 milk cows and nearly 50 percent had less than 20 milk cows (table 2). Such small herds are not likely to be able to withstand the economic pressure for increased efficiency.

TABLE 2.—Percentage distribution of farms by number of milk cows per farm, northeast region, 1954

Number of milk cows per farm :	Percent of farms
Fewer than 10-----	11
10 to 19-----	35
20 to 29-----	29
30 to 49-----	20
50 or more-----	5
Total-----	100

Source : 1954 census of agriculture.

The elimination of small poultry flocks can be widely observed in the region. In New York State the number of farms with chickens decreased by about 50 percent from 1930 to 1954. Layer numbers increased about 10 percent so that the average number of layers per farm more than doubled between 1940 and 1954.

SIZE OF FARMS

The consolidation of farms into larger acreage units and the passing of some land out of farming account for the decrease in number of farms. In New York, the average acres per farm increased from 112 in 1930 to 143 in 1954 (table 3). Most of the increase took place in the last 10 years.

TABLE 3.—Average acreage per farm, New York, 1930-54

Year :	Total acres per farm
1930-----	112
1940-----	112
1945-----	118
1950-----	129
1954-----	143

Source : 1954 census of agriculture.

Similar increases in size of farms have occurred in other States of the region.

THE FARM LABOR FORCE

The typical commercial farm in the Northeast continues to be essentially a family operation. Most of the farmwork is done by the farm operator and members of his family.

Recent studies of commercial dairy farms in 3 areas of New York show the average labor force per farm to be about 21 months or a man equivalent of 1.8 (table 4). Operator labor is counted as 12 months. The months of family and partner labor slightly exceed the months of hired labor.

TABLE 4.—*Farm labor force, commercial dairy farms, 3 areas, New York*

Kind of labor	Average per farm			Average of 3 areas
	Central plain, 371 farms, 1953-54 ¹	North country, 556 farms, 1955-56 ²	Montgomery County, 109 farms, 1954-55 ³	
Operator, month.....	12.0	12.0	12.0	12.0
Partner, month.....	2.1	.7	2.6	1.8
Family, month.....	2.5	4.5	2.1	3.0
Hired, month.....	6.5	2.8	4.4	4.6
Total, months.....	23.1	20.0	21.1	21.4
Man equivalent.....	1.9	1.7	1.8	1.8

¹ Cunningham, L. C., Commercial Farming, Central Plain Region, New York, 1953-54, bulletin 921, January 1957.

² Unpublished data by L. C. Cunningham.

³ Edmondson, Vance W., Farm Business Adjustments on Commercial Dairy Farms, Montgomery County, New York, 1944-45 to 1954-55, thesis 1956.

Although the average size of labor force is just under two men per farm, some farms have a much larger labor force than others. Based on recent studies of dairy farms, about 1 farm in 10 is strictly a 1-man operation. Most of the farms have labor forces ranging from 1.1 to 2.9 man equivalent (table 5). Large farms attract attention far out of proportion to their relative numbers. Farms with a labor force of 4 men or more are found in the ratio of only 2 out of every 100 farms. Despite the increasing commercialization in agriculture, most farms continue to be operated as family businesses.

TABLE 5.—*Variation in size of farm labor force, commercial dairy farms, 3 areas, New York*

Man equivalent per farm	Central plain, 371 farms, 1953-54 ¹	Percent of farms		Average of 3 areas
		North country, 556 farms, 1955-56 ²	Montgomery County, 109 farms, 1954-55 ³	
1.0.....	13	14	9	12
1.1 to 1.9.....	39	54	42	45
2.0 to 2.9.....	35	28	42	35
3.0 to 3.9.....	9	3	7	6
4.0 to 4.9.....	2	1	0	1
5.0 or more.....	2	0	0	1
Total.....	100	100	100	100

¹ Cunningham, L. C., Commercial Farming, Central Plain Region, New York, 1953-54, bull. 921, January 1957.

² Unpublished data by L. C. Cunningham.

³ Edmondson, Vance W., Farm Business Adjustments on Commercial Dairy Farms, Montgomery County, New York, 1944-45 to 1954-55, thesis 1956.

Active industrial employment in the region provides alternative job opportunities to farmers who have not or cannot make the necessary adjustments to increase their efficiency. However, these same industrial circumstances mean strong competition for the hired and family help on commercial farms. Operators of these farms have turned to mechanization of the enlarged farming operations to increase the output per worker. This is the most important way to compete successfully for labor.

MORE MACHINES

Accompanying the enlargement of land area operated per unit has been a striking increase in the mechanization of many farm jobs, with little or no change in the typical size of the farm labor force.

Not only has the shift from horses to tractors occurred, but the inventories of modern dairy farm businesses now include long lists of major items such as milking machines, gutter cleaners, bulk milk tanks, silo unloaders, crop driers, grain combines, balers, and field forage harvesters.

The field forage harvester presents a good illustration of the increase in use of machinery. In 1950, according to estimates of the United States Department of Agriculture, there were 10,600¹ forage harvesters in the region. By 1956, this number had nearly trebled to 28,800. As will be shown in the next section of this paper, the investment in power and machinery has increased tremendously.

The shift to all these new and complicated machines calls for much more mechanical knowledge and skill on the part of farm operators than ever before. Programs of education for adult farmers and future farmers should be expanded even further to meet this need.

INCREASE IN CAPITAL INVESTMENT

Increased size of farm, more mechanization, and a relatively high price level all make the dollar figures of investment in the present-day farm business materially larger than a generation ago. To illustrate, on crop and livestock farms in western New York, the average capital per farm jumped from about \$18,000 in the late twenties to nearly \$40,000 in 1954 (table 6). Power and machinery investment accounted for nearly 25 percent of the total in the recent years, compared to only about 10 percent in the earlier period. Many other data are available to show that farm capital requirements generally in the region have about doubled during the last 25 years.

TABLE 6.—Average capital investment per farm, 514 farms, Livingston County, N. Y., 525 farms, central plain region, New York

Items	Average investment per farm	
	1928 ¹	1954 ²
Real estate.....	\$13,430	\$23,220
Livestock.....	2,327	6,520
Power and machinery.....	2,083	8,980
Feeds and supplies.....	350	830
Total.....	18,190	39,550

¹ Warren, Stanley Whitson, An Economic Study of Agriculture in Northern Livingston County, New York, bulletin 539, May 1932.

² Cunningham, L. C., Commercial Farming Central Plain Region, New York, 1953-54, bull. 921, January 1957.

The increase in the actual amount of capital and the shift in proportions in real estate and in machinery and livestock both call for a

¹ Statistical Bull. No. 217, Silage From 1955 Crops, U. S. Department of Agriculture.

new look at the sources of long- and short-term credit for the agriculture of the region.

FITTING THE MACHINE TO THE JOB

The increased output of the farm-labor force working in larger businesses with more machinery has been repeatedly measured and widely recognized. Perhaps the part of this picture that has been underemphasized is that the farmer has become increasingly specialized in producing his product or products and has turned to off-farm agencies to perform many of the jobs formerly done by his own labor force. It cannot be denied that the outturn of product per worker has greatly increased, but the cash costs of operation have also risen tremendously. One recent farm management study has shown that the saving in labor resulting from mechanizing the forage harvesting job was about offset by the increased costs of the machines involved.²

All of this is to say that the mechanization of farming in this region, although well on its way, is far from complete. It is one of the more fascinating and glamour changes in present-day farming. The hazards are many, however. Much more economic research and education are needed to fit the machine to the job in northeastern agriculture.

SUMMARY

In this brief analysis of northeastern agriculture, the attempt is made to show the following points:

(a) Long-time shifts in the types of farming have been toward the production of bulky, perishable products.

(b) The farms have become more specialized and commercialized in their operations.

(c) The adjustment toward fewer and larger farms has progressed considerably, but will go further.

(d) The typical size of the farm-labor force has remained remarkably stable. Family-operated farms continue to predominate, particularly in dairying.

(e) Mechanization of the major jobs on commercial farms is currently the most striking adjustment that is taking place in the region.

(f) The added machines along with the larger size of farms have greatly increased the capital requirements in farming.

(g) Larger farm operating units, increased specialization and more mechanization have increased output per farm worker, but at considerable cost.

Farmers of the northeast will continue to make the adjustments described. The rate of their progress can be speeded up by these conditions:

(a) Active research and educational programs, especially those concerned with mechanization.

(b) Reasonably free market prices of products sold and of goods and services purchased.

(c) A minimum of Government production controls.

(d) Reliable sources of and suitable kinds of farm credit.

² Cunningham, L. C., and Fife, L. S. Analysis of Forage Harvesting Patterns on New York Dairy Farms. Cornell University Agriculture Experimental Station Bulletin 917. 1955.

ADJUSTMENT PROBLEMS IN THE CORN BELT AND MIDWEST

Earl O. Heady, Iowa State College

Midwest agriculture is faced with the same general problem as most other commercial sectors of agriculture; namely, the adjustment of production patterns, resources used, and farm size to consumer demands in an economy of relative maturity and rapid growth. As in other geographic regions, the Midwest farm-adjustment problem stems from: (1) rapid technological advance which has increased physical-resource productivity such that a relatively immobile collection of inputs produces an output exceeding demand at recently supported price levels; (2) a birthrate or labor supply, with its effectiveness increased by technical improvement, exceeding employment opportunities in farming which compare with the monetary returns elsewhere in the economy; (3) an average farm size which is short of fully realizing the main cost advantages of modern mechanization; and (4) a consumer demand situation which places a greater premium on increased output of nonfarm goods and services.

Midwest agriculture, like that of most other regions, is caught in a cost-price squeeze arising mainly from economic growth. Consumers, as their incomes have increased, have been unwilling to place a high premium on the farm products of the region. Through the market, they have tended to hold prices down, to indicate that they want more poundage of food only as there are more persons to feed. In contrast, they have attached relatively high prices to nonfarm goods which they prize as their incomes grow. Even farm people react similarly; in increasing per capita expenditure on food freezers, home furnishings, television sets, recreation, and education, rather than consuming more food per person. In bidding relatively higher prices for nonfarm goods and services, the consumer has bid, or kept, up the price of steel, labor, petroleum, and other materials which go into goods representing his preference under economic growth. Consequently, the cost of tractors, lumber, fuel, and other farm-cost items is kept up. This, then, is the farm-price squeeze in the Midwest: The consumer is saying that he wishes relatively more of the region's resources used for nonfarm goods, and fewer for farm goods. He is trying to say that we are giving him too much of food and too few of other things; that he wants some labor and perhaps some capital transferred from farming accordingly. This transfer is possible because recent technology readily allows production of the "required" food with many fewer resources.

LABOR SUBSTITUTION

Technology has not only rapidly increased the physical productivity of labor, and thus decreased the amount of labor required to meet food needs, but also labor has been relatively costly as compared to machines

and other forms of capital which directly replace manpower. The result has been a rapid postwar substitution of machinery for labor in the region. Typically, machinery added has not only replaced labor to the technical limit on farms of the average size, but it also has capacity to be used on more acres. Thus, there is a latent pressure for operators in the region to extend the size of their operating units, to make a more effective use of both the stock of labor and capital on farms. However, other forms of capital also are priced low relative to their physical and monetary productivity. Fertilizer, insecticides, antibiotics, and prepared feeds and similar materials provide a high return under current price levels. More farmers can and will make greater investments in these materials and practices. Along with the high degree of mechanization in the region, further use of these forms of capital will continue to place heavy pressure on displacement of labor in production of the region's farm output.

PRODUCTIVITY AND INCOME BY CLASS OF FARM

Compared to other regions, farms of the Corn Belt are relatively productive in terms of the value of product produced per unit of capital and labor.¹ However, an important proportion provides incomes below nonfarm family incomes of the region. While some of this difference is due to managerial skills, more of it is due to the amount of capital resources used per farm and per worker. Table 1 indicates the amounts of specified resources used per worker and the value of product produced from labor and capital for Corn Belt farms. Economic classes IV, V, and VI make up about 40 percent of all cash-grain and livestock farms in the region. However, as the data show, gross output per worker for farms in these groups is less than interest on capital and wages of skilled nonfarm workers. Annual wage rates for skilled nonfarm workers ranged upward from \$4,000 in 1954, the year of the comparison. Farms in economic class IV had a gross value of output per worker averaging less than \$2,500, after interest on capital is deducted. (Farm operating expenses must be deducted from these amounts in figuring net income.) The majority of farmers in economic classes IV, V, and VI receive little or no return on their labor. Farmers in these groups are especially under the pressure of a competitive agriculture and economic growth. Many farmers in economic classes I, II, and III also have incomes which return little to their labor. However, the adjustment problem impinges mainly on farmers in classes IV, V, and VI. They have relatively small farms and little capital per worker. Included in the group are beginning farmers, older operators who have experienced economic adversity and middle-aged farmers who started from a low base in capital and experience. Farmers in this group, if they are to have incomes comparable to those being realized elsewhere in economy, are faced with the problem either of expansion or quitting full-time farm operations.

¹ See Heady, Earl O., Strand, E. G., and Seagraves, J. Productivity of Resources Used on Commercial Farms. USDA Tech. Bull. 1128. November 1955.

TABLE 1.—1954 value of resources used per man-year of labor and value of product per unit of labor and capital by type and economic class of farm in the Corn Belt¹

Type and economic class of farm	Amount of land per man-equivalent of labor (acres)	Capital per man-equivalent of labor (dollars)	Gross value of output per man-equivalent of labor (dollars)	Value of output per \$1,000 of capital (dollars)	Gross value of output per man-equivalent after deducting interest on capital ² (dollars)
Cash-grain farms:					
Economic class:					
I.....	261	72,132	14,475	201	10,862
II.....	224	56,621	9,889	175	7,059
III.....	193	39,132	6,139	157	4,182
IV.....	169	29,321	3,897	133	2,430
V.....	148	23,924	2,509	105	1,313
VI.....	101	14,327	970	68	254
Livestock farms:					
Economic class:					
I.....	211	54,168	21,201	391	18,493
II.....	194	45,426	10,250	226	7,979
III.....	178	33,452	5,755	172	4,082
IV.....	163	25,787	3,462	134	2,213
V.....	150	21,404	2,226	104	1,151
VI.....	111	13,645	937	69	254
All commercial farms.....	171	35,217	6,870	195	5,114

¹ Based on 1954 Census of Agriculture, Special Report: Cash Grain and Livestock Producers in the Corn Belt. U. S. Department of Agriculture, and U. S. Department of Commerce. Washington, 1956.

² Interest at 5 percent on capital shown in col. 2 subtracted from product per worker in col. 3.

MAJOR ADJUSTMENTS REQUIRED

If it is meshed to the growth trends in the national economy, Midwest agriculture, on the average, must shift to somewhat larger farms using more capital per worker and realizing more of the economies associated with modern farming techniques. Its labor force must shrink such that the capital per worker is increased to a level where labor earnings in agriculture more nearly approach those of other industries. Under the economic growth and full employment conditions of the last decade, there has been a strong trend to fewer farms, less labor in agriculture and more capital per worker. Continuance of full employment and nonfarm wage rates which greatly exceed labor earnings in farming will cause these trends to be maintained, perhaps at an even greater rate than over the past decade. However, these changes will be gradual, just as they have been in the past. With assistance, upward of 10 years will be required before the structure of Midwest agriculture, on the average, conforms closely to that needed in a wealthy economy where the consumer is relatively well fed and expresses, through the pricing mechanism, his preference that an increased proportion of resources be devoted to housing, recreation, health, education and similar items, with a smaller proportion devote to food.

Major shift in resource structure

In some agricultural areas, the adjustment problem is great because it involves both a major shift in type of farming and a change in the resource structure in agriculture. In the Midwest, the major change required is in the resource structure (i. e., the size of farms). Farms, now in economic classes IV, V, and VI especially, need to be large enough so that the amount of capital per worker allows a greater

value of output per person. Given demand prospects for the next two decades, it does not appear that major changes are required in the general type of farming over the region (such as shifting from wheat to grass in parts of the Great Plains or from cotton and cash crops to feed and livestock in parts of the Southeast). Since the problem of adjustment is largely one of farm size and resource structure, progress depends particularly upon the rate at which the agricultural labor force of the region adapts to current economic growth pressures. Consolidation of small, low-income farms can proceed only at the rate allowed by occupational migration of some farmers, in order that those remaining have an opportunity for expansion.

Specialization trends

Demand prospects and the soil and climate resources at hand indicate that Midwest agriculture should continue largely as a feed-livestock sector. There are isolated local areas where some adjustment may be required, particularly in the shift of land from row crops to less intensive forages. But, in general, these adjustments are minor and the general production pattern, with emphasis on sale of livestock and livestock products, will continue with a slightly greater emphasis from growth in population and national income.

But while the general pattern of production remains essentially the same, some fairly marked trends may occur in the degree of specialization between farms. On the side of commercial farms, larger and somewhat more product specialization can be expected. In line with the product and resource prices expressed in the market, technical developments such as multiple farrowing of hogs, bulk tank cooling of milk, improved rations and brooding facilities for poultry and others, will encourage farms in a balanced agriculture to be more specialized and to employ more specialized management. Agriculture will be highly competitive. In line with these trends and the cost advantages which relate to them, we might expect an increase in the number of dairy farms with 50-60 cows per man, broiler farms with 80,000-100,000 birds, and perhaps hog farms specializing in either the production of feeder pigs or market hogs. The ability of the farm to buy part of its labor input in prepared feeds and similar custom services will encourage the trend.

Fear is sometimes expressed that integration of farm production and processing services may give rise to highly specialized and large farms which will dominate the agricultural picture. However, as is pointed out later, the cost structure and the labor force of Midwest agriculture provides no particular advantage to this system of agriculture. In regions where it has developed, it is more a function of the capital problem and the existence of a migratory or low-wage labor, than of the cost structure.

OCCUPATION INFORMATION FOR ADJUSTMENT

Several obstacles serve to retard the rate at which Midwest agriculture has and will, in the absence of the proper assisting aids, adjust to economic change. One of these is lack of information and education on national economic outlook as it relates to farming. Too few farm youth and farm families, especially those with few resources and faced with continuous economic adversity if they remain on the

farm, realize that the trends initiated in the 1920's and resumed, after the obscuring forces of depression in the 1930's and war in the 1940's, during the 1950's will continue as national and per consumer incomes increase in future years. They have not been made sufficiently aware of the outlook; namely, that patterns of consumer preference under continued economic growth will place price advantage on nonfarm products, and, therefore, income advantage on the resources used in producing them. Given proper understanding of these conditions, some young persons who enter farming with too little capital for efficient operations would seek employment elsewhere, and would attain higher incomes and living levels in doing so. Provided with this information, some established farmers with insufficient capital would transfer out where they would not be faced with such intense economic adversity.

The educational services in rural areas are lacking in providing this type of vocational guidance; both for encouraging persons with sufficient capital and management skills to enter farming and for encouraging individuals lacking these assets to follow other pursuits. The price-cost squeeze and also drought in some areas over the last few years have caused a marked increase in the number of young families who have ceased farming operations and moved to industrial employment. Society does no favor for these families, by having them initiate farming operations only to find out later that they must transfer because their resources are too few and their incomes are too low. Provided with proper information on economic outlook and with vocational guidance indicating income prospects from the abilities and resources possessed, more young families could be guided into employment alternatives which provide greater real income; fewer would make false occupational starts in farming with the necessity of starting over again in another occupation. Relative to contribution in longer-run adjustment of agriculture to full employment and continued economic growth, lack of proper economic educational and vocational guidance is a major obstacle in many rural areas of the Midwest where vocational education and youth work has as a focus the return to farming. In most rural communities of the region, there are 2 or 3 boys for each 1 who can enter farming. Education generally is not geared to their needs. Also in a large part of the region, lack of concentrated industrial activity does not allow their occupational vision to be broadened, as in some other farming regions where a variety of nonfarm employment opportunities is at hand.

Capital to enter farming

Modern technology and high real-estate prices also present a formidable obstacle to, as well as a need for, adjustment. Land values have remained at peak levels, or have crept upward even while farm prices and income have been declining. This firmness, or even upward pressure, in land prices can be attributed to the tendency of firmly established farmers with sufficient capital to expand operations; to realize cost economies associated with modern machines and perhaps even to maintain incomes. The farmer with a modern power unit and the machines to go with it can, if he operates a unit of average acres and has underemployment of his machine capital, realize a larger marginal profit on an acreage added to his original holdings.

While product prices have moved down, the low marginal operating costs for an added acreage has caused land itself to have a price premium. But with high real-estate prices and the large outlay required for modern implements of farming, a capital problem exists for many young operators. Those who must begin as tenants need upward of \$10,000 for power, machinery, and operating costs. To have effective employment of their labor and realize incomes comparable with urban occupations, they need capital for livestock; with total capital requirements for comparable returns amounting to \$15,000 or more for an efficient tenant. The family ready for the ownership is typically faced with an outlay of another \$40,000 to \$50,000 for a 160-acre farm in much of the central Corn Belt. Hence, while the well-established operator with ample capital is encouraged, by current technology and perhaps by the price-cost squeeze, to expand his operations, the farmer with limited funds finds that high capital requirements and his own limited assets prevent operation of an amount of resources and a farm size allowing returns on labor and capital resources comparable with nonfarm rates. Lack of capital would not prevent adjustment to farms of a more efficient size and an improved ratio of labor to capital in the Corn Belt proper, for a sizable increase in rate of migration and decrease in farm numbers. A sufficiently large number of farmers have capital, or an equity base for obtaining credit, so that they can consolidate a "vacated" farm with their own. But frequently this addition is made by farms which already are large in acreage and in amount of capital per worker. Farmers with a small equity are more often prevented from expanding even though it is here that capital per worker is smallest and effective employment of labor is least. The problem of financing Midwest agriculture, with operations on a scale consistent with modern technology and under prospective prices for resources, promises to become an important one as current economic trends continue.

SIZE OF FARMS

The major adjustment required in Midwest agriculture is obviously that of farm size. It is through larger farms that the labor force will be decreased; the amount of capital per worker will be increased; and, if preferences of consumers are to be used for allocative purposes, the margin between product prices and costs will be widened.

The typical or modal farm unit of the Corn Belt still centers on the historic 160 acres established under homestead, preemption, and other acts used for original disposal of the public domain; although the trend is slowly to larger units. (See table 2.) This unit was efficient for the techniques and the relative demands and prices, between agriculture and other economic sectors, for the first half of the last century. But it is too small relative to the more recent technologies developed by public research institutions and private industry and relative to the consumer-placed premium on use of labor resources for more education, housing, health services, recreation and other nonfarm goods and services. Research studies show that machine and average costs per acre decline quite sharply up to about 240 crop acres for a corn-hog-beef farm in the Corn Belt.² While

² Heady, Earl O., et al. Farm Size Adjustments and Cost Economies for Farms of Different Sizes. Iowa Agricultural Experiment Station Bull. 428. May 1955.

there are slight economies beyond that size, they are unimportant in terms of profit per unit of crop product. Similarly, the research shows that farms of this size or larger are necessary if, on the average, the amount of capital per worker is large enough to give labor earnings comparable with nonfarm wage rates for skilled workers. Opportunity for expansion in farm size to this level exists because the labor supply and machine capacity on the average 160-acre farm are large enough to allow an increase of 50 percent in acres per farm.

TABLE 2.—*Distribution of commercial farms by size in acres for the Corn Belt, 1954*

Region of Corn Belt	Size group in acres							
	Under 30	30-69	70-139	140-179	180-259	260-499	500-999	Over 1,000
Eastern Corn Belt.....	7.9	14.4	32.7	14.5	16.4	12.1	1.9	0.2
Central Corn Belt.....	3.9	4.6	20.6	24.6	24.4	19.4	2.3	.2
Northern Corn Belt.....	2.8	3.8	21.0	23.8	24.3	20.3	2.8	.3
Western Corn Belt.....	3.2	3.6	13.3	20.8	21.4	27.7	7.7	2.3
Southern Corn Belt.....	3.5	7.0	24.3	16.4	21.8	21.8	4.6	.6
Total Corn Belt.....	4.4	6.9	22.5	19.7	21.4	20.3	4.0	.8

Effect of adjustment on family farming

Mention of size immediately gives rise to the question, Do these economic pressures and trends threaten to liquidate the family farm? The answer appears to be "no" in general, although there is a prospect that integration of production and acquisition of large holdings by a few persons with the required assets will increase slightly the number of supersized farms. But the family farm can and will continue as the foundation of Midwest agriculture. The type of adjustments outlined above need not undermine it. Generally, they would strengthen the position of more family farms in the sense of providing returns on resources used in farming more nearly comparable to those used in other industries. A strong system of family farming is unlikely to persist over time, unless it can provide favorable earnings on resources. Research studies show that favorable earnings on resources are indeed possible for family farms operating with sufficient capital and on a sufficient scale in the Midwest.³ Modern machinery has generally meant that the labor of the farm family can be used to operate somewhat more acres, often with a reduction of hired labor even for seasonal operations such as harvesting. If family farming is denoted by the proportion of the total labor input furnished by the family, the strength of the family farm has not declined with a reduction in the labor force and with some increase in farm size. The percentage of the total labor input represented by hired workers has declined considerably over the past two decades. There are localized areas (California, for example) where an increase in nonfamily farms has been great in recent decades. However, this does not appear to be the near-term prospect for the commercial agriculture of the Midwest, nor the necessary result of adjustment to bring about balance in agriculture of the region.

³ Cf. Wilcox, W. W., Efficiency and Stability of American Agriculture, *Journal of Farm Economics*, vol. 30; Heady, Earl O., and Strand, E. G., Efficiency Within American Agriculture, *Journal of Farm Economics*, vol. 37.

The nature of cost economies associated with farms of different sizes will determine the extent that prospective adjustments to lessen agricultural imbalance will strengthen or weaken the position of family farms. The family farm structure would be threatened if scale or cost economies extended over large acreages. There is empirical evidence, however, that this is not the case for Midwest agriculture.⁴ Given the fixed costs associated with modern machinery, cost advantages can be quite large for some further expansion by farms of small or modal size. However, because variable costs in farming eventually dominate total costs, costs reductions per acre eventually become minute as acreage continues to expand with a given power and machine unit. When this acreage has been reached, no great cost advantage is realized by a larger unit. Generally, with this acreage representing full utilization of labor and machine services in particular seasons of the year, further expansion in size must come from duplication of machine units. Since the limit on crop acreage for a 2-plow tractor is about 240 acres in the Corn Belt, costs will not be substantially, if any, lower on a 480-acre farm which uses a 3-plow tractor or two 2-plow tractors. When both use the same crop techniques and have approximately equal variable costs per acre, a farm with either a 3-plow or two 2-plow tractors has no great advantage over a farm with a single 2-plow tractor which is used fully and effectively. With the tendency of per-unit costs to approach a minimum floor, as they fall to the limit of per-acre operating costs, there is no particular disadvantage for a family farm of efficient size. But, at the same time, there is no particular cost disadvantage for larger farms. Historically, it has been the complex of market uncertainty, capital limitations, and related institutional factors which have restricted the size of the farm in the Midwest. In the absence of large-scale corporation or equity financing schemes in agriculture, this will continue to be the case. Perhaps any trend to larger than family farms will result more from the pattern of capital or asset distribution than from scale or cost advantages.

The large hired-labor farm with a big force of migratory workers does not threaten to become the dominant unit in Midwest agriculture. Reasons, in addition to the nature of costs, include the lack of extreme seasonal labor requirements and cheap migratory labor. The problem is more nearly one of capital availability so that many farms of small and modal size can increase to an efficient family size, rather than one of corporate or other tendencies which will eliminate family farming.

ADJUSTMENT IN RELATION TO OUTPUT

The orthodox suggestions for adjusting agriculture—the reduction in the size of the labor force and an increase in the amount of capital per worker—is a long-run solution. It is not, however, a solution to the immediate or short-run problem of surplus and low resource earnings for many farm people. This is particularly true for the Midwest where farming is on a commercial basis with relatively less part-time and subsistence farming. Given its commercial structure and the availability of productive soils, removal of some part of the labor force does not result in withdrawal of land and certain capital items from farming. The long-run directional accuracy of a reduced labor

⁴ See Heady, Earl O., et al., *ibid.*

force in agriculture is not in question; the question is more nearly whether these adjustments will alleviate the aggregate surplus problem over the next decade or so.

Progress toward an objective of an agricultural labor force consistent with the techniques and relative demands of the economy may well accentuate the near-term surplus of farm products, particularly for Midwest agriculture. Available techniques would allow a reduction by a third or more in the number of farms over the major crop-producing sectors of the Midwest. Farms of average and modal size, but not farms which already are large, in corn and wheat areas could expand acreage by about 50 percent on the basis of the existing surplus capacity of labor and machinery. Given the possibility of this adjustment potential, the prospect is this: The net effect of further reduction in the total labor and in farm numbers and consequent increase in farm size will be to augment agricultural output for several years before it alone causes output to diminish. Families leave farming mainly because of such natural causes as age and health and because of such economic forces as comparative monetary or real income. Farm consolidations, arising as people leave because of economic forces, present opportunities for a continued upward trend in output for these reasons: Relative income disadvantage is greatest for operators who possess the small amounts of capital and managerial skills. As they leave agriculture, their farm can be consolidated by a neighbor who generally has a brighter farming outlook. With greater managerial ability and capital, he can operate the added acreage with the same efficiency as his previous unit and often with greater efficiency than the operator who leaves.

Illustrating these possibilities are the results of an Iowa study on Marshall silt loam, an area about average for the Corn Belt. Farms consolidated typically are operated by remaining farmers with only a slight increase in labor and capital of their own, the total employed on the combined units being less than for the separate units. Remaining operators apply more yield-increasing techniques and have higher yields than those who leave agriculture. Most remaining farmers add very little machinery or only special machines; they do not duplicate the machine units of those who relinquish the land.

These same possibilities exist over wide areas used for grain crops which are currently in surplus. Given the current surplus capacity of labor and machine capital, the farm labor force might be decreased by a third in the Midwest, without causing a reduction in field crop output. And the accomplishment can be made with less total capital than is now used in these areas. Capital now in the form of surplus machines can be transferred into fertilizer and other capital forms representing improved technology, with further expansion in output.

RELATIVE GAINS TO GROUPS OF FARMERS

Progress toward a long-run goal of a reduced labor force and farms operated on a scale to give favorable resource returns can represent direct short-run gains and losses to three groups of farmers in the region. Persons who possess insufficient capital and operate inefficient units can transfer from farming to employments of higher real income and increase their welfare. Persons who remain in agriculture on consolidated and larger farms can, if they intensify tech-

niques and expand to reduce unit costs sufficiently, gain from a reduction in the labor force accordingly. However, in a third group are persons who both remain in agriculture and are unable to expand farm size. Their relative welfare may be depressed further if product prices continue to decline relatively because of continued growth in output (from new innovations and further technological improvements resulting from consolidation). This group includes mainly families unable to adjust because of age, health, skills, capital limitations, lack of knowledge, and similar considerations. The typical farmer of 50 years or older perhaps falls in this group.

Expanding small farms

The greatest adjustment need is for size expansion by farms which are too small to provide sufficient income and which have a great underemployment of labor. From the standpoint of increasing income and labor productivity, it would be desirable to have two small farms in economic classes IV, V, and VI, consolidated; rather than for a large farm to annex a small one. However, two difficulties stand in the way of this consolidation pattern. One is the spatial characteristics of the farm. Generally, it needs a relatively contiguous acreage for consolidation. More often a small farm is consolidated with a contiguous large one, rather than with another small unit at some distance. But the main difficulty is that of capital. Operators of larger units more often have the capital for adding acreage. Families with few assets and a small acreage less seldom can bid for consolidation, even though their labor is not fully utilized. In industrial areas, they more often turn to part-time farming.

Part-time farming opportunities

Part-time farming characterizes a transition from specialization in agriculture to industrialization. It provides families on small units an opportunity to take one step in occupational migration, if they lack the capital for expansion and their values are geared to farm life and the particular community. Part-time farmers or farm families often have incomes from combined sources which are greater than their neighboring full-time commercial farmers.

Part-time farming is less complex than any other type of occupational migration facing agriculture; since it does not require the breaking of home ties and the adjustment of value systems to those of urban communities and other geographic locations. The transfer of labor to industry might be quite simple if all farm families in the region had ample opportunity for older members to enter nonfarm employment through part-time operations. (Generally, younger persons, or those just entering the labor force are more flexible and adaptable for moving to occupations at other locations.) However, this opportunity is not equally spread over the Midwest. Both the opportunity for and the trend to part-time farming are greatest in the eastern part of the region where population and industry are concentrated. In the tier of States from eastern North Dakota to eastern Kansas (including much of Minnesota and Iowa) and in the southern part of the region (including the southern parts of Iowa, Illinois, Indiana, and Missouri), opportunities for occupational migration through part-time farming are relatively scarce. The need for employment information and aids is particularly important in

these areas because of the greater difficulty in the transfer to non-farm employment when migration must be geographical as well as occupational.

Industrial opportunity and spatial advantage

Adjustment of agriculture in the sense of increased out-migration of labor and more farms which use a greater proportion of capital to labor would be most easily attained if there were favorable economic development or industrialization opportunities in each local community. Transfer to nonfarm employment would then be simple for most persons: They would have ample opportunity to explore the range of skills required and the wage alternatives; they would not need to move far from their lifelong acquaintances and little or no costs would be involved in moving. But it is the lack of local industrial development and nonfarm job opportunities which makes agricultural adjustment difficult in the part of the Midwest mentioned above. Obviously, the problem of occupational migration is more difficult for a young farmer in southern Iowa, who might have to move to another State, than for one in northern Ohio who might find employment in the same county. Again, this obstacle might best be overcome through more complete information and employment services, perhaps coupled with some direct monetary assistance for migration, in areas where industrial development is slow or nonexistent.

ADJUSTMENT PROBLEMS FACED BY FARMERS OF THE SOUTHEAST

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The Southeast, as used in this report, includes Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. These 9 States consist of a total land area of approximately 264 million acres. They comprise 14 percent of the farmland area, 13 percent of the total cropland, and 32 percent of all the farm people of the United States.

FARM GROUPS IN THE SOUTHEAST

The Joint Economic Committee of Congress in setting up its study of adjustment problems faced by commercial farmers of the United States defined "commercial" farmers as "the 35 percent of all farm operators who produce about 85 percent of the marketed farm products." The census of agriculture classifies farms as commercial, part-time, and residential. Commercial farms are further divided into six economic classes. For purposes of this report, farms in economic classes I through IV are referred to as "large commercial farms." Those in economic classes V and VI are referred to as "small commercial farms."

Of the 1.5 million farms in the Southeast in 1954, 25 percent were in economic classes I through IV, 37 percent were in economic classes V and VI, and 38 percent were part-time and residential farms, table 1. Large commercial farms in the Southeast made up only 25 percent of all farms as compared to 44 percent for the United States.

TABLE 1.—*Comparison of southeastern farms with the United States by percentage of all farms, cash sales, and average sales per farm, 1954*¹

Class	Southeast			United States		
	Percentage of all farms	Percentage of all cash sales	Average sales per farm	Percentage of all farms	Percentage of all cash sales	Average sales per farm
	<i>Percent</i>	<i>Percent</i>	<i>Dollars</i>	<i>Percent</i>	<i>Percent</i>	<i>Dollars</i>
Large commercial.....	25	75	7,315	44	91	10,720
Small commercial.....	37	20	1,372	26	7	1,415
Part-time and residential.....	38	5	299	30	2	293
Total or average.....	100	100	2,460	100	100	5,188

¹ Source: 1954 census of agriculture.

Large commercial farms comprised 51 percent of all the farmland in the Southeast, and averaged 216 acres in size, table 2. Small com-

¹ The writer is indebted to B. F. Alvord, W. F. Gregory, B. T. Lanham, Jr., and J. H. Yeager for comments and criticisms of earlier drafts of this manuscript, and to E. E. Mansfield for research assistance.

mercial and part-time and residential farms were much smaller. Cash sales per acre of farmland varied with class of farm. Only on the large commercial farms were sales sufficient to provide an income competitive with nonfarm employment.

TABLE 2.—Percentage of all farms, all land, average size of farm, and sales per acre of farmland, by class, Southeast, 1954¹

Class	Percentage of all farms	Percentage of all farmland	Average size farm	Sales per acre of all farmland
	<i>Percent</i>	<i>Percent</i>	<i>Acres</i>	<i>Dollars</i>
Large commercial.....	25	51	216	34
Small commercial.....	37	28	76	13
Part-time and residential.....	38	21	56	5
Total or average.....	100	100	106	23

¹ Source: 1954 census of agriculture.

ADJUSTMENTS IN AGRICULTURE IN THE SOUTHEAST

The adjustments that have occurred and that are expected to occur in the Southeast in the future fall into two groups. One has to do with land and the other deals with farm people. Adjustments that occur in either group are interrelated with those of the other.

Some of the problems related to land use in the Southeast are directly related to past and present public policies and programs affecting agriculture. Acreage allotments of certain basic crops have become smaller each year. This has affected land use through scale of operation and combination of enterprises. It has led to a continuous search for new ways to use land taken out of basic crops. Soybeans and grain crops have been planted, forage crop acreages have expanded, livestock have been added in an attempt to replace the income lost from reduced acreages of basic crops.

Complete answers on new pasture plants and fertilization and full information on kinds of livestock to use under given conditions or the combinations to be made with varying acreages of basic crops are difficult to obtain. Thus, in recent years many farmers have shifted from one class of livestock to another, or have shifted numbers of livestock on hand from year to year. The net results of the adjustments and shifts that have occurred in the Southeast over the past 20 years are about as follows: Hog numbers have changed little; however, dairying has expanded to about supply the expanding fluid milk market, but has expanded little in terms of manufacturing milk. Broiler production has increased severalfold without much increase in egg production. Beef cattle have increased sharply in numbers and have been improved in quality. Farm woodland areas, while not expanding greatly, have improved and given much more production. These changes often occurred more as a result of a search for additional sources of income rather than long-time adjustments in agriculture. This has had varying effects on land use. No long-term policy of land use and adjustment has developed, however, since there has been no long-time policy or program to serve as a guide for its development.

Many problems in connection with size of farms, size and shape of fields, selection of proper crops for specific types of land, proper man-

agement of woodlots, and use of recommended kinds and amounts of fertilizer still remain despite the many adjustments that have been made. The adjustments needed in land use in the Southeast are somewhat different for each of the three major classes in which farms have been divided. Large commercial farms not only have a larger acreage of land per farm, but this land is used more efficiently than in the other two groups. In all three cases, output per acre of land remains relatively low.

Adjustment problems related to people are also closely related to Government programs. Production-control programs with cotton, peanuts, and tobacco have divided a decreasing allotment base among a large number of farms. This has encouraged farm people to stay on the farm. The problems with people relate to number on farms, age of farm operators, their education, tenure, and the goals of farm families.

Large commercial farms generally are operated with a higher degree of managerial ability and have made more widespread adjustments. Small, commercial farmers have been more inclined to seek off-farm employment and have moved away from the farm in large numbers. Part-time and residential farmers have tended to adjust in two directions, one toward off-farm employment, and the other in the use of funds received from off-farm employment to make adjustments on the farm. Some of these adjustments have been only for home improvement, others have been to improve the production of items for home use, while still others have been to increase total farm output and sales.

Average cash sales of the large commercial farm group are hardly large enough under present cost conditions to return an adequate level of living to the families involved. In order to avoid adding to output, this group needs to make adjustments to lower costs as far as possible. Assistance in farm planning and budgeting should be made available to this group. The small, commercial farm group had average cash sales of only \$1,400 per farm. While many farms in this group had off-farm employment, such income had to be lower than their farm sales in order for them to be classed as commercial. This would mean that their total gross income per farm was under \$2,800. With this low gross income, costs could not be low enough to provide adequate net income for these families. The only improvement they could make would have to come largely from added farm sales. This would be inconsistent with the present farm supply-demand situation. The alternative for this group is to seek additional off-farm employment or leave farming entirely. For many, this would mean a shift from small commercial farms to a part-time or residential status.

DESCRIPTION OF FARMING IN THE SOUTHEAST

Of the 264 million acres of land area in the Southeast in 1950, 21 percent was classed as available cropland, 12 percent as nonforested pasture and grazing land, 56 percent as forest and woodland, 6 percent as special use, and 5 percent as miscellaneous and other uses.² Of the total woodland in the Southeast, only 52 percent is farmer owned. The remainder is owned by Federal, State, county, and city government, wood-using industries, and other industries and individuals.

² Wooten, H. H., Supplement to Major Use of Land in the United States, USDA Technical Bulletin 1082, BAE, USDA, Washington, D. C., September 1953.

Total land in farms increased from 161 million acres in 1935 to 164 million acres in 1954. Although total farmland area remained relatively constant during this period, cropland harvested decreased 24 percent, and pasture acreage increased 37 percent. Cropland used for major crops decreased from 42.7 million to 32.5 million acres. Of the total farmland in 1954, 42 percent was open land.

Wooten³ estimated there were 72 million acres of land available for crops or pasture in the Southeast in 1950. About 55 million acres were used for crops, harvested, fallowed, conservation crops, or idle land. About 17 million acres were used for pasture. Of the 72 million acres, 84 percent were estimated to be suitable for full-time cultivation.

The pressure of farm people on the land in the Southeast is indicated by the fact that this area had an average of 1 person for each 23 acres of total farmland in 1954. Farm population in the Southeast decreased 29 percent from 1930 to 1950, as contrasted to a 40-percent national decrease. Estimates are that the Nation's farm population will decrease a third by 1975. If population in the Southeast declines by an equal percentage during this period, this would indicate approximately 2.5 million fewer farm people.

As additional people leave the farm, operators of large, commercial farms will find it more difficult to employ seasonal help when needed. Much of the seasonable labor needed on large commercial farms is now supplied by surplus labor on small commercial, part-time, and residential farms. This loss will speed up adjustments in types of farming and in the amount and kind of machinery used on large commercial farms.

The Southeast had 2.1 million farms in 1935 and only 1.5 million in 1954. There was a decrease in farm numbers of 584,000. This decrease was not evenly divided over the 20-year period. Seventy-five percent of the shift occurred in 2 periods—1935-40, 40 percent, and 1950-54, 35 percent. Of the total decrease, 370,000 were white farmers and 214,000 nonwhite farmers. Thirty-seven percent of all nonwhite families left the farm between 1935 and 1954, while 24 percent of the white families left.

There was a net decrease of 205,000 farms in the Southeast from 1950 to 1954. The net decrease in all farms amounted to 12 percent. Of this net decrease, 64 percent occurred on small commercial farms and 36 percent on part-time and residential farms. There was an increase of 75,000 in large commercial farms. This was a gain of 24 percent. The shift from a lower to a higher economic class by 75,000 farmers denotes some of the adjustments farmers have made. The small commercial and part-time and residential farms accounted for only 25 percent of the cash farm sales in 1954. In 1950, these same groups accounted for 34 percent of all farm sales. A decrease in farm numbers and an increase in farm size permitted many shifts to be made in the use of land and other farm resources, and it resulted in higher per capita farm incomes.

In 1935, 52 percent of all farmers in the Southeast were tenants. By 1954, this percentage had declined to 31. The decrease in total tenants amounted to 57 percent. There was a 56-percent decrease in

³ Wooten, H. H., Major Uses for Land in the United States, USDA Technical Bulletin No. 1082, September 1953.

sharecroppers. However, the percentage that sharecroppers were of all tenants did not change over this 20-year period. In 1935, 45 percent of all tenants were sharecroppers; in 1954, this percentage was 46 percent. The average farm operator of the Southeast was 50 years of age in 1954. Only 15 percent of the farm operators were under 35 years of age, while 61 percent were 45 years of age or over. Most of the operators of 45 and over would have difficulty finding off-farm employment with industry.

Some of the problems of farmers in the Southeast are closely related to size of farm. Of the 1.5 million farms in 1954, three-fourths were farms of less than 100 acres. The distribution by size was:

Range in size:	Percent of all farms
Under 100 acres.....	73.4
100 to 139 acres.....	9.3
140 to 179 acres.....	5.3
180 to 219 acres.....	3.2
220 to 259 acres.....	2.0
260 to 499 acres.....	4.3
500 to 999 acres.....	1.6
1,000 acres or larger.....	.9

Since 1935, most of the effort to increase farm size has been by buying additional land as other farmers left the farm. This effort provides only a partial solution to the problem of size. The shifts to making more land available for crops and pasture on farmland now within the farm boundary will assist in correcting many of the problems of size and shape of field and will permit more complete utilization of farm machinery and equipment.

Another measure of farm size in the Southeast is cropland harvested. Seventy-six percent of all farmers of this area harvested less than 50 acres in 1954. In addition, 12 percent had no harvested cropland; however, some of these were large farms devoted to grazing. The distribution of farms by acres of cropland harvested in 1954 was as follows:

Acres of cropland harvested:	Percent of all farms
None.....	12.1
1 to 9 acres.....	27.0
10 to 19 acres.....	22.2
20 to 29 acres.....	14.1
30 to 49 acres.....	12.6
50 to 99 acres.....	8.2
100 to 199 acres.....	2.6
200 or more.....	1.2

In 1954, the average farm of the United States consisted of 242 acres as compared to 106 acres in the Southeast. The average United States farm in 1954 had cash farm sales of \$5,153 compared to \$2,469 for the Southeast. The Southeast had an income per farm equal to 48 percent of the national average. The average value of land and buildings for the United States was \$20,405 per farm or \$84.25 per acre in 1954. The Southeast had an average value of land and buildings of \$9,294 per farm or \$87.66 per acre.

Total sales of farm products in the Southeast amounted to an annual average of \$1.2 billion for the period 1935-39. This had increased to an annual average of \$5 billion for the period 1950-54 and

for later years. In terms of United States cash farm sales in 1954, the Southeast sold 34 percent of all forest products sold from farms, 33 percent of the cotton and cottonseed, 87 percent of the peanuts, and 92 percent of the tobacco.

In 1935-39, 72 percent of the Southeast's cash farm income was from crops and 28 percent from livestock and poultry. Of the total cash farm income, 28 percent was from cotton and cottonseed and 20 percent from tobacco. In the 1950-54 period, 65 percent of the cash farm income was from crops and 35 percent from livestock and poultry. Cotton and cottonseed accounted for 20 percent of the total and tobacco, 21 percent.

The percentage of income from cattle and calves increased from 6.3 percent of the total in 1935-39 to 8.5 percent in the 1950-54 period; hogs increased from 5.4 to 6.7 percent; dairying from 8.2 to 8.6 percent; and poultry from 6.1 to 9.6 percent. The increase in livestock production was associated with an increase in pasture acreage from 46 million acres in 1935 to 63 million acres in 1955.

A comparison of the percentages of farms by economic class, by total sales, and by average sales is shown in table 3 for the Southeast and for the United States.

TABLE 3.—Comparison of farms of the Southeast with the United States, by economic class, percentage of total sales, and average sales, 1954¹

Economic class	Southeast			United States		
	Percentage of all farms	Percentage of all sales	Average sales per farm	Percentage of all farms	Percentage of all sales	Average sales per farm
Large commercial:	<i>Percent</i>	<i>Percent</i>		<i>Percent</i>	<i>Percent</i>	
I.....	0.8	20.0	\$59,645	2.8	31.3	\$57,968
II.....	2.4	14.3	14,628	9.4	26.9	14,887
III.....	6.5	18.1	6,863	14.8	20.5	7,193
IV.....	15.5	22.7	3,593	17.0	12.1	3,705
Small commercial:						
V.....	21.0	15.6	1,826	15.9	5.7	1,852
VI.....	15.5	4.8	757	9.7	1.4	756
Total commercial.....	61.7	95.5	3,806	69.6	97.9	7,305
Part-time.....	14.1	3.5	613	12.0	1.5	621
Residential.....	24.2	1.0	70	18.4	.6	73
Total or average.....	100.0	100.0	2,460	100.0	100.0	5,188

¹ Source: 1954 Census of Agriculture.

Acres per farm decreased with each change in economic class. In the large commercial farm group the average farm in economic class I was 1,381 acres compared to 181 acres in economic class IV. Small commercial farms averaged only 89 and 72 acres for economic classes V and VI, respectively. Farm size in both dollar sales and acreage were closely related. Some farms have been able to increase dollar sales on small land areas through an integrated system with broilers and laying hens, and to some extent with truck crops, hogs, and cattle. Even with some changes in systems of ownership of production items the Southeast is still an area of family farms.

COTTON

From 1930 to 1954, the number of farmers growing cotton decreased from 1,119,000 to 560,641. In 1930, 56 percent of all the farmers in

the Southeast were growing cotton. By 1955, only 36 percent were growing cotton. From 1930 to 1954, there was a reduction in total acreage of cotton harvested from 15.9 million to 6.1 million acres. On the average farm, the reduction in acreage harvested amounted to 24 percent—a reduction from 14.2 to 10.8 acres. There was an increase in cotton produced on the average farm from 6.1 to 7.5 bales.

Cotton acreage has declined from a high of approximately 16 million acres in 1930 to a low of 4.2 million acres planted in 1957. Twenty-three percent of the allotted acres went into the reserve in the Southeast in 1957 compared to 17 percent for the Nation. By States, the sign-up in the Southeast varied from 12 percent of the total allotment in Tennessee to 41 percent in Florida.

Of the 560,000 farmers producing cotton in 1954, 32 percent were on large commercial farms, table 4. Half of all the farmers producing cotton in the Southeast were on small commercial farms. This group accounted for only 35 percent of total production.

TABLE 4.—Percentage of farmers producing cotton, percentage of cotton acreage harvested, and bales harvested by class, Southeast, 1954¹

Class	Percentage of all farmers producing cotton	Percentage of all acres of cotton harvested	Percentage of all bales of cotton harvested
Large commercial.....	32	54	60
Small commercial.....	51	39	35
Part-time and residential.....	17	7	5
Total.....	100	100	100

¹ Source: 1954 census of agriculture.

Acres of cotton harvested, bales harvested, and lint yield per acre for each class of farms are shown in table 5. In most cases, the acreage of cotton per farm was too small for full use of machinery for production purposes. A still smaller number of farms produced sufficient bales of cotton to justify the ownership of a cottonpicker for individual farm use.

TABLE 5.—Number of farms producing cotton, average acres of cotton harvested, bales produced, and lint yield per acre by class, Southeast, 1954¹

Class	Farms producing cotton	Acres of cotton per farm	Average number of bales of cotton produced per farm	Lint yield per acre
	<i>Number</i>	<i>Acres</i>	<i>Bales</i>	<i>Pounds</i>
Large commercial.....	179, 185	18.3	14.1	370
Small commercial.....	286, 066	8.3	5.2	301
Part-time and residential.....	95, 390	4.5	2.3	245
Total or average.....	560, 641	10.8	7.5	336

¹ Source: 1954 census of agriculture.

Within each class there was a large variation in acres of cotton harvested, bales harvested, and lint yield per acre. For instance, within the large commercial farm group, economic class I averaged 145 acres of cotton harvested, 125 bales produced, and a lint yield of

413 pounds per acre. Farms in economic class IV averaged only 13 acres of cotton harvested, 9.7 bales, and a lint yield of 358 pounds per acre.

In all States of the Southeast, the small cotton acreage per farm has tended to delay complete mechanization. Yet, southeastern farms are becoming more mechanized. From 1945 to 1955 the number of tractors on farms increased from 190,000 to 699,000. The percentage of the cotton crop produced with tractor power increased from approximately 25 percent in 1947-48 to above 70 percent in 1954. This would still leave the Southeast as the section of the Nation most dependent on animal power and hand labor, but indicates it is the section which made the greatest percentage increase in the use of tractor power during the 7-year period. Langsford⁴ estimated that 23 percent of the total United States cotton crop was machine harvested in 1955. In the Southeast, about 25 percent of the cotton in the Mississippi Valley States was machine harvested, but only about 2 percent in the remainder of the area. Further expansion of pickers on farms will likely be delayed until a smaller-sized picker is made available and until weed and grass control is further developed by chemical or mechanical means.

TOBACCO

In 1930, 1.7 million acres of tobacco were planted, as compared to 1.4 million in 1954. Tobacco made up 3.4 percent of all crop acres in 1930 and 3.5 in 1954. Tobacco accounted for 19.5 percent of the total cash farm income in the period 1935-39, 20.6 in the 1950-54 period, and 22.7 percent in 1955. Tobacco sales accounted for 57 percent of all cash farm sales in North Carolina, 46 percent in Kentucky, and 31 percent in South Carolina. In all other Southeastern States tobacco sales accounted for less than 20 percent of all sales.

Forty-two percent of all farms of the Southeast grew tobacco in 1954. The variation in the percentage of all farms growing tobacco by class was as follows:

Percentage of all farms in each class growing tobacco

Class:	
Large commercial.....	65
Small commercial.....	51
Part-time and residential.....	15
<hr/>	
Average of all.....	42

The large commercial farms made up 44 percent of all farms growing tobacco, table 6. This group produced 70 percent of all the tobacco and averaged 5 acres of tobacco per farm. The fact that a fairly high percentage of all farmers grew tobacco under Government controls has kept the acreage so distributed that a small percentage of the farms do not account for a high percentage of total production.

⁴ Langsford, E. L., *Mechanization in Cotton's Future*. Proceedings, 10th Annual Cotton Mechanization Conference, Atlanta, Ga., August 1956.

TABLE 6.—Percentage of all tobacco-growing farms, acreage harvested, pounds harvested, and average acreage per farm, by class, Southeast, 1954¹

Class	Percentage of all tobacco growing farms in each class	Percentage of total acres of tobacco harvested by each class	Percentage of total pounds of tobacco harvested by each class	Average number of tobacco acres per farm
	Percent	Percent	Percent	Acres
Large commercial.....	44	68	70	5.0
Small commercial.....	43	28	26	2.1
Part-time and residential.....	13	4	4	.9
Total or average.....	100	100	100	3.0

¹ Source: 1954 census of agriculture.

Bishop⁵ reports that a family of 2 adults and 2 children of working age can produce about 6 acres of tobacco per year. This number of acres would supply an income to the family comparable to what the operator might earn in off-farm employment. Only a part of the large commercial farms in the Southeast have an allotment of tobacco of 6 acres or more.

SUMMARY AND CONCLUSIONS

The Southeast with its wide range of soil and climate can grow many crops and kinds of livestock. As the allotted acreage of cotton, tobacco, and peanuts have become smaller, farmers have attempted to replace this loss with other crops or with livestock or with trees. This has led the Southeast to plant more and more feed crops and pasture, and to use more livestock. However, the use of livestock, with present levels of production, has not been a profitable substitute for the high margin crops like cotton, tobacco, and peanuts on many farms.

Large commercial farms make up 25 percent of all farms in the Southeast. They include 51 percent of all the farmland and produce 75 percent of all the products marketed. Within this group is found 32 percent of all farmers who plant cotton; they have 54 percent of all acres of cotton harvested, and produce 60 percent of the cotton crop. They averaged 18.3 acres of cotton harvested per farm in 1954 and produced an average of 370 pounds of lint per acre. Large commercial farms also account for 44 percent of the farms growing tobacco; they plant 68 percent of the tobacco acreage, and harvest 70 percent of the crop. This group of farms also accounts for the production of most of the truck crops and fruits and nuts, much of the livestock and livestock products produced, and of woodlot sales.

Large commercial farms have made many adjustments over the past 2 decades. In many respects, these farmers have been able to make adjustments because they were on farms above average in size, above average in general fertility, were generally adaptable to livestock, and were operated by farmers who had adequate resources for making changes and who were above average in managerial abilities and skills. Most of these operators were able to finance farming adjustments out of past savings, current incomes, or credit obtainable through well-established credit institutions. They were able to make

⁵ Bishop, C. E., Henry, W. R., and Finkner, A. L., Underplanting Tobacco Allotments, North Carolina State College A. E. Information Series No. 42, March 1955.

shifts and adjustments about as rapidly as was technically feasible.

Some of the farms in this group have shifted away from the production of controlled crops. Others continue to produce cotton, tobacco, and peanuts. Acreage control programs have tended to slow down adjustments on some farms within this group. In the absence of control programs many of these farms would increase their acreage of basic cash crops.

Small commercial farms account for 37 percent of all farms; they comprise 28 percent of the farmland, and produce 20 percent of the marketed farm products, and average 76 acres per farm. Their cash farm sales average about \$1,400 per farm. Within this group is 51 percent of all the farmers growing cotton. They harvest 39 percent of the cotton acreage and 35 percent of the cotton crop. In 1954, they harvested an average of 8.3 acres of cotton per farm with an average lint yield of 301 pounds per acre. This group contained 43 percent of the farms growing tobacco. They harvest 23 percent of the tobacco acreage, and 26 percent of the total crop.

Small commercial farms have depended most on cash crops. Because of their small farm size, they have made little headway in the production of livestock. Many of the farmers who have moved away from the farm over the past two decades have been from this group. Indications are that this group will continue to leave the farm if economic conditions are such that they can find employment. Within this group are many tenant farmers, many nonwhite farmers, and many farmers with limited managerial ability.

Small commercial farms are faced with the need of making several different types of adjustments. Some need to require more land, make better use of present land, and make other adjustments that would enable them to rise to a higher economic class. They would benefit by farm programs that would guide them in this direction. Some of this group are making adjustments toward leaving the farm. They are in need of public programs that would assist them in this transition. Still others in this group have little desire to change and will continue to be low in farm production.

The third group of farms consists of part-time and residential farms. This group accounts for 38 percent of all the farms in the Southeast. It includes 21 percent of the farmland and produces 5 percent of the farm products marketed. Farms in this group average only 56 acres of land per farm and produce about \$5 worth of sales per acre of land operated. Seventeen percent of all farms producing cotton are classed as part time and residential. This group harvests 7 percent of the cotton acreage and 5 percent of the total crop. They averaged about 2.3 acres of cotton per farm in 1954 with a lint yield of 245 pounds per acre. This group also accounts for 13 percent of all farms growing tobacco. They harvest 4 percent of the tobacco acreage and 4 percent of the total crop.

The adjustment problems faced by part time and residential farms are often quite different from those of commercial farms. Many of these farmers carry their present designation because of the location of their farm near industrial areas where they have full-time or part-time employment. Their location has given them an advantage over more distant farmers.

Part time and residential farms add little to total agricultural output at the present time. Yet they are a group who supply a great

potential. Public programs should be encouraged that will enable this group to improve its present status without increasing its agricultural output greatly in a short period of time. This group needs guidance in making adjustments to meet longtime production goals.

Many changes have occurred in the past 20 years in the agriculture of the Southeast. Yet, the lag of production methods behind proved knowledge, and failure of an overpopulated agricultural area to utilize fully all of its available resources are difficult to explain. This is best understood when looked at from the light of the three distinct groups of farmers who live in the Southeast. The Southeast has not one, but several agricultural problems. They are problems of not only farmland but also of farm people. Consequently, not one, but many adjustments are needed. In turn, this would imply that there is a need for not one, but several Government policies and programs. They should be programs that provide a minimum of restrictions. They should provide aids in the shifts and transition from agricultural employment to nonagricultural, and they should provide long-time goals on the needs of agricultural products and plans for reaching these goals. There is a need for the further development of credit facilities and of lending policies and procedures that will permit the lender's capital to be fully utilized in financing needed adjustments on individual farms. Repayments should be geared to returns and provide for a transition period. Perhaps, the two major obstacles holding back the Southeast's rate of progress in making needed farm adjustments are (1) the individual farmer, his resources, and his abilities, and (2) the current capital market. Most of the responsibility for overcoming these obstacles must be borne by the farmer himself. This, however, does not lessen the responsibilities that research, educational, credit, and other service institutions have to farmers.

Most of the changes that will occur in the agricultural economy of the Southeast in the years ahead will call for major adjustments in farm size, organization, operation, and management. Such adjustments will require more capital than past or present systems of farming. The use of mechanized farm equipment should continue to expand. Material increases in production and income for farm people of the Southeast depend largely upon (1) providing more land, livestock, machinery, fertilizer, and other capital items per worker, and (2) opportunities for nonfarm work for those who wish to leave the farm.

If the job facing southeastern agriculture is to be done, those who remain in farming must become larger in size, more commercial, more highly mechanized, and more efficient. This raises important public policy issues. One of the most important is whether our future policy programs should be devised to make it easier for farm people to choose between continuing in agriculture or accepting employment in other sectors of the economy. Thus far, policies that apply to farm people have emphasized measures that have attempted, though without much success, to increase incomes of farmers on farms. To be effective, policy programs must be long-run programs based on long-run objectives and should encourage the transfer of land, labor, and other resources into those areas, farm or nonfarm, where net incomes could be maximized. To effect rational transfer of resources, information

must be made available to resource owners, and capital must be available to finance the transfer.

Farmers of the Southeast today find themselves in different situations with respect to the kind of adjustments they can make on their individual farms and the alternatives which are available to them. This is due to variations in soils, topography, and climatic conditions. In addition, potential changes are often restricted by lack of capital, lack of nonfarm opportunities, institutional restrictions, or by mere unwillingness of operators to make a change.

Even with present trends in farm size, in number of farms, and in number of farm workers, a basic problem still remains in that we have too many resources devoted to farming relative to present-day needs. The voluntary shift of people off the farm in the Southeast has not kept pace with rising farm productivity. The result is that we still have too many small, poorly equipped, low-production, low-income farms. Price increases help little on these farms when they have so little to sell. Some of these will remain as inadequate farms for many years because their operators are farming as a "way of life," and not as commercial producers. Their problem is more social than economic.

The most radical adjustment that some farmers face is to quit farming. A shift to full-time, nonfarm work often means migration from the community, since a nonfarm job may not be available in the immediate farm neighborhood. But where movements are made, most of these people improve their incomes. At the same time, they release land and other resources for the farmers who remain and who need these resources to expand to more efficient size.

Our principal concern should not be how to stop the decline in number of farms, or how to slow up the increase in the size of the farms that remain. Instead, we should be concerned with doing the best job possible on those farms that have adequate resources to support farm families, and in making possible a transfer of resources on those farms that have inadequate resources to support farm families.

ADJUSTMENTS FACED BY COMMERCIAL FARMERS IN THE SOUTHWEST¹

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THE SOUTHWEST

The States of Texas, Oklahoma, Arkansas, and Louisiana comprise the major portion of the Southwest. Many of the same characteristics of these States and, therefore, many similar adjustment problems are found in Mississippi, Missouri, Kansas, Colorado, and New Mexico.

Southwestern agriculture is conditioned by a wide range of climate and soils and by extreme weather variations from month to month and from area to area. Humid conditions prevail in the easternmost sections, but moving westward, they gradually give way to semiarid and arid conditions. Within the broad expanse of humid, subhumid, semiarid and almost arid conditions, prolonged periods of drought occur and are to be expected, particularly toward the central and western extremes of the region. Like the climate, land resources differ greatly from forested mountains and coastal plains, broad prairies, alluvial river deltas, shallow semidesert soils, and deep fertile soils of the high plains, reflecting the effects of climate, vegetation, and time on soil parent materials characteristic of the individual area.

Commercial agriculture³ is dominated by these broad climatic and soil belts, and farm enterprises vary accordingly. These physical conditions plus economic hazards of changes in production costs and in farm prices have combined to place commercial agriculture of the

¹ Since the authors are members of the staff of an educational institution the intent has been to indicate pertinent trends, issues, etc., bearing importantly upon alternative adjustments rather than to recommend specific adjustments for southwestern agriculture.

The authors believe that policy decisions affecting agricultural adjustments should be made by all the people, largely through their interest groups and their elected representatives.

² A number of persons contributed to the content of this report. For example, prior to the preparation of the initial draft six task forces were organized among the professional staff of the department of agricultural economics and sociology. Each task force pulled together certain trends, issues, and examples bearing upon a given facet of the overall adjustment problem.

Leaders of the task forces were: Vance Edmondson, assistant professor; John H. Southern, agricultural economist, USDA, and attached to the department; Clarence Moore, assistant professor; Robert L. Skrabanek, professor; Robert Cherry, extension economist; and Fred Sargent, assistant professor. Southern assisted in preparing the final draft.

The final draft also was reviewed by Frank Hughes and Ralph Rogers, agricultural economists, USDA, attached to the department; Don Moore, assistant professor; Robert Branson, associate professor; A. C. Magee, professor; James Hildreth, associate professor; John Kincannon, assistant professor; and W. E. Paulson, professor.

Finally, in order to gain a better area perspective of the adjustments faced by commercial farmers, the authors asked the following heads of departments of agricultural economics to review the report: H. R. Stucky, New Mexico State College; L. F. Miller, Oklahoma State University; H. J. Meenen, University of Arkansas; and M. D. Woodin, Louisiana State University.

Although grateful for the valuable assistance received from their colleagues, the authors realize that only they should be held accountable for this final report.

³ Commercial agriculture as defined in the 1957 Joint Economic Committee report is "the 35 percent of the farm operators who produce about 85 percent of marketed farm products." With no data available on the above basis, trends in commercial agriculture are based on the agricultural census. Discussion of adjustments and related problems are applicable to commercial farms as defined by the committee.

Southwest in a relatively high risk and uncertain situation in relation to its national setting.

BASIC CONSIDERATIONS AND ADJUSTMENT TRENDS

Adjustments faced by farmers in the Southwest are conditioned by several basic considerations. Such adjustments also are conditioned by major trends which have been underway for some period of time.

Basic considerations

The basic considerations are these:

- (1) A continuing drive by farmers for technological advances.
- (2) Most all cost-reducing practices increase production per unit.
- (3) The demand for farm products is relatively inelastic.
- (4) An expanding general economy increases the cost of farm operation and at the same time provides opportunities for farm people to move from agricultural to nonagricultural occupations.

Major trends

Several significant major trends underway in the Southwest condition future adjustments for commercial farmers:

1. *Increased dependence on general economy.*—Commercial agriculture has come to depend upon nonagricultural sources for more than 60 percent of its supplies and services. Such agriculture is almost completely dependent upon the rest of the economy as a market for its product. Many services and functions formerly performed on the farm have been and are being further transferred to the off-farm segment of the agricultural economy.

2. *Rapid adoption of new technology.*—Some of the more outstanding examples of the rapid adoption of new technology include corn and sorghum hybrids, high analysis fertilizers, vitamins and antibiotics in livestock and poultry feeding, supplemental irrigation, early insect control on cotton, complete mechanization of forage production and harvesting and mechanization and bulk handling of milk. New levels of managerial skills have combined to bring new practices and techniques which are recommended for greater efficiency and which at the same time bring about greater production.

3. *Larger and fewer farms.*—This trend has been underway for a number of years and total farms have decreased significantly in number ranging up to one-third or more since 1940, in Texas. For the region, the decrease was 31 percent. The number of commercial farms in the region dropped by nearly 20 percent in the period from 1950 to 1954. With one exception, every income grouping of commercial farming units registered losses in number during this period.

A slight increase occurred in the number of the largest operations, those with sales exceeding \$25,000.

Coupled with this trend toward fewer commercial farms is the correlative trend to larger farms. For example, the increase in the average size of Texas farms was from 320 to 498 acres from 1940 to 1954 and in Arkansas from 83 to 124 acres. The average size of commercial farms in these States increased by 140 and 63 acres, respectively, between 1949 and 1954. In the other States the increase in farm size has been in about the same proportion.

4. *Larger capital requirements.*—Capital requirements for both land and operations have increased greatly since 1950. Rising land prices plus the increase in the size of the commercial farm unit have raised such requirements for land by as much as 40 percent since that year. Nonreal estate, or operating capital requirements for farming, reflecting the tremendous growth in technology, have about doubled during this period.

5. *Changes in types of farming.*—Generally, changes in types of farming in the Southwest have been gradual over the past two decades. In terms of land use, the tendency has been away from cotton and wheat, toward grain sorghum and specialty crops, and to specialization in livestock combinations including dairying, and poultry and egg production. Cotton has shifted from such areas as the hilly uplands of all States to the coast prairies, and the high plains in both irrigated and dryland production. Cotton continues to hold its position in delta and bottomland agriculture. Some areas, such as the forested coastal plain of east Texas and south Arkansas, have become major producers of livestock.

Dairy and poultry production reflect some of the more drastic changes. In dairying the trend has been away from a small supplemental type enterprise featuring butterfat production to a large scale, highly specialized enterprise featuring grade A milk production. Since 1940 the amount of milk sold in Texas increased 38 percent while butterfat sales decreased 93 percent. Changes in the poultry enterprise have been even more drastic. The trend has been in the direction of specialized egg and broiler production, with broiler production in Texas and Arkansas increasing from about 15 million in 1940 to about 200 million in 1957.

Irrigation and supplementary irrigation have continued to expand under prolonged drought conditions. The effects of irrigation, in the main, have been to intensify existing row-crop enterprises. Irrigation and other technological practices have helped to maintain crop production despite sharply reduced acreage allotments. In most areas in which water supplies are limited, cotton has been favored in the use of the water.

Considerable vegetable production has been introduced into the high plains of Texas where lettuce, onions, carrots, and Irish potatoes are now grown under irrigation.

Soybeans as a cash crop have increased significantly in delta areas of Arkansas and Louisiana. This crop occupies a large proportion of the land formerly in cotton. Rice acreage expanded significantly in the States growing that crop.

An increasing number of commercial farmers are realizing income through recreational use of certain facilities on their farms. So far, most of the realized income has been from the leasing of hunting rights. Thousands of farmers have developed water-storage structures, but only a few have realized income from the recreational aspects of these facilities.

Some adjustment in commercial timbered areas toward a multiple land use system has occurred. Timber production and livestock grazing are being combined successfully by some commercial farmers who have adequate acreages of land adapted to timber. However, this adjustment has not moved rapidly.

6. *Tenure trends.*—The tenure pattern of commercial agriculture has changed decidedly since 1940. Owner-operators and part-owner-operators have strengthened their position, while many tenant farmers either have left the farm or have changed their status to owners or part owners. In the Southwest, many types of commercial agriculture formerly were operated by tenants. Nearly all farming areas, particularly cotton-growing areas, had a pattern of such tenure as late as 1940. However, tenancy is no longer dominant, having been reduced to 20 to 25 percent of all operators in the region. Except in the Mississippi River Delta, sharecropping has been nearly eliminated.

The family type commercial farm, considering such a farm as dynamic, has not been replaced to any appreciable extent in recent trends. On the other hand, many of the technological advances as well as the acquirement of managerial skills have strengthened and protected the family type of operation. This is an adjustment toward more efficient operation for those who have remained in agriculture.

Some types of commercial family units have been integrated with farm supply or marketing firms. This is particularly true among the broiler-producing units and to a lesser degree among vegetable farms. There also is indication that some cotton gins, in order to assure a good volume of business, have integrated certain production and labor-management services into their operations. Indications are that such integration will continue.

Corporation farming, other than that of the land and cattle companies, has never been a feature of southwestern agriculture, and trends do not indicate a change. Farms larger than the family type are found primarily in extensive holdings of the land and cattle company type. These are historical in origin and are not increasing in number or extent at present. The old plantation holdings, also larger than family type farms, remain but many are now operated with wage laborers rather than with croppers, as formerly. There is some increase in absenteeism, defining this term as the operator and family living away from the land. However, in most instances these families live in the nearest town or city and perform the usual managerial function from that point. Because of capital requirements and the nature of the enterprise, large corporate holdings appear to be on the increase in the commercial forested area. Commercial farmer forest units have been slow in developing in this region.

Land market research since World War II indicates considerable purchase of farm and ranch land by nonfarmers. However, acreage of land owned by farm operators has increased steadily in nearly all areas.

ALTERNATIVE ADJUSTMENTS FACED BY COMMERCIAL FARMERS

Adjustments being made by commercial farmers in the Southwest revolve primarily around two of the basic considerations mentioned earlier in this report: (1) the continuing adoption of technological practices for greater efficiency; and (2) an expanding general economy providing alternative employment opportunity on a full- or part-time basis.

Adjustments within agriculture

Within agriculture, the major adjustment alternatives point in one direction only, toward increasing efficiency by the individual commer-

cial farmer. These farmers necessarily ignore the implications of greater total production resulting from increased efficiency and the effect on prices of an inelastic demand for their products.

Within agriculture the following are the principal adjustments:

(1) *Increasing farm resources.*—An apparent overall adjustment is an increase in resources by a large proportion of commercial farmers. The need for this adjustment overshadows any problem that may arise from larger-than-family units, or from the factories in the field type of production. There are far too many inadequate (too small) sized commercial farms as judged from an efficiency of resource use standpoint or from that of income and level-of-living adequacy. Production costs are high on these small commercial farms, and narrow cost-price margins result in inadequate income to the farm family. With developing technology, such cost-price margins tend to narrow, resulting in less income if resources are not adjusted to provide a greater volume of output per farm.

In the Southwest, many operators are faced with the necessity of increasing their land base to obtain adequate resources, while others can add to their resources primarily through the addition of capital. In the latter case, the level of management becomes a crucial factor. The usual situation with most commercial farmers is a need to increase resources through both capital and land additions. Because of climatic and weather characteristics, expansion in farm resources in a large part of the Southwest means primarily an expansion in land acreage.

(2) *Changes in types of farming.*—The trend toward greater dependence on livestock systems will continue, but it needs accelerating. With continued growth in population, some further expansion will be needed in the future for specified types of production, such as broilers and eggs, dairying, some fruits and vegetables, timber, and livestock feeding. Commercial farmers currently producing such commodities can, in many instances, better their income situation by internal changes and capital additions. Dependence on some of the cash crops, cotton, for example, may be lessened in the relatively inefficient production areas if livestock-forage systems can be substituted successfully. Certain important production areas have no alternatives for a change in type of farming. Here, adjustment opportunities will be limited to increasing acreage and to reorganizing for greater efficiency.

Recreational use of certain facilities and resources are possible on many farms and ranches. Some operators are taking advantage of this income source. For example, extensive areas are leased for deer hunting, fishing, and duck hunting. Income from deer leases ranges from \$1 to \$1.50 per acre over thousands of square miles. Range management programs need to be adjusted to treat this resource as part of the range operations rather than as a byproduct. Large water storage structures on some farms and ranches offer opportunities for additional income from fishing, boating, and camping privileges. Population growth and shorter working time are bringing increased opportunity for recreational use of land. There is a need to recognize and accelerate this use.

Production of timber is a broad adjustment toward better utilization of land in the commercial forested areas. At present a number of commercial farmers are successfully combining livestock and timber

production. The expansion of timber-using industries in the region, particularly pulp industries, offers an opportunity for many additional commercial farmers of this type.

(3) *Technological practices.*—Revolutionary changes have occurred within some enterprises, for example, in broiler and egg production. Practices now used by the more efficient farmers need to be adopted more widely. The use of fertilizers, insecticides, pesticides, improved varieties and other practices need to be combined into systems of farming so that maximum benefits can be obtained. The development of practices to permit a more complete mechanization of cotton production is one of the most pressing needs in Southwest agriculture.

Technological practices in irrigation are complex in both economic and physical terms. One of the crucial adjustments among commercial farmers in certain irrigated areas is to make due allowance for a gradually decreasing water supply. Problems faced by such farmers will be critical and guiding policies and research will be greatly needed.

(4) *Integration and contractual arrangements.*—Another adjustment likely to take place within agriculture is for commercial operators to further integrate their production with farm supply and marketing firms. The decision-making process in farming is characterized by increasing complexity, and many functions and part of the risks may be shifted to off-farm institutions. In certain kinds of production, broilers for example, much of the technical management, financing and marketing of the enterprise have been shifted from the farmer to suppliers and processors.

Some operators, particularly vegetable producers, have the opportunity of shifting part of their production risks by contractual arrangements with jobbers or marketing firms. Additional capital also may be obtained from these firms. Many commercial farmers producing vegetables, cantaloups, melons, etc., may not possess the managerial skills necessary to market such products successfully. A merchandising system geared to supermarkets makes it difficult to deal with small lots, individual producers for a continuity of product.

Another enterprise where technical guidance and contractual arrangements between producers and marketing advising firms appears feasible is in timber production. Here the lack of managerial skills and knowledge on the part of farm forestry operators may well be overcome by some integration or long-term contractual arrangements with forestry using industries. Failure in this approach may mean the ultimate holding of the most desirable timberlands by the large corporate type of owner.

Marketing agreements, except for whole milk, have not been used by farmers in the Southwest. Such agreements may be feasible for other products, and commercial farmers through group action can make them.

The use of custom operations has expanded some during the past 10 years. Commercial farmers can reduce the heavy outlays for some equipment by having more of their operations done on a custom basis. Efficiency achieved in this manner is as important as that reached through adding resources, and this adjustment route may become desirable for more operators.

Adjustment to nonagricultural opportunity

A most important adjustment in the Southwest during the past two decades has been the movement of thousands of commercial farmers to off-farm employment. In large areas, up to two-thirds of the farm population have left agriculture or have accepted nonagricultural employment and continue to live in rural areas. This remains as one of the most promising adjustment alternatives for many commercial farmers who cannot obtain adequate farm resources.

In the drive for technological progress many farmers will, for one reason or another, fail to keep pace with the methods, managerial skills and resource combinations necessary for continuing success. In the recombination of resources required for adequate production units, the need for a smaller number of commercial farms also will continue. Thus, many commercial farmers will seek and may find a better opportunity in nonfarm employment.

To permit a continuing movement of farmers from the farm to non-agricultural occupations requires that overall business activity be maintained at a high level. Essentially, this means employment opportunities in activities with products for which there is a demand more elastic than that of agricultural products.

A promising alternative is the combining of part-time commercial farming with off-farm employment. Some development of this nature has occurred since 1945. As industrialization progresses in the Southwest, this type of adjustment may become increasingly important. Highly efficient operations of a commercial nature, though not large-scale, may not be pursued by many farm operators who have the opportunity for off-farm employment. In some areas family members accept off-farm employment, and needed capital for farm adjustments is being obtained in this manner.

PROBLEMS OF ADJUSTMENT

The problems to be solved in making necessary adjustments on commercial farms and ranches revolve around the trends and specific adjustments previously outlined. These major adjustments are referred to as "within agriculture" and as "nonagricultural."

(1) *Increasing size of business.*—As indicated above the major adjustment needed in agriculture is a substantial increase in the size of business, or, in other words, to arrive at a better balance between the human and physical resources devoted to the production of agricultural products. To enlarge the farm business, one must purchase or rent more land or increase his use of capital by adding livestock, power, equipment, buildings, etc. In many cases both land and capital must be added. In any event, a number of additional problems emerge. The ownership pattern developed under systems of small-scale operation necessitates the purchase or lease of a number of small tracts to permit the development of an efficient operating unit. In many cases contiguous tracts cannot be purchased or leased. This problem of ownership patterns is common in the lower Rio Grande Valley of Texas, in parts of the Coast Prairie, throughout the Forested Coastal Plain of all States and in most farming areas where small-scale types of farming have prevailed. One operator in the lower Rio Grande Valley leased land from 26 different owners.

In adding land by purchase, the farmer is confronted with rising land prices and interest rates. Land prices have risen about 40 percent since 1950. He must compete not only with neighboring farmers who are trying to expand but also with the land-hungry individuals from the high income groups in the professions and business, who may want land for mineral speculation, residence or for many other reasons. If he is in an area where mineral rights are involved the land may be priced far above its value for agricultural purposes. In most cases he will not have accumulated much of the necessary capital for the purchase of the land since he has been operating an inefficient-sized unit on which capital may be accumulated only at the expense of living levels.

Leasing may be the most practical way of obtaining control of additional land. However, the degree of control may be affected adversely by traditional leasing arrangements including the uncertainty of tenure. Thus, some desirable adjustments in the type of farming may not be possible. This is the case in areas like the blackland prairie of Texas in which the one-third and one-fourth cropshare lease still prevails despite a drastic reduction in cash crop production. Another area in which the tenure pattern poses an adjustment problem is the coast prairie where much of the land resources are devoted to rice and cattle production. The landowner usually leases riceland to the grower for cash or a share of the crop and retains the grazing rights for himself. A system of pasture improvement which increases rice yields has long been recommended for the area. However, the divided control of the land and difference in interest in the products prevent adjustments which should prove mutually beneficial.

The addition of other forms of capital needed for some adjustments may be even more difficult and costly than adding land since leasing in most cases is not feasible. For example, an additional investment of about \$20,000 is required in changing from a cash-crop system to a 36-cow dairy operation on a 180-acre blackland prairie farm. Adjusting to beef production would require a much smaller investment in buildings and equipment. However, only the larger farms can develop an efficient beef-cattle enterprise without going into the land market. The adjustment on some farms may be simplified and made more feasible through the annual purchase of steers instead of maintaining a breeding herd.

When custom operation is resorted to in order to keep down investment in farm equipment, the farmer surrenders some degree of control over his farm operations. He may not be able to obtain the services of a custom combine operator or an insect-control service at the optimum time. As a result, he may suffer a loss in yield or in the quality of the product.

By resorting to vertical integration some farmers avoid investing additional capital and shift certain management decisions and market risks to others. At the same time they give up independence of action and in the long run may find themselves working for wages without opportunity for profit.

(2) *Obtaining water for irrigation.*—Since much of the Southwest is subject to light, variable rainfall and frequent drought, a major adjustment since World War II has been the widespread development of supplemental irrigation. The problems related to this

adjustment differ with location, source of water, and present stage of development. On the high plains and in the trans-Pecos area, where water supplies are obtained mainly from underground sources, there are few, if any known supplies, either ground or surface, available for further development. Declining water levels and quality of water in some instances indicate that the water resources from underground sources may be overutilized. The situation is much the same in the ricegrowing areas of eastern Arkansas. Costs of irrigation on the high plains of Texas have more than doubled over the 6-year period 1949-54. Because of receding water levels and declining well yields, the lowering of pumps and the drilling of additional wells have become necessary to provide adequate irrigation water. Since the rate of recharge of these ground waters is far less than the current rate of use, it seems likely that a number of the irrigated farms of the area eventually may be confronted with a difficult retreat to dryland operation.

An area extending through central Texas and Oklahoma is naturally short of water suitable for irrigation. Consequently, there has been little irrigation development in this area. The few geological formations capable of holding water are thin and limited in extent. Although there is no particular shortage of reservoir sites in this area, the infrequent occurrence of stream flow and high rates of evaporation materially reduce the effectiveness of surface water developments.

In the more humid eastern half of the Southwest, where the demand for water has increased greatly in recent years, reliance is being placed more and more on surface water. While plenty of water is available for future development, the problem is complicated by a scarcity of suitable reservoir sites, confused water right situations, unresolved upstream-downstream controversies, inability to finance construction, and conflicts between increasing urban-industrial demands and agricultural use.

(3) *Obtaining credit.*—Most commercial farmers can finance or arrange for credit for the minor adjustments they make from year to year, such as changing varieties or fertilizer practices. Successful farmers have little difficulty in financing major adjustments such as installing irrigation systems or livestock enterprises. However, few farmers are able to finance these major adjustments without resorting to credit. Most credit institutions would rather not make loans for much more than 1 or 2 years for adjustments other than the purchase of land. There appears to be a need for amortized loans geared to the useful life of the added capital and to the additional earnings that may be expected. For example, a period of about 6 years is needed to repay, from increased earnings, the added capital required to shift from cash-crop farming to a 36-cow dairy operation on a 180-acre blackland farm. Similarly, a period of 4 to 6 years is needed to repay the added investment required to fit a steer-feeding enterprise into a blackland farming system.

(4) *Lack of profitable alternatives.*—Agricultural adjustments in the Southwest are hindered by a lack of profitable alternatives, especially in subhumid portions of the region. On land resources physically limited to grazing, changes in size and in the combination and quality of the livestock are generally the only adjustment opportunities. In subhumid cropping areas, the few crops adapted may

not be compatible. Such is the case with wheat and grain sorghum on nonirrigated farms on the high plains of Texas and Oklahoma. In such areas, land planted to sorghums cannot be returned to wheat successfully the following year. Sorghum land must be planted to spring oats or barley or fallowed the following year. As a consequence, wheat follows wheat and sorghum follows sorghum. Alternatives are more numerous in the humid sections, but a large increase in the size of most farms is necessary if efficient operation is to be developed.

(5) *Lack of managerial skills.*—One of the main obstacles to adjustment is the lack of managerial skills essential to success with new enterprises and expanded operations. Farmers of the Southwest have been consistently cash-crop producers. Their chief interest usually has been in some one crop such as cotton, rice, or wheat from which they obtained the greater part of their income. This concentration on cash-crop production and lack of experience in other enterprises have produced a generation of farmers many of whom are not inclined to adopt the complex of practices essential to success with livestock enterprises.

(6) *Age of farm operators.*—Another obstacle to adjustment is the advanced age of so many farm operators. About 40 percent of the commercial farmers are more than 60 years old, an age at which there is little incentive to develop a profitable system of growing pine trees or an efficient beef or dairy enterprise.

(7) *Conflict between individual adjustments and overall adjustment objectives.*—One of the most important problems to be resolved is the conflict between the necessity for the individual operator to drive for efficiency through greater total production and the need to shift resources out of farming to reduce total production. The substitution of capital for decreasing manpower in farming will continue to aggravate the problem. Somehow, more land resources must be shifted into extensive uses, such as timber and grazing.

(8) *Adjustment to nonfarm employment.*—Although 40 to 50 percent of the farm population has migrated during the past 15 years to nonagricultural occupations, little is known about the attendant problems of this migration. Opportunities to achieve higher incomes and to attain higher levels of living have been better outside of farming. Nearly all adjustments on commercial farms point to a continuing need for such off-farm employment.

Providing off-farm employment opportunities requires an expanding general economy, a requirement beyond the control of the agricultural industry. A much needed feature of an expanding economy is an information program relative to available farm and nonfarm opportunities. Educational agencies should adjust their programs to meet this need.

Another problem raised by the movement into nonfarm occupations is that brought about by selective migration in which the aged and those less well prepared for making adjustments tend to remain on the land. The younger persons of the more productive age groups are being drawn from the farms. Thus, only slow improvement in resource use can be expected in areas of heaviest outmigration.

RESEARCH AND EDUCATION

To achieve these adjustments and solve related problems a number of questions require answers. In many instances, research and education are not adequate to guide commercial farmers toward the adjustments apparently needed. Problems raised call for intensification of research to be followed by educational information. The stream of technological research and information for commercial farmers must be maintained. To meet needed adjustments such technological research might place more emphasis on those enterprises of an extensive nature, such as range livestock and range management, timber management, and the establishment of grass and forage production. At the same time increased effort is necessary to answer certain other questions. Such questions include:

(1) What are the costs and time period involved in farm adjustments?

(2) How is capital to be acquired for needed adjustments? And what modifications in credit practices are necessary to meet problems of finance?

(3) What are the minimum resource needs of commercial farmers under various types of production and how do young men enter farming on a satisfactory basis?

(4) How can land resources be recombined into larger units in areas of heavy outmigration of population?

(5) What is involved in the process of shifting from farm to nonfarm employment (part time or full time)? How may this trend be accelerated and what are the important human problems in such shifts?

(6) How may the effective demand for total agricultural output and the demand for specific farm commodities be appraised more accurately as a guide to needed adjustment?

(7) What is the effect of annual public programs and allotment patterns on southwestern agriculture?

Finally, if some of the human resources in agriculture are to find profitable nonagricultural employment, and if total farm resources are to be adjusted to needs, there is a problem of an educational program which will (1) make the farm population aware of the opportunities outside farming, (2) prepare them to make the shift to the advantage of themselves and of the Nation, and (3) to make the general public aware of the necessity for the individual operator (if he is to survive) to strive for greater production when the overall need is to adjust aggregate output to market demand.

ADJUSTMENT PROBLEMS FACED BY COMMERCIAL WHEAT FARMERS IN THE GREAT PLAINS

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The Great Plains States of Montana, North and South Dakota, Nebraska, Kansas, and Oklahoma have about one third of the cropland of the United States. In this area are two major wheat-producing regions, the hard-winter-wheat area centering in Kansas, Oklahoma, and Colorado, with substantial acreages in Nebraska and Texas, and the spring-wheat area with the largest acreages in Montana and Dakota. In the region are about three-quarter million farms, a substantial portion of which produce wheat.

The region is characterized by extensive reaches of unbroken topography well adapted to mechanized farming. Rainfall is the limiting factor in crop production. Not only is the rainfall limited, but it is also highly variable, both within seasons and from year to year. Wheat is the major cultivated crop of the area. Wheat lends itself to mechanized farming on an extensive scale. Wheat can utilize effectively moisture stored in the soil, so that a system of summer fallowing may be used to accumulate the moisture of 2 or 3 years for the benefit of a single crop.

Wheat is the chief source of cash farm income in much of the region. In Montana and North Dakota, wheat provides nearly one-half of the cash receipts from marketings. Wheat provides about one-third of the cash receipts in Kansas, on the average about one-fourth in Oklahoma, and about one-seventh in Nebraska.

The variation in weather along with hazards of insects and rust result in wide fluctuations in yields. For example, counties in western Kansas, where crop failures prevailed in 1934, 1935, and 1936, had average yields above 20 bushels in 1947 and 1948 when wheat sold for \$3 per bushel. Farmers who survived the crop failures and adversities of 40-cent wheat in the 1930's had an opportunity for unexpected or fortuitous income when high yields were accompanied by high prices in the early postwar period. This situation, along with the absence of close alternative crops, complicates the problem of adjustment and efficient use of resources.

BASIC TRENDS OF THE WHEAT INDUSTRY

Change has characterized wheat farming in the Great Plains. Mechanization, new varieties, and improved tillage practices have been adopted rapidly. Now, economic forces confronting wheat farmers require changes differing from those they were accustomed to making in the past. During the development and expansion of wheat production in the Great Plains, the goals of individual farmers and the goals of society were not in conflict. Farmers who increased their efficiency and their output were rewarded, since a growing domestic

population and opportunity for exports provided markets at acceptable prices for the increased production. In recent decades farmers have been uncertain or confused about the goals of society and the income opportunities of the economy in which they live. The individual wheat farmer assumes he will be rewarded for increased efficiency and increased output. However, prior to price supports he knew that a large crop might bring a smaller income than a small crop. And at times, farmers found that the economy urgently needed more wheat and was willing to pay \$3 per bushel for it; but at other times, markets were available for their product only at prices below cost of production.

Farmers' attention has been focused on the wide fluctuations of income rather than the basic trends which are occurring. Two basic trends dominate the wheat industry of the United States: the decline in per capita consumption, and increase in the efficiency of wheat production. These two forces dominate the demand for and the supply of wheat as the Eiffel Tower and the Empire State dominate the skylines of Paris and Manhattan Island, but farmers are reluctant to accept what this means to their farm operations. Per capita consumption of wheat for human food in the United States has declined continuously, through not at a uniform rate, for 50 years. This decrease has continued both in periods of prosperity and depression. The per capita requirements currently are only slightly more than half those of the base period used for calculating parity. In recent years increase in total population has offset the per capita intake so that total domestic consumption of wheat for food has remained remarkably stable.

Concurrent with the decline in per capita consumption have occurred striking increases in efficiency in the production of wheat. The man-hours required to produce 100 bushels of wheat are only one-third those of a generation ago. The decrease in the inputs of labor is the result of numerous technological changes, such as introduction of high-yielding varieties, improved tillage practices, summer fallow, insect and disease control; but most important is the substitution of capital (machinery) for labor.

There are few, if any, indications that the direction of either of these trends will be reversed during the next few years. The trend of per capita consumption may level off, but it is improbable that it will turn upward. The changing age composition of the population and the mature dietary habits of those who are now children could alter the per capita consumption during the next decade, but such change would be minor. A leveling off of the per capita rate of consumption with a growing population would result in increases in the total consumption of wheat above the recent average of 480 million bushels annually. Likewise, technological improvements may occur less rapidly, but there are no indications that the labor inputs in wheat production will become less efficient. For example, the rate at which improved and larger machines are purchased may slow down at given periods, but wheat producers generally will not use smaller or less efficient machines.

DIFFICULTIES OF ADJUSTMENT

Even though these basic trends have been occurring during a long period of years, the wheat industry has not adjusted effectively to

then. Depression, war, crop failures, and bountiful harvests have obscured the real significance. Furthermore, farmers in making managerial decisions realize that the adjustments appropriate to these trends are in conflict. The decline in per capita consumption requires reduction of total output. Mechanization and other technological advances have made the optimum sized farm substantially larger, so that individual farmers are under pressure to expand output.

The small yields of the drought of the 1930's and the increased utilization of wheat during the 1940's prevented normal or gradual adjustment to the underlying forces in the wheat industry. The urgent need for food and a guaranteed price for wheat for 3 years after 1917 increased the acreage and capital investment in wheat production so permanently that the quantity of physical resources (land and machinery) applied to wheat production in the Great Plains was not altered substantially by the prolonged drought and the low prices of the depression of the 1930's. Likewise, the absorption for a time of the greatly increased production in the 1940's led farmers to believe the normal outlets were larger than actually existed. Prior to 1943, the United States had produced only one wheat crop in excess of a billion bushels. The crops since 1943 have averaged more than a billion bushels. During part of the period since 1943, postwar demands provided an outlet at prices from \$2.50 to \$3 per bushel, and the loan program provided a price floor at 75 to 90 percent of parity.

Farmers' attention has been focused on these more evident but not recurrent influences, rather than on the continuing underlying trends. Now, wheat farmers in the Great Plains are confronted with three elements of adjustment: (a) an accumulation of adjustments which should have been occurring over a period of years; (b) reduction of output to offset the war and postwar expansion; and (c) adjustment to the continuing technological improvements in wheat production.

CHANGES REQUIRED

Two types of changes are required in the wheat industry of the United States:

- (1) Change in scale of operations and organization of individual wheat farms for efficient production with existing technology.

- (2) Adjustment of the quantity of resources (land, machinery, and labor) applied to production of wheat for human food to that quantity appropriate for domestic consumption plus normal exports.

Changes on individual farms

Substantial adjustments of individual farms are already in progress. The adjustments are toward larger, but fewer, farm units, with larger investment in machinery and equipment and with smaller amounts of labor per farm and also per unit of output.

In 4 States of the northern Great Plains—Kansas, Nebraska, North and South Dakota—the number of farms decreased from 476,114 in 1935 to 345,476 in 1954, a decrease of 27.4 percent. The total land in farms in these 4 States increased from 170.8 million acres in 1935 to 184.3 million in 1954.¹ The average size of farm increased from 358.8

¹ Farm Costs and Returns, 1956, USDA Agricultural Information Bulletin No. 176, June 1957.

acres to 533.6 acres, an increase of 174.8 acres per farm, or 49 percent.

Similar but larger changes occurred in the southern Great Plains. In Texas and Oklahoma, the number of farms decreased 42.4 percent from 1935 to 1954, and the size increased from 242 acres to 440.5 acres, an increase of 81.9 percent. From 1945 to 1954, the number of farms decreased by 25 percent, and the size increased by more than one-third.

In 1935, 16.7 percent of the farms in these 4 States were farms of 500 acres or more. In 1954, 28.5 percent of the farms were 500 acres or more. In 1935, 51.5 percent of the land was in farms of 500 acres or more. In 1954, 69.3 percent of the land was in farms of this group.

In Kansas, 22.9 percent of the farms in 1954 were 500 acres or larger, compared with 11.3 percent in 1935. In 1954, 62 percent of the farmland in Kansas was in farms of 500 acres or more, compared to 42.3 percent in 1935. In North and South Dakota, approximately 77 percent of the farmland was in units of 500 acres or more in 1954; 40 percent of the land in North Dakota was in farms of 1,000 acres or more in 1954, and in South Dakota 58 percent of the farmland was in units of 1,000 acres or more.

Another continuing change in wheat production is the substitution of capital for labor. On winter wheat farms in the southern Great Plains, the investment per worker in 1956 was twice the investment in 1940 (adjusted for change in price level). The investment in 1956 at current dollars was \$54,000 per worker. This relationship is also shown by the ratio of labor costs to machinery costs. On winter wheat farms in the southern Great Plains, labor costs in 1937-41 were \$1.30 for each dollar of machinery costs. In 1956, labor costs were \$0.73 for each dollar of machinery costs.

On wheat, small-grain, livestock farms of the northern Great Plains, machinery constituted 25 percent of the total inputs in 1937-41 as compared to 38 percent in 1956. On winter wheat farms in the southern Great Plains, the inputs attributed to machinery increased from 24 percent in 1937-41 to 30 percent in 1956.

In the northern Great Plains, family labor made up 35 percent of the inputs in 1937-41 compared to 25 percent in 1956. On winter wheat farms in the southern Great Plains, the input of family labor decreased from 22 percent of the total inputs in 1937-41 to 19 percent of the total in 1956.

The input of hired labor has decreased even more than family labor. In the northern Great Plains, hired labor made up 15 percent of the total inputs in 1937-41 compared to 5 percent in 1956. On winter-wheat farms in the southern Great Plains, hired labor declined from 9 percent of the total inputs in 1937-41 to 3 percent in 1956. This would indicate that wheat farms in both the northern and southern portions of the Great Plains are becoming more fully family-operated.

The price and income policies established for the wheat industry have complicated adjustment of wheat farms to the technological improvements which are occurring. Support prices are related to the purchasing power of wheat, a relationship which prevailed 45 years ago. During the intervening period, the cost of producing wheat, especially the labor cost during the last two decades, has been reduced significantly. When wheat loans, which provide assurance of prices at 90 or 75 percent of parity, are available, farmers in many areas

realize that net income can be increased substantially by planting more acres. Since the 1954 season, farmers have been confronted with the choice of complying with an allotment which provided an assured price, and the privilege of increasing plantings to achieve minimum acre cost without price assurance. Influenced by tradition of efficiency and maximum output per man and per farm, and recalling the financial rewards of maximum acreage in years such as 1947 and 1948, wheat farmers of the Great Plains are unhappy with the necessity of choosing between these two major alternatives. Currently there are numerous indications that more farmers will choose to operate at optimum or at least larger output and assume the risk of a lower price. The apparent plantings of winter wheat for the 1958 harvest in excess of the allotment in many areas is one indication. The continued upward trend of land prices in specialized wheat regions in spite of prospects for lower income from wheat is another. Continued purchases of new and improved machinery for wheat production indicates that farmers generally do not expect to operate on a less extensive scale.

Specialized wheat farming in the Great Plains produces a large amount of product per unit of labor input. However, on those farms on which wheat is the only or dominant enterprise, labor is required during limited portions of the year. As adjustment to longtime trends occur, farmers probably will find it desirable or essential to have productive employment for a larger portion of the labor time available annually. On many farms in the Great Plains this is or can be achieved by addition of a cattle or other livestock enterprise. In a few areas, such as the Wichita area of central Kansas, fuller utilization of labor is achieved by off-farm employment in industry. In other instances, fuller utilization of the operator's labor is achieved by the farm operator's conducting a business or accepting employment in a business or service enterprise at substantial distances from the location of the wheat-farming operation. This results in a substantial number of wheat-farming operations being located at some distance from the residence of the operator. Unless the addition of a livestock enterprise becomes more attractive relative to wheat farming as a single enterprise, it is probable that a larger part of the wheat crop in the Great Plains will be produced by operators who do not live on the farms they operate. Many wheat producers may live at the county seat town or even at greater distances from the land being cultivated.

Another characteristic of wheat farming is the large degree of custom work. Combining and trucking of the grain to the elevator are the operations which lend themselves most readily to custom operation. However, absentee landlords in most areas can readily hire neighbors or other local persons to perform all tillage or seeding operations including summer fallowing. If the current program of allotments and support prices were modified or removed so that competitive forces operated in a normal manner, the system of absentee operation would present rigorous competition for the family farms where the family lives on the farm and wheat is the sole or main source of income.

The absentee operator, in addition to hiring operations at near actual variable costs, usually has a business or other employment

which provides assurance of sufficient income for family-living expenditures.

USES OF RESOURCES

The outlook for total consumption of wheat for human food in the United States and recent trends in acre yields and labor productivity in wheat production require that the quantities of land and labor devoted to producing wheat for human food be substantially smaller than in the past. There are numerous indications that the resources in the Great Plains to be withdrawn from production of wheat for human food will not remain idle. Some of the land in the areas of least rainfall and some of the areas brought into wheat production in the postwar period may be withdrawn permanently from cultivation. It will be difficult, however, to withdraw from use permanently a substantial portion of the cultivated land of existing wheat farms. This raises the basic and difficult problem of the use to be made of the resources (land, machinery, managerial ability) on existing wheat farms that will not be needed in the future for production of wheat for human food. For many sections of the Great Plains, especially for areas such as central and western Kansas, the addition of a livestock enterprise, especially a grain-consuming livestock enterprise, provides the best alternative use. The production of grain, either wheat or grain sorghums, to support a livestock enterprise provides opportunity for using the land, the machinery, and managerial experience in essentially the same manner as in the production of wheat for human food. The addition of a livestock enterprise would provide for year-round employment of the farm family. This would strengthen and support the traditional system of family farming. If the trend toward greater specialization continues, with a larger degree of absentee cultivation of the land, the change may be toward a system of agriculture characterized by large-scale, specialized feed-grain production, with large-scale commercial feeding of livestock at various locations within trucking distance from the land where the grain was grown. The system of farming as well as the organization of individual farms will be determined primarily by the level of prices and the relative prices between grains and livestock during the next few years.

ADJUSTMENT PROBLEMS FACED BY COMMERCIAL FARMERS IN THE EIGHT MOUNTAIN STATES

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To obtain satisfactory incomes for farm families and the efficient use of agricultural resources, adjustments need be made in the agriculture of the Mountain States.¹ Some of these will be difficult. Some of these problems are inherent in the physical environment; some stem from changing economic conditions; and others are associated with institutional conditions, both past and present. An individual farmer can do little to solve these problems. He can only adjust or adapt his operations to them. Still other problems exist over which the farmer has more control, though he is always limited in what he can do.

The purpose of this paper is to help the reader understand the nature of agriculture in the Mountain States, the underlying problems and difficulties involved in making adjustments. No attempt will be made to provide proof of ideas presented. In truth, it would probably be impossible to find studies that would justify all assertions made. Personal experience, supplemented by results of formal studies and ideas of colleagues at this and other land-grant institutions² in the Mountain States, farmers, and representatives of many agencies working with agriculture, has been drawn upon. Undue emphasis may have been given conditions in Utah, but an attempt has been made to report the entire mountain area. Statistics quoted have been taken largely from the agricultural census and other Government reports.

MOUNTAIN AGRICULTURE

The 8 Mountain States include 29 percent of the land area of the Nation, but only 3.4 percent of the population. The 1954 census reports 3.8 percent of the farms of the Nation in the Mountain States, and recent AMS reports attribute 6.8 percent of the cash farm receipts to the mountain area. These data suggest that agriculture here differs somewhat from the average of the Nation. In general, farms are larger. The 1954 census classified 76 percent of the farms in the Mountain States as commercial, compared with 69 percent for the entire Nation. Probably more significant, the upper 35 percent of the farms in income in the Mountain States had gross receipts of approximately \$8,000 or more, while for the Nation the income level for the upper 35 percent was approximately \$3,700. There are proportionately more farms in this area in economic classes I, II, and III than the average for the Nation. This can be attributed, in part, to the type

¹ The Mountain States are Montana, Idaho, Nevada, Utah, Wyoming, Colorado, New Mexico, and Arizona.

² Specific help has been given by D. M. Stevens, University of Wyoming; R. C. Bevan, University of Idaho; M. E. Quenomen, Montana State College; R. D. Rehberg, Colorado State University; and J. L. Fischer, University of Nevada.

of agriculture followed. Within this area, however, there is substantial variation in level of incomes.

Agriculture in this area differs significantly from that of other areas in that it is more completely dependent on irrigation. In 1954, 62 percent of all farms were classified as irrigated farms. Fifty-six percent of the cropland harvested was irrigated. The variety and yields of crops grown on irrigated land are significantly greater than on non-irrigated land. Crops grown vary from semitropical, such as cotton, citrus fruits, and peanuts, in Arizona and New Mexico, to hardy grasses, which are the only feasible crop in some of the higher mountain valleys.

Preliminary reports for 1956 show 52 percent of the agricultural income in the Mountain States from livestock and livestock products as compared to 53.5 percent from this source in the entire Nation. A finer breakdown, however, shows differences. In the Mountain States, the income from meat animals amounted to 38 percent as compared with 27 percent for the Nation. Of the meat animals, the Mountain States produced relatively more beef and sheep and many fewer hogs. Many beef cattle and sheep produced in this area move either to the west coast or the Corn Belt for finishing. Dairy production in the Mountain States is about one-half as important as in the Nation, and poultry and eggs only about a third as important. Food grains were relatively twice as important in the Mountain States; vegetables somewhat more important, fruits much less important, and cotton, though produced only in Arizona and New Mexico, provided essentially the same proportion of income in the Mountain States as for the entire Nation. Food grains consist almost exclusively of wheat, most of which is produced on nonirrigated lands. For these lands there are few, if any, alternative crops. Because of moisture limitations, only 1 crop is grown during each 2 years on most wheatlands.

Methods of beef cattle and sheep production differ materially from most other parts of the country. These enterprises, in large measure, are associated with publicly owned lands and with the use of lands unadapted for any other purpose. They are often migratory, using the high mountain lands during the summer and moving to lower farm or desert lands during the winter. For economic operation, relatively large units are necessary. This accounts for the high proportion of farms in economic classes I and II.

PHYSICAL CONDITIONS AFFECTING AGRICULTURE

Agriculture in the Mountain States probably is determined by physical environment more than in any other major area of the country. Topography, moisture, temperatures, and soils each provide major limitations to adjustments that can be made on farms. The one factor that can be changed to any extent for better serving men's purposes is moisture. This is done through irrigation. Without irrigation, most farms could not exist.

Topography and elevation

The great Rocky Mountain Range of mountains forms the backbone of the eight Mountain States. Only on the eastern slope, comprising the eastern part of the States of Montana, Wyoming, and Colorado, is there any extensive plains. The major part consists of valleys of

varied shapes and sizes, separated by mountain ranges or high plateaus. Most valleys are traversed by a stream fed in summer from melting snows in the adjacent high mountains. It is in the valleys that the communities are located and the arable agriculture is carried on.

Elevations range from a few hundred feet to a number of peaks of more than 14,000 feet. Much of the terrain at higher elevations is steep and broken. These high areas serve as natural reservoirs for storing winter snow for summer water. The less broken areas produce native grasses and shrubs, and are grazed by domestic livestock during the summer months, and by deer and elk the year around. Some areas are heavily timbered and not adapted to grazing domestic animals. Some forestry is carried on in these areas, though it is not important for the region as a whole.

Most of the arable agriculture is carried on at an elevation above 4,000 and below 6,500 feet. Latitude, which ranges from 31° to 49°, and air drainage cause some variations, but at elevations above 5,000 feet the production of arable crops other than livestock feed and forage is limited. Above 6,500 feet, the crops are restricted largely to grasses. Not much grazing is done above 10,000 feet.

Precipitation, and length of growing season

Precipitation at the mountain tops is usually several times that in the lower valleys. Much of the precipitation falls in the form of snow which melts slowly and feeds the irrigation streams during the summer.

Substantial parts of the Mountain States have annual precipitation of less than 10 inches. During the usual growing period, from April to September, some parts receive as little as 2 inches. In general, however, agriculture is carried on with a minimum of 5 inches during the growing season and many areas receive more than 10 inches. Because of limited precipitation, only a small part of the total land area can be used for arable crops even by irrigation.

As elevation increases the number of frost-free days decreases. The range in frost-free days is from an average of at least 348 days (Yuma, Ariz.) to practically none at the high mountain peaks. Most arable crops are produced in areas with growing seasons averaging between 90 and 160 days. The yearly deviations from the long-time average are large at most locations. Practically, crop selections must be based on growing seasons considerably less than the average. The number of crops that can be grown with an average of less than 90 frost-free days is not large.

The limited amount of moisture, the short growing season, and the large areas of rough, steep terrain present many problems and limit the agricultural adjustments that farmers in the Mountain States can make.

Soils

The quality of soils in the mountain areas varies widely. The valley soils have been largely deposited by water. The fine materials were deposited in the lower parts of the valleys while coarser materials were deposited farther upstream. Because the valleys are often small and many streams have flowed into them, soil types change frequently. This poses problems for most efficient agricultural use.

Arid soils tend to be alkaline. Fine textured or slowly permeable soils containing alkaline salts combined with irrigation often lead to problems of high water tables and an excess of salts in the topsoil. The correction of this problem means costly drainage systems which are not always entirely successful. Seldom can a single farmer solve this problem alone. The variety and yield of crops grown has been substantially reduced in many areas because of high water tables and excessive concentrations of harmful salts.

Another problem fairly widespread has developed due to limited knowledge of soil science and economic pressures to apply water in the easiest possible way. In areas of limited water supplies highly productive soils lie idle or produce sparse native vegetation while scarce water is applied to poorer soils. Laws governing the use of water tend to perpetuate these uneconomic conditions.

These conditions also tend to limit the opportunities of individual farmers to adjust their farming operations to meet changing conditions.

ECONOMIC CONDITIONS AFFECTING AGRICULTURE

In addition to the limited opportunities to change the existing agriculture afforded by the physical resources, further restrictions are imposed by particular economic forces. These in part stem from physical conditions discussed above.

Population and markets

The Mountain States area is the most sparsely populated region of the Nation. The 1950 population census reported 50.6 persons per square mile for the Nation but only 5.9 for the 8 Mountain States. The population density among the 8 States varies from 439 acres of land per person in Nevada to 50 in Colorado. The regional average is 108 acres, compared with 12.6 for the entire country.

In 1950 only one city, Denver with 415,000 people, had more than 200,000 population. Two others exceeded 100,000 and 3 others exceeded 50,000. Available information since 1950 indicates that population has been growing more rapidly in parts of this region than in the Nation as a whole, and that this trend will continue. Since agriculture is relatively twice as important in the Mountain States as in the Nation—8.5 percent of total personal income compared with 4.4 percent—much of the farm produce must find markets outside the region.

Transportation facilities and costs

Because of sparse population and mountain ranges the major highways and railroads are also far apart. They tend to follow river valleys but have to cross divides and are far from being the shortest distance between points. Much agricultural produce is grown many miles from a railroad. Long-distance trucking or shorter truck hauls plus railroad hauls result. The physical as well as the cost problems of moving products to market tend to limit the produce to concentrated, nonperishable goods. They also limit adjustments a farmer can make in his farming operation.

Rail and trucking costs constitute a major barrier to the kinds of produce that can be shipped economically from the area. The impact of these costs is particularly severe in periods of high production and low prices for crops such as potatoes, onions, and fruits. Frequently

produce is sold at destination for less than freight charges. In order to compete in the major markets, Mountain States must have some advantages in production. Since most movements are east-west along latitude lines the time crops are ready for market is about the same in other areas that produce similar crops. Vegetables from Arizona and New Mexico are an exception since the large markets are north as well as east.

The large increase in population on the west coast since 1940 has helped the Mountain States in marketing some products. More beef cattle, lambs, winter potatoes, eggs, and feed grains find a market there. For many products, however, the west coast States also are surplus producers.

Availability of off-farm employment

An adjustment frequently made by farm operators is to work part time or even full time away from their farms. This is taking place in parts of the Mountain States. A necessary condition to part-time work is that off-farm employment be available within a reasonable distance of the farm. Such conditions do not prevail in large areas of the sparsely populated mountain region. For farmers in other areas to obtain part-time employment would mean selling or leasing their farms. This can readily be done so far as land is concerned. But often there is no alternative use or value for the buildings which may represent a substantial investment. Since building deterioration is rapid if unused, many farmers do not make this adjustment.

Just as the physical conditions restrict the adjustment possibilities of commercial and noncommercial farmers, so do location and costs of marketing and available nonfarm employment opportunities.

INSTITUTIONAL CONDITIONS AFFECTING AGRICULTURE

All farmers, regardless of location, are limited in feasible adjustments by physical and economic conditions. The differences between the mountain and other areas in this respect are of degree not of kind. Mountain States farmers are confronted with certain institutional problems, however, that are unknown to most other farmers. These have to do with the use of land in public ownership and with rights in irrigation water.

Use of land in public ownership

A recent report³ of the Agricultural Research Service shows that 49.8 percent of the land area of the Mountain States belongs to the Federal Government. An additional 7.3 percent belongs to State governments. The remaining 42.9 percent includes private, county, and municipal ownership, and a considerable amount of Indian land that has a measure of Government control. Title to 87.1 percent of all land in Nevada is vested in the Federal Government. This is the highest of any State, the lowest is Montana with 29.9 percent.

Lands in Federal and State ownership are those with greatest physical limitations for agricultural use. They include much high mountain land which is administered as national forests. The major part of the balance is administered by the Bureau of Land Management, De-

³ Wooten, Hugh H., and James R. Anderson. Major Uses of Land in the United States, Agricultural Information Bulletin No. 168, PERB, ARS, USDA, Washington, D. C., 1957.

partment of the Interior, and include the driest and most desert-like lands of the Nation (the Great American Desert). These lands contribute directly to agriculture through the grazing of cattle and sheep. Forest lands provide mostly summer grazing while "BLM" or "Taylor grazing" lands are used mostly for winter grazing. Although the productivity of a typical section of either forest or BLM lands is low, in the aggregate these lands contribute materially to the income of livestock operators.

Livestock operators use these lands under a system of grazing permits. Permits are for a specified number of animals of a given kind—cattle or sheep. They specify the date animals may go on the land and the date they must be removed. Other specifications are made pertaining to grazing and other practices. For these privileges the livestock operator pays a specified fee for each animal.

Decreasing permits on public lands

Probably the most serious problem associated with the use of public lands is uncertainty of tenure. While general policies of both administrative agencies have been to continue permits to the same livestock operators, many operators feel insecure. They have no legal assurance that changes may not be made in their permits without their approval. Often such permits are all important to a successful livestock enterprise since the feed they provide must complement the feed from private lands, and possibly feed provided by permits on other Federal or State lands at other seasons of the year. Their private property and permits on other public lands may be of little value without the continuation of all permits.

So far as is known few, if any, livestock operators have been completely eliminated from using public lands. Reductions in numbers of livestock permitted, however, have been frequent. Data provided by S. Blair Hutchison, forest economist, Intermountain Forest and Range Experiment Station, region 4, show a reduction in number of cattle permitted of nearly 15 percent from 1938 to 1955 in regions 1 to 4, inclusive. Reduction in sheep numbers, however, was 42 percent. Regions 1, 2, 3, and 4 are nearly, though not exactly, coextensive with the 8 Mountain States. This amounts to a reduction of about 27.5 percent in total animal units⁴ permitted. In some grazing districts reductions have been much heavier than in others.

In addition to reduction in numbers many stockmen have been curtailed in the period or length of time they were permitted to use public lands. The trend has been to delay the beginning of the grazing period and to advance the required date of leaving. These reductions have thrown a burden on privately owned lands of stockmen.

How adjustments in grazing permits are made

The most important and frequent method of reducing the number of livestock permitted on a given area is to reduce numbers of animals of all operators a uniform percentage. This seems fair and equitable but there comes a time when the size of one's permit is so small it is of little worth.

⁴ Cattle assumed to average 0.8 and sheep 0.2 animal unit each. The heavier reduction in sheep numbers probably represents a voluntary shift from sheep to cattle by many operators. Considerable controversy has revolved about the need for reductions but this problem is not relevant to this discussion.

Although the administrative agencies do not recognize any rights in permits they will transfer permits with transfer of stock and/or base ranch property. They may, however, make reductions up to 10 percent when such transfers are made. They also may make similar reductions when an operator changes from sheep to cattle as many have done since 1940.

From 1945 to 1955 numbers of permits for cattle on national-forest land in the Mountain States decreased from 13,743 to 12,683 and for sheep from 3,287 to 1,765. The average size of the cattle permits remained constant at 70. The average size of sheep permits increased from 1,015 to 1,335. However, there is wide variation in size of permit. For 1955 in region 4 the average number of cattle per permit was 58, but 65 percent of the permits were for less than 40 head. Only 5 percent of the permits were for more than 200 head. This group averaged 397 head which is about what is considered necessary for efficient operation. The range in size of sheep permits is not so great but follows the same pattern. Between 1945 and 1955 the average size permit increased for both cattle and sheep. This resulted from a reduction in the number of permits for less than 40 head of cattle and 1,000 sheep.

Adjustments in size of permit and business are further complicated by the fact that permits have value. These values are added to the market price of the livestock or land transferred with the permits. With the recognition that grazing permits may be reduced or even eliminated, stockmen are reluctant to assume the risk in paying above market prices for livestock or land.

Many operators graze their livestock on Forest Service lands during the summer and BLM lands in winter, and on private lands during spring and fall. In some areas a lack of coordination between Forest Service and BLM policies presents problems. One agency may reduce grazing permits of an operator without regard to what the other does. An increase in winter grazing may be useless without a commensurate increase in summer grazing. It makes difficult the maintenance of a well-balanced operation.

Water rights

Although laws governing use of water for irrigation in each State are somewhat different, each follows the general law of appropriation and of beneficial use. These laws tend to limit achievement of maximum efficiency in the use of this scarce resource. Probably the biggest weakness is in the accepted concept of beneficial use. Almost any use is accepted as beneficial. In some cases also a prior appropriation or right to the use of water at a specified place or in a specified manner prevents the development of additional water because it would interfere with established use. These laws tend to establish a rigidity that is not favorable to change.

Acreeage restrictions and price supports

Acreeage restrictions have greatest effect on wheat producers. In many dryland wheat-producing areas of the Mountain States there is no satisfactory substitute for wheat on the diverted acreage. In more favorable areas where other crops, usually barley, can be grown the problem isn't so critical. In some areas it means that instead of getting a crop of wheat from half of the land each year and having half in fallow, a crop is harvested from only one-third each year

and two-thirds is fallowed. Since most operators have machinery and labor to crop half their wheatland each year the cost per bushel is increased nearly in proportion to the decrease in production.

Apparently the situation is similar in much of the cotton area. There the problem is that substitute crops produce only a small fraction as much income as is obtained from cotton.

High prices for wheat, above-normal precipitation, and improved machinery during and following World War II brought about an expansion of wheat acreage. Most of this came by clearing and breaking up virgin land. In the Mountain States the seeded acreage increased 88 percent. It is now generally agreed that a sizable part of this land is not suitable for permanent cropping. Either the soil is too poor, the slopes too steep, or moisture is inadequate. Unfortunately nature does not readily restore the native vegetation and the economic feasibility of widespread artificial seeding of such lands has not been established.

Price supports have also restricted the demand for wheat as a livestock feed. Although Utah is the only Mountain State in which commercial poultry is of major importance, it will serve as an example. Studies in the past have shown that the egg and turkey enterprises were founded, in large measure, on feed wheat. As recently as 1946, three-fourths of the feed given poultry was wheat. The balance was barley, corn, and oats. On a pound basis, barley prices were 8 percent less than wheat, corn 17.5 percent more, and oats 1.5 percent more. Recent price reports show corn, oats, and barley at 1, 18, and 34 percent, respectively, less than wheat. The basic feed for poultry is now barley and sorghum grains. The latter are not produced in Utah or most of the Mountain States. Colorado, New Mexico, and Arizona do produce some. The manager of a feed plant serving turkey producers is reported to have said that in Utah milo has replaced wheat to the extent of 1 bushel per bird for 2 million birds. Poultrymen who also produce wheat sell the wheat to Uncle Sam and purchase milo.

Some replacement of wheat by barley as poultry feed would probably have taken place without price supports on wheat, but not so completely. Price supports have increased the price disadvantage of wheat more than fourfold, and acreage allotments have shifted the use of much land best adapted to wheat to barley. The poultryman gets a less desirable feed. What has happened in the poultry industry has also taken place in the feeding of other kinds of grain-consuming livestock. At one time considerable wheat was fed to hogs and dairy cows, and some to beef and lambs.

The extent of the impact that changes in the prices of different feed grains have had on the poultry industry is not known. However, the January 1 number of chickens on farms in the Western States has declined about 37 percent since 1930. This has occurred in spite of more favorable markets for poultry and eggs. Although the situation with turkeys is not exactly comparable, it may be significant to point out that during the same period the number of turkeys produced declined markedly in 5 States, remained about constant in 2, and increased materially in only 1. The one that increased was Utah.

PROBLEMS IN FARM ORGANIZATION

To this point we have discussed problems that are largely outside the control of the farm operator. To a large extent, the farm operator

must adapt his choice of enterprises and production methods to the prevailing physical, economic, and institutional conditions. Within limitations imposed by these factors there are generally some choices available to the operator. This section will deal largely with these problems.

Size of farm

The most important of all adjustment needs is the need to increase size of farm business. It is estimated that from a half to two-thirds of the farms with incomes in the upper 35 percent are too small to be highly efficient and too small to provide satisfactory family incomes. To a large extent, farm sizes had their origin in the Homestead Act or other institutional regulation under which land was originally patented. As mechanical power and other labor-saving devices developed, the land base became too small. Although there is a trend toward fewer and larger farms, it has not kept pace with the need.

In the Mountain States the physical and economic limitations operate to restrict substantial enlargement of business by intensification of land use. Increasing the land base can be accomplished only through developing new land and water or by reducing the number of farms.

Adequacy of water supply

In many cases the cropland to be irrigated is greater than the available water supply. The extent of the water deficiency is not known for all Mountain States. A Utah study made a few years ago indicated that less than half the irrigated land in Utah had an adequate water supply.⁵ Some improvement has been made since that time. This situation seems to be characteristic of all Mountain States.

Operation of farms with an inadequate water supply is generally uneconomical. Under some situations an individual farmer can obtain additional water by means of wells or purchase of additional water stock, but this is an exception rather than a general rule. Water development usually requires group action. In many areas either additional water should be developed or ways found to concentrate the existing water on smaller areas.

Adjustments that would concentrate the limited water supply on better soils would be desirable. Not infrequently, low quality soils are combined with adequate water supplies while better quality soils are combined with inadequate or no water at all. The supply of good soil exceeds the supply of water.

Types of farming

Existing types of farming are quite well adjusted to the physical and economic environment. Major livestock enterprises are quite stable, as is dry land wheat production. For the majority of these farms few, if any, alternative farm enterprises exist. There are some fringe operators, however, who could change enterprises to advantage. Perhaps the biggest adjustment needed is the shift in use of low-producing wheatland to provide grazing for livestock. Establishing grasses on such land is not easy. It is reported that any

⁵ Thomas, W. P., et al., The Colorado River and Utah's Agriculture. Special Report No. 1, Agricultural Experiment Station, Utah State Agricultural College, Logan, Utah, April 1949.

such seeding operation has no better than a 50-50 chance of being successful. Little information is available on either the costs or the benefits from this activity. Also, little experience has been developed with respect to management practices and persistence of such seedings. At best, the productivity of such lands is so small that but little capital inputs can be justified. It is known the lands will have to be fenced, more water will have to be provided, and the land must not be grazed for 1 or 2 years.

Land values and credit

Many farmers report that they would like to increase their land base but there is no land close by that they can add. Where land can be had the asking prices are often too high to make the addition profitable. Apparently there are more farmers who would like to buy additional land than there are those who desire to sell, and land values are being pushed beyond the normal productive value. Most farmers who need to purchase land to increase their incomes must depend upon credit.

Information is somewhat contradictory in relation to the availability of credit. Some reports are that lending agencies, particularly the Federal land-bank system, are so conservative that they are ineffective. Other reports are that the mortgage credit agencies can be depended upon to provide credit if the risk is at all within reason. It seems safe to conclude that there is adequate credit for the farmers with established credit ratings who desire to enlarge a standard farming operation. It may not be available, however, for men or operations that do not meet the above qualifications.

Older operators particularly are reluctant to go in debt in order to add to their land resources.

Balance in resources

Additional land is often necessary to balance or to make more efficient the operation of other resources, particularly power and machinery. In recent years there has been a trend toward fewer enterprises on a farm in order to reduce the capital requirements in machinery. Nevertheless many farmers report that with existing power and machinery they could operate up to double the acreage they have. They think it necessary to have modern equipment in order to save labor and also perform operations at the proper time. Apparently dependence upon custom machine operators has not proved satisfactory.

FARM OPERATING PROBLEMS

In addition to problems farmers face in organizing an economic and well-balanced business, there are problems in its operation. Some of these are discussed in this section.

Available farm labor

Probably the most serious labor problem is in sheep ranching. Experienced and dependable shepherders are scarce. Such herders command a high wage which is willingly paid. Inexperienced or undependable herders are considered expensive at any wage. Neglect of the herd or poor decisions can, in many situations, result in losses far exceeding herders' wages. The reason most frequently given for the shift from sheep to cattle on many ranches in recent years is the problem of herders.

In some areas there is also a problem of hiring farm labor for short periods of only a few days. Special jobs of short duration give more difficulty than regular season peaks that are usually cared for by itinerant laborers or local youth groups from nearby cities.

Short and intermediate term credit

As with long-term credit, some differences of opinion exist on the difficulty of getting short-term credit. Some reports are that short-term production credit isn't available in the quantities needed. Agencies that would make loans haven't funds to loan, and agencies that have money will not risk it in sufficient quantities, is the way the problem is sometimes presented. No doubt some shortages do exist. Poultrymen particularly seem to have credit problems. There are indications that some of the integration of production and marketing processes—and this is not extensive in the Mountain States—is because regular financing agencies will not risk the amount of credit required. Thus, if the processor or feed dealer is to continue in business he has had to finance the production of products.

The type of credit that seems most in demand and isn't available, with satisfactory terms, is that which is needed for a few years. It is used for the purchase of such items as tractors, breeding stock, major building, or land improvements. It is alleged that some lenders will make such loans only for 1 year, the loan to be renewed as necessary if the conditions are satisfactory to the lender. Farmers consider this unsatisfactory.

Adoption of improved production practices

A 1951 study made in each of the Mountain States shows that agricultural production could have been increased an average of 13 percent⁶ by the adoption of improved practices then known. This would not have required more land or labor. In all probability these results are still true. The significance of this is not that additional production is needed but that such practices would be profitable. It is inevitable that some lag will occur between the discovery of new information and its full adoption, but the lag is often greater than need be. This applies to adjusting farm organization to changed economic conditions as well as to production practices.

There is no reason to think that farmers in the Mountain States are less willing or able than farmers in other areas to accept and use new ideas. Differences may exist, however, in the extent to which new principles and practices are developed and made available to them. This is not unrelated to the bases used in distributing Federal appropriations for agricultural research and extension work among States. Without doubt, many farmers need help in determining alternatives available to them. Lack of information, need for new skills, risks and uncertainty, all associated with adjustments, are always barriers to change.

In some areas too much emphasis has been given to prices as the solution to all the farmers' problems. Too often the attitude is held that there is no alternative solution and that Government should some-

⁶ Agriculture's Capacity To Produce, Bureau of Agricultural Economics, U. S. Department of Agriculture, Agricultural Information Bulletin No. 88, Washington, D. C., June 1952.

how adjust prices so that farmers' incomes would be adequate without any adjustments on the farm.

Available capital also restricts change. This is probably mentioned more frequently than any other problem. Rising prices of all production resources as well as operating labor and supplies, plus the need for larger quantities of all of these goods and services, places the amount of needed capital beyond the reach of many farmers. It is a particular barrier to young farmers, and many older ones will not assume the risks even if they can obtain the necessary credit. It may be that a different method of providing capital for agriculture is needed.

SUMMARY

Many complex problems face farmers in the Mountain States. Some of these are of such nature that individual farmers can do little about them except "adjust as best they can to the inevitable." Many farmers, however, can make changes in the amount, choice, and use of the resources available to them that would improve their economic condition. Some problems fall between those that cannot be changed and those that depend upon decisions of the individual. Group action can improve some of these.

Among the most important problems that farmers can do little about is the variation in precipitation from year to year. Droughts are cruel, and are often difficult to adjust to. Temperatures, topography, and the natural state of the soil cannot be significantly changed. In general, agriculture has become reasonably well adjusted to these conditions, though some additional adjustments might well be made. These would include returning low-producing wheatland to grazing land.

Group action, through time, might modify the effects of some institutional barriers, such as use of public lands, water rights, acreage controls, price supports, some marketing problems, and the availability of information on new developments, desirable changes, and credit.

The area where the individual farmer can be most effective is in adjusting his farm organization and production practices to the relatively unchanging natural environment and to the rapidly changing economic and social conditions. Enlargement of volume of business and the seeking out and adoption of improved production practices are most important.

In spite of the seeming complex problems with which commercial farmers must deal, the industry is generally in a healthy condition. Those that have a volume of business large enough to use family labor and capital efficiently are, with few exceptions, including drought areas, in sound condition. There are always some inefficient farmers, regardless of size of their holdings, and most of the largest 35 percent haven't size enough to be efficient. The most difficult problems are with the farmers smaller than these who are primarily dependent upon agriculture for their income.

ADJUSTMENT PROBLEMS FACED BY COMMERCIAL FARMERS ON THE WEST COAST

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I. INTRODUCTION

Agriculture's role in an expanding industrial economy is one of constant challenge and adjustment. Farmers must accept the important role as suppliers of food and fiber and, more important, they must stand ready to make adjustments in output and production techniques. Failure to make adjustments may lead to lower incomes than are attainable and, possibly, to loss of control of their capital resources. Economic pressure is not new to farmers, but the penalties for failure to make necessary adjustments in the future not only will be as great but may come more swiftly than in the past.

This paper discusses the types of adjustments anticipated in commercial agriculture of the three Pacific Coast States. Specific assumptions are made concerning trends in population, social, and economic conditions, and consumption. Within this context the following points are discussed:

- (1) Changes that might be expected in relative importance of different commodities produced in the Western States and the reasons for these changes; and
- (2) The effect of production adjustments on factor and resource requirements, farm size, factor and resource control and ownership, and business structure.

Persons familiar with the abrupt changes that have been made in production patterns in this country are aware that long-term projections of agricultural adjustment can be viewed only in a setting of well-defined assumptions. This is particularly relevant in the Pacific-coast area where, for major geographic areas, producers are quick to change production plans in light of expected market conditions. Major emphasis has been given to adjustment problems in California, though reference is made frequently to similar problems in Oregon and Washington.

The assumptions giving direction to the analysis are contained in the studies of Daly¹ and Barton and Rogers.² The assumptions that have been made are:

1. A total population in the United States of 210 million by 1975. (Since the population on the Pacific coast, and particularly in California, is increasing at a greater rate than the rest of the United States.

¹Daly, Rex F., *The Long-Run Demand for Farm Products*, *Agricultural Economics Research*, a journal of economic and statistical research in the U. S. Department of Agriculture and cooperating agencies, vol. VIII, No. 3, July 1956.

²U. S. Department of Agriculture, *Farm Output, Past Changes and Projected Needs*, by Glen T. Barton and Robert O. Rogers, *Agriculture Information Bulletin No. 162*, Agricultural Research Service, Washington, D. C., August 1956.

a population estimate of 20 million to 25 million in California in that year seems entirely reasonable.³

2. A labor force of 90 to 95 million by 1975, a level of unemployment not to exceed 4 to 5 percent, and a rate of increase in labor productivity of approximately 2½ percent per year.

3. An increase in the rate of output of goods and services of 3 to 3½ percent per year, a resultant doubling of the gross national product by 1975, and an increase in real income per capita of approximately 60 percent by 1975. (Projections based on the lower level of per capita real income included by Daly have been omitted.)

4. Prices at 1953 levels for agriculture and the economy as a whole.

5. Agricultural exports and imports not increasing appreciably from the 1952-53 level, and, therefore, continuing to be a relatively small element in aggregate supply and demand.

6. Continuing world peace.

Additional assumptions are provided by the analyses of Daly and Barton and Rogers. These are projections of national utilization and required output for major commodity groups in 1960 and 1975, expressed as index numbers. In considering the impact of population growth and rising per capita real incomes on the demand for agricultural products, both increases in aggregate demand and changes in consumer preferences are recognized. These latter changes result directly from the assumed increase in real incomes and may be augmented by trends in consumption habits.

Projections of utilization and required output for major crops for 1960 and 1975 (table 1) are of particular importance to the Pacific Coast States because of the indicated increases in the types of products already produced in large quantities in California, Oregon, and Washington. Projected output requirements have been developed from present production-utilization ratios, and indicated utilization in 1960 and 1975.

TABLE 1.—*Projected indexes of utilization and required national output for major crops for 1960 and 1975 (1953=100)*

Commodity	Utilization		Output	
	1960	1975	1960	1975
Wheat.....	95	104	74	81
Rice.....	92	95	92	94
Apples.....	120	128	121	129
Citrus.....	122	176	121	176
Other fruits.....	111	132	114	135
Tomatoes.....	113	154	119	165
Leafy, green, and yellow vegetables.....	111	145	109	142
Other vegetables.....	110	138	104	131
Potatoes.....	103	106	99	102
Dry beans.....	96	98	98	99
Sugar (raw).....	110	126	101	101
Nonfood fats and oils.....	110	131	106	137
Feed concentrates.....	114	142	(¹)	(¹)
Cotton.....	118	143	96	117

¹ No estimate.

A similar summary of utilization and required output for major livestock products (table 2) indicates the aggregate trends in con-

³ Fuller, Varden, *Population Growth and the Demand for Food, California Monthly*, vol. LXIV, No. 10, June-July 1954.

sumption and the production needed to meet the utilization requirements for the 2 target years.

TABLE 2.—*Projected indexes of utilization and required national output for major livestock and livestock products for 1960 and 1975 (1953=100)*

Commodity	Utilization		Output	
	1960	1975	1960	1975
Cattle and calves.....	105	138	104	138
Pork (excluding lard).....	118	152	121	156
Sheep and lambs.....	108	113	110	114
Milk (fat solid basis).....	111	134	106	129
Chickens and turkeys.....	115	153	115	153
Eggs.....	112	140	112	140

A brief comment on the output requirements is desirable in light of the assumptions introduced in the analysis of Barton and Rogers. While they defer the analysis of the future production potential, they suggest that the task of increasing livestock and livestock-product output by 45 percent and crop production by a fourth over the 1951-53 levels might not be too difficult. This conclusion is based largely on projected past performance of the agricultural segment.

Bressler⁴ suggests that output expansion in agriculture over the last 20 years may have resulted largely from a series of nonrepetitive events. Black and Bonnen⁵ project a continued need for holding intensively cultivated acreage down if overproduction in agriculture is to be avoided in the decades ahead. Shifts in production to meet changing preferences is perhaps the most critical type of adjustment to achieve.

Perhaps of more importance than the overall rate of growth is the potential differential rates of growth in output between different commodity groups in which expansion in output is called for. The largest expansion in crops is suggested for fruits and vegetables, especially citrus fruits. Producers of these crops have in the past been quick to adopt new technology, though advances, particularly in harvesting, have been slow to develop because of the perishable nature of the commodities. This is illustrated by the fact that from the 1947-49 period to 1956, farm production per man-hour has risen only 14 percent in fruit and nut production and 19 percent in vegetable production. In contrast, a 40 percent increase for all crops and a 36 percent increase for total farm output per man-hour for agriculture as a whole is indicated for the same period.⁶

Increases in output of most all crops will be required. This means that substantial increases in yields or acreage, or both, must be realized. Additional acreage for cultivated crops can be expected to come into production. There may be as many as 25 million acres of land

⁴ Bressler, R. G., *Farm Technology and the Race With Population*, paper presented to the Arizona agricultural research and extension annual meeting, Arizona State College. He cites favorable weather during the late thirties and favorable economic conditions in agriculture during the war and postwar years. A backlog of technological developments was a major contribution to the growth in output in the postwar years. These could not be expected to be repeated in exactly the same manner.

⁵ Black, John D., and James T. Bonnen, *A Balanced United States Agriculture in 1965*. National Planning Association. Special Report No. 42.

⁶ U. S. Department of Agriculture, *Changes in Farm Production and Efficiency, 1956 Summary*. ARS 43-35 Agricultural Research Service, Washington, D. C., August 1957.

come under cultivation over the next 20 years—about 6 percent of the present total harvested acres. A further increase in the use of tractors will be of minor importance in freeing additional acres. Therefore, increased production must come largely from greater yields. Increased use of fertilizers and the adoption of better varieties and management practices can be expected.

In the commercial vegetable producing areas additional yields per acre may have to come from better pest and disease control, greater utilization of the quantity produced, and from genetic improvements in the plants. Some researchers in vegetable crops doubt whether additional yield increases from fertilization and plant spacing, for many commercial vegetable areas, can be obtained. Further mechanization is not likely to increase yields except as it facilitates more timely harvesting or pest and disease control. Reduced costs resulting from greater mechanization will encourage increased planted acreage and, thereby, add to total output.

In the foregoing, emphasis has been placed on aggregate goals and some of the possibilities of meeting them. Attention will now focus on the west coast and the expected shifts in land use to meet changes in relative demands.

II. PROJECTED LAND-USE CHANGES

Adjustments in the allocation of cropland on individual farms and in aggregate for any region result from expected and actual changes in relative net earnings among alternatives. Net earnings are affected by yield, product price, inputs, and practices and factor costs. Because of interrelationships among enterprises and products these factors seldom affect only a single enterprise. A change in any single determinant or combination of determinants of net income for one or more enterprises can lead to shifts in land use. Where the number of physically adapted alternative crops or livestock products is large and, particularly, where net earnings of two or more are nearly equal, small changes in expected net earnings may result in transfer of large acreages.

In the Pacific Coast States, a large number of alternatives can be produced on irrigated land. A total of 9.3 million acres are now under irrigation comprising 32 percent of the total irrigated acres in the United States and approximately 43 percent of the total cropland in the 3 Pacific Coast States.⁷ In California, 69 percent of the cropland is irrigated, nearly one quarter of all of the irrigated land in the United States. It is on this land and new land that might subsequently be brought under irrigation that significant shifts in land use in the Far West will take place.

In marked contrast, alternatives on nonirrigated land are limited in number. Small grains, grain, hay, dry peas, grazing, and fallow comprise the bulk of the physical alternatives, though not all of these are applicable to each dry-farmed region. Often substantial changes in expected relative net earnings must take place before adjustments are made.

⁷ U. S. Department of Commerce, 1954 Census of Agriculture, vol. 1. Bureau of the Census, Washington, 1956. Total cropland includes that cropland harvested, fallow, idle, or in soil-improvement crops only.

Shifts in land use associated with changes in relative prices of the products that can be produced on the land are those most frequently recognized. Further, the assumptions framing this analysis focus primarily on shifts in demand. The importance of differential rates of technological development and adoption in agriculture as they affect costs and supplies produced should not be overlooked. Developments at both the production and factor supply levels are pertinent. If past experience concerning relative rates of technological development in various segments of agriculture can serve as a guide, it is likely that even greater price differentials than have prevailed in the past will be required to achieve output goals projected.

Those crops for which large increases in utilization and output are projected, such as the fruit and vegetable crops, and those projected for decreases, such as wheat and rice, are crops in which the Pacific Coast States produce a large proportion of the total production of the United States. When considered in terms of geographic regions within the West Coast States, their importance is magnified.

Wheat

Any major adjustments to be made in wheat acreage and production on the west coast will be made in Washington and Oregon. However, with a history of producing a wheat going partly to feed outlets, it is reasonable to expect that a portion of the increased requirement for feed concentrates in the West will come from this source. Projections for poultry and egg output indicate the availability of a market for Northwest wheat in the event present export outlets dwindle. Price programs in wheat in recent years have discouraged the use of west coast wheat for livestock feeding in the West. A reduction in price for wheat produced in the Northwest would encourage the feeding of this wheat to livestock and poultry. It would also encourage expansion of livestock feeding in the Northwest.

The major alternative to wheat in the dry-farmed regions of the west coast is barley though its ability to compete with wheat for land varies from area to area depending on rainfall primarily. In the Palouse region of eastern Washington dry field peas have been an important crop grown on wheat farms. Foreign markets largely determine changes in demand for dry field peas produced in eastern Washington. Expansion or contraction of acreage will be determined by foreign demands. Recent experience in diversion of wheat acreage resulting from the allotment program indicates the importance of barley as an alternative to wheat in all three Pacific Coast States. However, in view of relative yields of wheat and barley and added uncertainty of winter kill with barley, wheat is expected to remain the dominant grain crop in rotations on Palouse farms in the absence of acreage restriction programs.

Conversion of wheatland to improved dryland range and grain hay production as a basis for an expansion in livestock production has been suggested by some in light of the projected increased requirements for beef, sheep, and lambs. Even if wheat grain moves into feed outlets and is priced accordingly, net returns per acre would favor grain production. A recent study in Montana indicates that under present relative yields of wheat and beef (on improved dryland pasture) from such land, either prices or yields of wheat would have to be reduced to very low levels or livestock prices would have to increase to new

highs before such transfer became economically attractive.⁸ Production of wheat for feeding outlets in poultry and other livestock production appears to be a more realistic projection than transfer of acreage to grain hay and improved pasture. Wheat produced for milling outlets would retain its competitive position, assuming no change in interregional competitive forces in wheat.

Rice

Rice acreage on the west coast is confined to California where 20 percent of the United States rice (by value) is produced. This rice depends on an export market in the absence of a Government price program. Therefore, the projected requirement is less applicable under present utilization practices to California rice than to that produced in the Southern States. Insofar as production and acreage adjustment is required because of foreign and domestic changes in demand, barley and irrigated pasture appear to be the major alternatives. The structural characteristics of soils adapted to rice production deter production of most crops except the few adapted to soils with restricted drainage. Much of the California rice acreage is on land previously untilled because of structural or chemical impediments to other agricultural production. A period of high rice prices enables producers to undertake reclamation practices on these lands.

Increased irrigated pasture on the heavy basin soils in California's Central Valley less suited to barley would permit further expansion of cattle and sheep feeding. Both industries are well established in the rice-producing and adjacent areas. Expansion could take place in order to utilize additional spring, summer, and fall feed from irrigated pastures, particularly as the productivity of adjacent rangelands is further increased.

Citrus fruits

The 76-percent increase in output required from 1953 to 1975 suggests that citrus fruits will be strong competitors for acreage suited to their production. Of the Pacific Coast States, California is the sole producer of citrus fruits. California's acreage of oranges, both bearing and nonbearing, has declined steadily since the end of World War II, though the decline is not common to all producing areas in the State. Acreage in the vicinity of Los Angeles has declined rapidly, primarily as a result of subdivision and industrialization. Between 1945 and 1956 the total acreage of oranges in Los Angeles and Orange Counties declined from 113,000 to 50,400 acres. Acreage north of the Tehachapi Mountains, primarily in Tulare County, has held at approximately 40,000 acres during the same period. An opportunity exists to expand further the production of oranges in the latter area. Possibilities for expansion in Riverside and San Bernardino Counties all exist.

A further decline in acreage of oranges near Los Angeles can be expected. In California, if acreage is to be expanded it will probably

⁸ Carpv, Charles A., *Inducing Shifts From Crop Production to Beef on Dryland Farms in Montana*. Unpublished master of science thesis. This study estimates that on winter wheat land yielding 20 bushels selling for \$1.80 per bushel, calf prices would have to increase to nearly \$93 per hundredweight, before a transfer could be induced. In areas of higher yields, calf prices would have to be even greater. The cost of shifting enterprises is included in the analysis.

come in the Tulare-Fresno area or in the interior desert region of southern California. Opportunities in these districts are limited only by available water supplies. Considerable expansion in the Tulare-Fresno area can take place through displacement of field crops now produced under irrigation.

It is anticipated that California will continue to produce Valencia oranges both for fresh and processed uses, but its relative position nationally will decline. The production of navel oranges in California is expected to increase. California's winter navel oranges are already more important than Valencias in the areas of expanding orange acreage and have been returning growers higher gross returns per acre in recent years. Diversion of Valencia oranges to processed uses further reduces the gross returns per acre and reduces the competitive position of Valencia oranges.

The future of orange acreage and production in California will be largely dependent on the opportunities for expansion in other citrus-producing regions of the United States. Improvements in disease control in California may influence acreage and production also. California should continue to be a major supplier of table oranges, particularly winter oranges of the type purchased when disposable incomes are high. Expansion in orange production primarily to meet processing demands is questionable because of the expected competition for land in localities suitable for orange production.

Virtually all of the lemons produced in the United States are produced in California in the five south coastal counties where favorable climatic conditions prevail. It is in this area, however, where urban expansion is greatest. Increased acreage and production will depend in large measure on future nonagricultural competition for suitable lands. A limited expansion of acreage in the desert counties is possible and may provide some of the needed acreage. Grapefruit production can be expected to increase in the desert valleys of California where considerable expansion has taken place in recent years. However, total acreage of grapefruit in California has declined as a result of reduced acreage near urban areas.

Deciduous fruits

A 29-percent expansion in output of apples and a 35-percent expansion of other fruits nationally is indicated for 1975. With two-thirds of the present United States supply of noncitrus fruits being produced in the Pacific Coast States (nearly 50 percent from California alone) there is reason to expect that the West will meet a large part of the projected output.

In California, bearing acreage of deciduous fruits declined steadily from 1929 to 1955. The 1955 level was 45 percent below the peak year. In 1956, bearing acreage of fruits and nuts showed a net increase over the previous year for the first time in almost three decades. However, total output has increased steadily up through the 1940's and only recently showed an indication of declining. This production increase results largely from the adoption of improved production methods that increased yields by 70 percent from 1929 to 1955.

The type and rate of development of technology will determine to a large extent the total acreage required to meet the projected requirements. Further mechanization of fruit harvesting is anticipated. This would result in substantial cost reductions per unit of output

but might reduce per acre yields. Without offsetting improvements in yield-increasing practices such as fertilization and spraying, substantial acreage increases would be required to meet projected needs.

Some indication of the possibilities for expanding fruit acreage on the west coast can be gained by examining past cropping history. Nearly 300,000 acres of land in California were formerly in deciduous tree fruits. All of this area is not now available because of urbanization and industrialization that has taken place. In many cases necessary adjustments out of fruit production have been facilitated by urbanization. Reduction of prune acreage in the Santa Clara Valley provides an excellent example. Expansion of acreage of deciduous fruits, if required, in the Pacific Coast States will likely take place through displacement of irrigated field crops in three areas—Columbia River Basin in Washington, Willamette Valley in Oregon, and, to a lesser extent, the Central Valley of California.

Recent estimates in the Columbia Basin project place the land area suitable to deciduous fruit production at 20,000 acres. Over 500 acres have been planted recently. Increased apple acreage in this area is to be expected in meeting a part of the increased output. Other fruits can be produced particularly in the southern areas of the Columbia Basin where temperatures do not favor the coloring of apples. Fruit crops (and some processing vegetables) may assist producers on small farms in the project to increase net earnings.

In California, as water becomes available in other areas, fruit and vegetable acreage may be increased. An offsetting fact is that most areas in this category do not have winter and spring climates as desirable as present producing areas. As a consequence, irrigated field crops are expected to move onto lands less suited to fruits permitting fruits to expand adjacent to present producing areas should an increase in acreage in California take place. Any increased acreage of fruit will be primarily by expanded plantings by present producers or new producers primarily interested in fruit production.

A further shift from the dried to other forms of processing and fresh use of fruit is anticipated. California's output of canned, crushed, and frozen deciduous tree fruits could be increased by as much as 25 percent with no increase in total production if drying of fruits (other than raisins) were eliminated.

Vegetables

A favorable climate, rich soil, and irrigation have fostered a vegetable industry in California now providing a third of the total value of vegetable crops produced in the United States. In the 1937-41 period, California contributed 16.2 percent of the value of processed vegetables and 30.1 percent of the value of the fresh market vegetables. By the 1948-52 period the contributions rose to 23.5 and 32.5 percent, respectively. In 1956, California vegetable acreage totaled 717,500, a record high.

Projected increases in vegetable output could be attained with no additional acreage if the rate of increase in yield prevailing in the last 25 years should continue to 1975. These yield increase rates cannot be projected without question. Much of the increase recorded in the past 25 years is due to 2 changes that, for present plants and cultural methods, are largely exploited: the shift from horses to tractors, which permitted closer plant spacings; and intensive use of fer-

tilizers. Yield may be increased further by other means. Better control of diseases and pests, breeding programs for more efficient plants, increased use of growth regulators, and the use of those vegetables that under intermittent economic conditions may be produced but not harvested are four possibilities. A part of the vegetable requirements can be met by increasing the proportion of total production that reaches consumers. This can be accomplished by improved marketing methods to reduce shrinkage and spoilage.

Assuming that California continues to supply the same proportion of the total vegetables in 1975 that it does today, and assuming a rate of increase in yield one-third what prevailed in the past 25 years, as much as 200,000 acres of land would have to be diverted from other uses. Land presently planted to irrigated field crops such as alfalfa, irrigated grains, and sugar beets would provide much of this acreage. The highest quality land with suitable soil, temperature, and moisture conditions would be the first taken.

Opportunities also exist for increasing vegetable production in other west coast areas. Peas, corn, and asparagus for processing have already been produced in the Columbia Basin and a wide variety of vegetables can be produced in that region. At present the processing is being carried on at existing facilities outside the basin but additional processing facilities will develop in the area as increases in demand and production are experienced.

Vegetable production in the West for nationwide fresh consumption will continue to be expanded, particularly for shipment in seasons when other regions do not produce. Technological advances in production, harvesting, handling, and shipping are expected to maintain this production pattern.

In meeting processed vegetable needs, it is anticipated that farms presently planted to other crops will become vegetable producers on part of their land under various types of contract systems reducing the hazard of extreme income variability long associated with vegetable production. Irrigated farms in the Central Valley can produce a wide variety of vegetable crops in several seasons permitting the expansion of freezing, canning, and other forms of processing. Nearly year-round operations of these farms is anticipated. Evidence of this development exists throughout the Central Valley and smaller coastal valleys.

A processing (and possibly some fresh) vegetable industry of this type will provide farmers in the irrigated areas of the West additional alternatives.

Field crops

Field crops, particularly those produced on irrigated lands, can be expected to feel the strongest pressures of adjustment. Yet cotton, California's most important crop, will continue to compete strongly for lands in the Central Valley and southern interior valleys because of the high and relatively stable net returns even in the absence of a price program. California's farmers can be expected to increase cotton acreage with relaxation of restrictions and will likely maintain acreage in face of moderate declines in relative net income per acre.

Other field crops such as alfalfa, dry beans, and sugar beets will become relatively less important in the agriculture of California, Oregon, and Washington. Alfalfa will continue to be important as a rotation crop on irrigated farms.

The position of the feed crops—milo, corn, barley, and alfalfa—will be partly determined by the role of livestock in the agricultural future of the West. Projected needs for livestock products and the derived feed concentrate requirements indicate a need for expanding acreage and production. Some shift in relative importance among feed grains is expected as hybrid field corn production continues to expand. Yet, these crops may have to compete with higher net income crops for both land and water.

The role of irrigated field crops in the adjustment process will depend in large measure on water availability and water cost. In several producing areas, water costs are already at levels precluding production of all but high return crops. The impact of water on the adjustment of agriculture on the west coast is discussed in greater detail in the section following.

Livestock and livestock products

Projections of utilization and output for livestock and livestock products for the United States require major increases in the feed base. Production expansion will take place in those areas where feed production and conversion to meat is the most profitable farm activity. When the higher population growth rate on the west coast is considered, the problem of meeting the requirements becomes of major importance. For some commodities that can be shipped from other areas where feed supplies favor expansion, there is little adjustment problem involved locally. For such products as fresh milk, extensive adjustments may be required.

The west coast does not produce sufficient beef, pork, or lambs to meet the demands. Approximately 70 percent of the pork, 30 percent of the beef and 32 percent of the lamb consumed in California in recent years has been shipped in from Intermountain, North Central, and Southwestern States. As the population in the West increases the proportion of total requirements that will be shipped in will increase. Whether this meat is brought in live or dressed will depend in part on freight rate structures. Regardless of form, buyers will likely have to go further east than at present to obtain the required supplies.

Improved feed resources in the Western States through conversion of brushlands and foothills to improved pastures will provide additional grazing for cattle and sheep. This improvement will not furnish sufficient additional feed to increase animal populations in the Pacific Coast States in proportion to local consumption requirements.

The beef feedlot industry has developed very rapidly in California in recent years. Expansion in Oregon and Washington has not taken place, but Idaho has increased cattle numbers on feed and is supplying a part of the finished beef consumed in the Northwest. Cattle and calves on feed in California increased from 125,000 head in 1945 to 496,000 head in 1957—nearly a fourfold increase. Cattle are either purchased from or fed on contract for feeder cattle producers. The feedlot operations are characterized by large-scale, high-efficiency units operating on extremely low margins. If freight rates in the future are favorable, shipment of live animals to these feeders will continue. If dressed meats are favored, the west coast feedlot may decline significantly.

The demand for dairy products on the coast will likely be met through further diversion of milk from processed uses to fluid use.

More processed dairy products will be shipped in. In California the diversion is progressing at a rapid rate. In 1940, 55 percent of the milk produced went to processed uses. By 1956, only 30 percent was processed. With this conversion will come larger herds and more intensive feeding practices. Dairymen will purchase rather than raise their milk cow replacements. These replacements will be raised in other States, permitting available feeds to be used for milk production. Milk production per cow will continue to expand because of improved breeding and feeding. Milk for fluid uses is now produced near consumption centers. Technological developments in transportation and handling facilities are already increasing the feasible distance from producing units to market—an important consideration in the ability of dairy farms to meet land competition. Feed production on dairy farms will, of necessity, shift toward such sources as silage to provide large quantities of feed per unit of land. Other feeds will be purchased. Pasture will be confined to areas where land quality will not permit other feed crops to be grown.

The projected demand for chickens, turkeys, and eggs indicates a strong future demand for feed. Part of this could come from grains produced in excess of market demand. How much additional feed will be required to produce 53 percent more chicken and turkey and 40 percent more eggs will depend on advances in feed-conversion efficiency.

III. PROJECTED IMPACTS OF ADJUSTMENT

Land and water resources

The available land and water on the west coast is under strong competitive demand, particularly in localized areas where better grades of soil are found and where current water demands exceed current supplies at present prices. Farmers are not in an effective position to compete for either land or water against the increasing pressure from urban and industrial developments. An example of the nature of competition for land and its impact on allocation of the supply is provided by information on land conversion to other than agricultural uses (table 3). Over 10 percent of the land in classes I to IV has been converted to nonagricultural uses, 3.1 percent of this shift occurring since 1942. In California the rate of conversion has been higher with 15 percent of the land in classes I to IV converted, about 5 percent of the total since 1942. A high proportion of the converted area in California is from class I and II lands adjacent to metropolitan areas or rights-of-way stretching across rich agricultural lands in the valleys. The actual loss in agricultural land resources is probably understated since a high proportion of the converted land is of the better class.

In California where 1 out of every 7 acres of cultivatable land has been converted to other uses, serious consideration is being given to protecting high-grade agricultural lands through legal means such as zoning ordinances. Expanded interest in setting apart these lands for agriculture is expected as the demand increases for vegetables, fruits and dairy products produced on a large part of these lands. Four "agricultural towns" have already been incorporated within metropolitan areas in California, 3 for dairy production and 1 for fruit production.

TABLE 3.—Land conversions to nonagricultural uses¹ California, Oregon, Washington

State	Acres in land use classes I to IV	Acres converted prior to 1942	Percent of total converted prior to 1942	Acres converted between 1942 and 1956	Percent of total converted prior to 1956	Total percent converted prior to 1956
	<i>Million acres</i>	<i>Million acres</i>		<i>Million acres</i>		
California.....	17.56	1.94	10.5	0.82	4.7	15.2
Oregon.....	6.52	.27	4.1	.10	1.5	5.6
Washington.....	12.25	.47	4.0	.19	1.5	5.5
Total.....	36.33	2.68	7.4	1.11	3.1	10.5

¹ Cultivable acreage withdrawn for urban, industrial, and commercial developments and highways, airports, defense, and recreational purposes.

Source: USDA Soil Conservation Service. State offices of California, Oregon, and Washington.

Additions to cultivated land can be expected as reclamation and irrigation developments continue on the west coast. The largest recent addition has been the Columbia Basin project in Washington which includes approximately 600,000 acres of land types 1 through 3 (Columbia Basin project classification). Ultimately, as much as a million acres can be brought under irrigation within the Columbia Basin project. However, additional irrigation development will be required to maintain irrigated agriculture on several million acres in the West dependent on dwindling underground sources.

Of great concern in California is the allocation of available water both as to location and time. With population growth and industrialization, water demands from these sources become particularly strong. Heavy concentration of population in southern California has increased the interest in transporting water from the northern areas. This pressure follows the overdevelopment beyond locally available water supplies plus what already is committed from other areas. A highly-developed system of water rights dating back to acquisition of the water by original users presents a further complication.

Approximately 50 percent of the water applied to crops in California is pumped from underground sources. In several of the richest agricultural areas of the State, water tables are falling due to over-draft. Developments are underway to provide supplemental water to farmers in these areas. The future importance of supplemental water is expected to increase. Other users of water already are expressing interest in acquisitions from these sources and can offer more than agricultural users can afford to pay.

No easy solution to the water allocation problem in California is in sight nor can projections be made with any significant degree of certainty. If a solution is reached on strict economic grounds, industrial and urban users will likely gain the use of water currently not being utilized. There will undoubtedly be strong pressures to acquire water supplies currently going to agricultural uses. If California's farmers are to help meet the increases in output projections, protection of their claims to water must be continued.

In the Pacific Northwest irrigated areas, more abundant water supplies are available from surface sources. As industry and population expand, increased demands for water will undoubtedly arise. The acute nature of competition prevailing in California is not as yet in sight, however.

The intensification of demand for land and water resources is creating serious economic problems for agricultural producers. Perhaps most important is the impact on land prices. Numerous buyers are interested in land for nonagricultural purposes. Also, farmers selling for subdivision at prices appropriate to that use are willing to pay prices in other areas above those reflecting long-term incomes in agricultural uses. As a result, assessed valuations are rising, property taxes are increasing, and returns on investments in land for farming are declining. The 1957 California Legislature passed an amendment to restrict assessment of agricultural lands to a use basis.⁹ With urban and industrial development continuing at the present rate, farmers in California will continue to experience increasing fixed costs of operation resulting from strong demands for land and water resources both from within and outside agriculture.

Factor requirements and factor markets

Changes in aggregate output and its composition will have serious impact on factor markets, primarily labor. The types of production contemplated require large numbers of seasonal laborers, given present technology. With alternative employment opportunities with pay scales exceeding those in agriculture, competition for labor has already become severe. Expansion of enterprises with high labor requirements will accentuate the labor shortage.

The further use of laborers from Mexico and other areas will undoubtedly provide a continuing part of the labor supply for seasonal requirements. In 1955 approximately 8 percent of the weekly average number of workers on farms in California were contract foreign workers. In 1956 this figure rose to 10 percent, when an average in excess of 50,000 Mexican nationals per week were employed in California. This increase accompanied a decline in the average total number of workers employed per week from 475,000 to 467,600.

The farm operator in California currently requiring large quantities of hired labor will have increasing difficulty in meeting his needs. Several alternative courses of action appear open to him. First, he can employ each new labor-saving device available, provided he has sufficient capital and is operating on a scale sufficient to justify the investment. Second, he can organize in such fashion as to employ a nearly constant labor force over the entire year and provide attractive housing, salary, and other benefits in an attempt to acquire the kind of labor he desires. Undoubtedly, a combination of both measures will be employed with continued use of contracted labor for peak needs.

Further technological developments in planting, thinning, and harvesting intensive crops will undoubtedly be forthcoming. Already the harvest of many perishable crops, such as asparagus, grapes, and some fruits, is nearly the mechanized stage. Plant breeders and propagationists have been active in producing plants capable of being handled mechanically, and success appears to be near for several crops.

New requirements for capital in agriculture as a partial substitute for labor costs suggest the need for examining future capital requirements of agriculture on the Pacific coast. With increased intensifica-

⁹Ch. 2049, Statutes and Amendments to the Codes, California, 1957 (senate bill No. 1637).

tion in agriculture, greater capital inputs per acre will be required. If past experience can serve as a basis for projection, more production credit will be employed. There is little question regarding the availability of production credit either from primary or secondary sources, though any shift toward crops with greater fluctuation in net income (vegetables and fruits, for example) will cause lenders to require added security for loans. Sales contract, grower-processor integration, or other means of reducing income variation will be strongly encouraged by lending agencies.

Farm size

Farms in California have steadily increased in size (measured in acres per farm) since 1935. This is due partly to new land brought under cultivation between 1940 and 1945 and partly to a decline in the number of farms, particularly from 1950 to 1954 (13,955). Approximately 95 percent of the decrease in number of farms has been in farms under 180 acres and 63 percent in farms of under 30 acres. The census definition of a farm precludes accurate explanation for the change. However, in part, the decline reflects economic pressure on small farms and attempts to adjust thereto.

The magnitude of capital inputs required per farm has increased rapidly. Accompanying the physical and economic changes has been a rapid increase in value of farm products sold per farm in California expressed in constant dollar values. Between 1950 and 1954 the value of product sales per farm for California (adjusted for price increases) rose from \$6,417 to \$8,239, an increase of nearly 25 percent.

With respect to labor and capital inputs, it is revealing to examine the relationship of size of farm to efficiency in use of resources in California. Inefficiency in resource use in California agriculture concentrates in the small farms (those selling less than \$5,000 worth of farm products in 1949).¹⁰ These farms accounted for 11.4 percent of the farmland in commercial farms, 18.1 percent of the investment in land and buildings, and 22.5 percent of the farm labor, but produced only 6.3 percent of the total value of farm products sold. By comparison, the large farms (sales of \$25,000 or more) comprised only 14.2 percent of the commercial farms, accounted for 60.9 percent of the farmland and 48 percent of the value of land and buildings, utilized 44.6 percent of the farm labor, and produced 67.6 percent of the total farm sales. Average sales per worker on the small farms was \$1,999—on the large farm \$9,675.

Many farmers on the small farms have sought other professions or part-time employment. Others on small farms have attempted to increase the return to their most abundant resource—labor—through the selection of labor-intensive enterprises. Still others have attempted to increase the size of their holdings by renting or buying additional land, thus availing themselves of an opportunity to gain in efficiency. As a partial indication, transfer of farm titles in California has taken place at approximately twice the national average rate for at least the past 6 years.

Further evidence of the increase in farm size and intensity of cultivation is indicated by the change in size of labor force on farms.

¹⁰ Hopkin, John A., *A Study of Farm Size in California*. Economics Department, Bank of America, N. T. & S. A., San Francisco, Calif. (unpublished manuscript).

Between 1950 and 1954, the number of farms reporting 3 or more hired workers increased by 62 percent. The number hiring less than 3 workers declined by 14 percent. The number of farms operating with only family labor declined by 9 percent during the same period.

Technological developments in agriculture have given rise to the employment by farmers of agricultural specialists who are becoming an important segment in California's commercial agriculture. Soils technicians, irrigation engineers, entomologists, and plant pathologists, agronomists, and nutritionists are a few of the type of trained scientists being employed. Large farms often hire one or more specialists as a permanent part of the labor and management force. The bulk of these specialists sell their services to farmers, often furnishing the equipment necessary to accomplish the service. As farm size has increased these specialists have become an increasingly important segment of agriculture.

The developments in California that have taken place in farm size directly as a result of economic pressures and indirectly as a result of technological advance and resource and factor shortages may well preview the future of farming in other areas of the United States. Many criticize the commercial structure of agriculture in California pointing to its sociological shortcomings. In part, it does not conform to the classic family farm concept and, in the past, unfortunate conditions have prevailed with respect to some segments of the labor force. The latter conditions have been largely remedied. Perhaps the classic family farm concept may have to be replaced by a more realistic definition permitting capital and management in the hands of the farm operators and his family to substitute for the source of labor on the farm as the major criterion.

Business organization and control

Several developments in agriculture in California (and to a limited extent in Washington) suggest likely trends in future farm business organization. These characteristics include tenancy, contracting for services and outlets, integration of various types, and business organization.

Tenant farmers in California are usually specialists in the production of a single commodity, leasing land from season to season on a share basis. Most of their investment capital is in machinery and equipment. Others farmers own the land and farm the rotation crops. This permits accumulation and concentration of skills in producing intensively farmed crops and reduces the capital required by the producer. Technical specialists provide assistance either on a fee basis or as a service made available by supply companies or processors. Further intensification in agriculture, both as to types of products grown and as a result of interest in technological and economic efficiency, may well lead to increased numbers of tenant farmers and technical consultants such as those described.

Integration of production with processing, marketing and/or factor supply represents another development finding widespread application in the West. Two types of integration are prevalent. First is the conventional contractual arrangement involving the producer and feed dealer and possibly the processor. This type of integration is found in the poultry meat and cotton industries. It

is less prevalent on the west coast, however, than it is in the Midwest and East. Extension of credit usually accompanies these contracts.

The second type of integration provides the individual producer with greater opportunity to exercise his managerial skills. Under this arrangement, the producers of a given product organize to operate the required processing facilities and contract with a marketing firm to assume responsibility for sales, advertising, branding, transportation, and the other marketing functions. Profit sharing with the marketing agency is a characteristic of this development. Producers receive the benefits of profits ordinarily taken at the processing level and a portion of those desired in the marketing of the product. This arrangement is operative in the grape and wine industry in California and it is anticipated that like arrangements will develop in the processed fruit and vegetable industries. Similar developments can be expected in livestock production on the Pacific coast.

Purchasing and marketing integration of the second type has also been fostered through grower-owned cooperative associations in California. These producer owned and controlled associations are particularly important in marketing certain products, handling over 60 percent of the total supply of some products. A highly formalized contractual system between members and their associations has evolved.¹¹

Contractual arrangements with privately owned processing plants for delivery of perishable farm products have been common in California and other States for several decades. These contracts usually specify price, quality, acreage to be planted, and in some cases, rate of product acceptance by the processor. Growers have been attracted to these terms in order to insure a market at stipulated price prior to incurring any part of the high costs of producing and harvesting a perishable crop with extremely limited alternative outlets. Collins¹² has reported the nature of the contractual arrangement used in integrating grower-processor activities in California's canning tomato industry. Financing of production by the processor was common prior to and during World War II but commercial lenders have largely assumed this responsibility for established growers. Secondary financing prevails to a greater extent in conjunction with cotton producer-gin contracts in California.

While reducing the price uncertainty for the grower, this contractual arrangement fails to provide the advantages associated with grower ownership and operation of processing facilities. This type of integration demands competent management and informed producers—commodities more likely to be available in a highly commercialized agriculture.

Increased use of purchasing and marketing contracts and integration can be expected in commercial agriculture in the future. Individual producers will seek the benefits of price certainty in commodities subject to wide intraseasonal price fluctuations. Processors

¹¹ Mueller, W. F., and J. M. Tinley. The Use and Functions of Cooperative Marketing Contracts in California, California Agricultural Experiment Station. (Manuscript approved for publication.)

¹² Collins, Norman R., Integration of Grower-Processor Activities in the California Canning Tomato Industry. Paper delivered at the Third Annual University of California Tomato Day, February 20, 1957, Davis, Calif., 10 pp., processed.

will be attempting to maintain volume at near-plant-capacity levels. Lenders already recognize the improved quality of their chattels. Informed producer groups will see the benefits of integration through the entire processing and marketing channel. Any shift toward vegetables, fruits and other perishables will foster contracts between producers and others.

A development in business structure in western agriculture—a widely misunderstood development—is the increased interest in and use of incorporation by farmers. This form of ownership has been fostered as a means of acquiring capital in the amounts required to develop or acquire land and water resources. In most cases the incorporated farm is still fully owned and controlled by the individual farmer and his family.

V. SUMMARY AND CONCLUSIONS

Agricultural adjustments faced by commercial farmers on the west coast have been projected within a specific set of assumptions. The projections can be summarized as follows:

1. Little change in the kind of products produced in the dry-farmed areas of the west coast are anticipated. Greater quantities of wheat are expected to be used for feed than at present. Some expansion in livestock production in dry-farmed areas may take place but extensive conversion of wheatland to grazing is not anticipated.

2. In irrigated areas, strong competition exists for that acreage where climate, soil and water conditions favor the production of vegetables, fruits and high-value field crops. Farms having physical attributes that permit may inaugurate more intensive production including double cropping.

3. Competition for water and land on the west coast is becoming increasingly intense. Urban and industrial users can pay more for land and water than can commercial farmers. Nonagricultural demands for land and water resources are expected to work hardships on producers in irrigated agricultural areas because of the effects of these demands on agriculture's cost structure. Surface water must continue to be developed and transported if the present irrigated agriculture is to be maintained at today's level, irrespective of demands for urban and industrial uses.

4. In view of labor supplies and wage rates, farmers are expected to adjust their organizations to reduce needs for seasonal labor and employ permanent help on a longer term basis. Further mechanization is expected to help reduce seasonal labor needs.

5. Further reduction in the number of small low-output farms is anticipated, exclusive of part-time farms. The average size of the commercial farms is expected to continue to increase. These farms will still be "family-type" farms within a definition applicable to today's agricultural and industrial economy.

6. Tenant farming, as found in a highly commercial specialized agriculture, will continue to expand. Continued growth of a large agricultural service industry is anticipated. Integration through purchasing and sales contracts and grower-owned processing and marketing facilities will become more prevalent.

Adjustment in agriculture cannot be discussed without reference to national policies and programs directly affecting the decisions of

farmers. These policies and programs need not be confined to acreage or production control. Tariff, import and export restrictions, pricing programs, Government purchase and storage programs and reclamation programs all affect adjustments made by farmers individually and collectively within given geographic areas. The effects of two of these types of programs on adjustment in agriculture are discussed very briefly for illustrative purposes only.

Any acreage-allotment program utilizing an historical benchmark for establishing farm allotments contains features hindering adjustment in commercial agriculture. This is particularly important when qualification for price support is coupled with compliance. Farmers are apt to continue to produce crops to maintain "history" rather than undertake substantial reorganization. Where allotments are assigned to the land, values of the allotments tend to be capitalized rather quickly into the land rental, purchase price, or assessment and, thus, increase costs for the producer. Adjustments in production to long-term changes in consumer demands may be unduly delayed.

A second example of the effect of a policy or program on agricultural adjustment involves farm size. It is anticipated that the most difficult adjustment problems in the West, both now and in the future, will involve the small farms. These farmers often face severe capital limitations preventing their expansion to larger units and adoption of cost-reducing innovations in agriculture. Any public or private agency establishing farms capable of supporting a family only during very favorable economic periods creates a future adjustment problem for agriculture.

IV. CHANGING MARKETING COSTS AND STRUCTURE;
MARKETING AGREEMENTS AND ORDERS

(PAPERS FOR PANEL D)

CHANGING MARKETING COSTS AND STRUCTURE; MARKETING AGREEMENTS AND ORDERS

MARKETING COSTS, FARM PRICES, AND THE FARMER'S SHARE

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Marketing of farm products is a big business.¹ It is getting bigger year by year—in number of workers, in capital investment, and in dollar volume of business. The gross returns of agencies marketing farm products exceed the gross returns of the farmer-producers.² Furthermore, since the end of World War II the gross returns of marketing agencies have increased relative to farmers' gross returns in almost every year. Or, stated in another manner, the farmer's share of consumer expenditures for food, clothing, and other consumer goods derived from farm raw materials has declined.

For most consumer goods derived from agricultural products, the returns to marketing agencies are a larger part of the retail price than are the farmer's returns, particularly for those farm products that are used as raw materials in manufacturing or processing. The farm price is such a small proportion of the retail price of some products that if the farmer gave his products away, retail prices would be reduced by less than 20 percent. For example, if the farm value of the 0.9 pound of wheat in a loaf of bread were subtracted, the price of white bread would be reduced from 19 cents to 16.5. Similarly, the price of a 12-ounce package of corn flakes would drop from 23 cents to 20 cents, a 23.5-cent package of cigarettes to 20 cents, and a man's cotton dress shirt from \$3.60 to \$3.30. Likewise, farm prices of wheat, corn, cotton, and tobacco could increase by 50 percent with increases of not over 10 percent in the retail price of these consumer goods.³ It is perhaps significant that most of the products derived from the so-called basic farm commodities—wheat, cotton, corn, tobacco, rice, and peanuts—fall in the group discussed in this

¹ In this paper I use marketing of farm products in its broadest sense—to include all of the operations involved from the sale of the products by the farmer until purchased by the consumer in the form, time, and place desired. This is the definition generally used by State experiment stations and the U. S. Department of Agriculture, but it does not always agree with definitions of marketing used by nonagricultural workers. It is quite logical that agricultural workers should use this broad definition as farmers are interested in all of the operations from the farm to the consumer that may affect farmers' returns.

² As used here, gross returns of agencies marketing farm products are equal to consumer expenditures for goods derived from farm products less payments to farmers for the agricultural raw materials.

³ These comparisons assume, of course, that the size of the farm-retail spread (or gross marketing margin) would not be affected by these assumed changes in farm prices. Price comparisons are based on United States average retail prices published by the Bureau of Labor Statistics and United States average prices received by farmers published by the Agricultural Marketing Service.

paragraph; that is, products for which large percentage changes in farm prices would have relatively little effect on retail price.

With the large role that the marketing system has in getting products from the farmer to the consumer, it is not surprising that both farmers and consumers have a continuing keen interest in the amount and changes in marketing margins and the efficiency of the marketing system. This interest is usually intensified when farm prices are falling and/or retail prices are rising. Neither is it surprising that this subcommittee in its "exploration of the causes of the farm problem and the implications of alternative means of dealing with it" should wish to consider various aspects of "marketing costs and structure and marketing agreements and orders."

My assignment for the discussion on marketing was to prepare a paper that would help provide perspective as to the meaning of marketing margins and their significance for farm prices and income. In part, my paper will be introductory to topics that will be discussed in more detail by other participants. I will make particular reference to the following questions noted by the subcommittee:

1. Relation of marketing costs to level and stability of farm prices.
2. To what extent the farmer's share of the consumer's dollar is a criterion of marketing efficiency.

THE FARMER'S SHARE AS A MEASURE OF MARKETING EFFICIENCY

The farmer's share varies widely by product and over time. For example, the farmer's share of the retail price is always much larger for eggs than for a product like bread. But this is not because marketing agencies handling eggs are more efficient or make less profit than those handling wheat, flour, and bread. The principal reason for the differences is in the operations performed by farmers and marketing agencies and the differences in resources required to perform these operations. Egg production involves more operations on the farm than does the production of wheat—not only the production of grain as in wheat, but raising the laying hen and then feeding the hen. For wheat, a two-stage manufacturing process is involved after sale by farmers. The wheat is milled into flour and then the flour is combined with other ingredients in the baking of the bread, in addition to the buying and selling, transporting, and storage of wheat, flour, and bread.

By grouping food products into four classes—unprocessed animal products, processed animal products, unprocessed crops, and processed crops—the relationship of the farmer's share to the relative amounts of production processes on the farm and after farm sale can be shown. Eggs are classified as an unprocessed animal product and bread as a processed crop. In general, farmers receive the largest share of the consumer's dollar for unprocessed animal products and the smallest for processed crops although there is considerable variation within each of the groups (table 1). The degree of processing varies. Also, distance to market, relative perishability, and other factors affect the ranking of the farmer's share within groups.

TABLE 1.—Variations in farmer's shares by type of food products,
average 1952-56

Type of product	Farmer's share (percent)
Unprocessed foods, animal products¹:	
Eggs.....	69
Beef, choice grade.....	65
Chickens, frying.....	60
Lamb.....	59
Pork (retail cuts).....	58
Average.....	62
Unprocessed foods, crops:	
Beans, dried.....	46
Apples.....	43
Potatoes.....	39
Lettuce.....	38
Onions.....	36
Tomatoes.....	36
Prunes.....	35
Oranges.....	30
Lemons.....	29
Grapefruit.....	18
Average.....	35
Processed foods, animal products¹:	
Butter.....	71
Cheese, American process.....	52
Milk, fluid.....	47
Milk, evaporated.....	46
Lard ²	44
Ice cream.....	19
Average.....	46
Processed foods, crops:	
Peanut butter ³	40
Vegetable shortening.....	37
Margarine.....	31
Salad dressing.....	23
Flour, white.....	39
Corn meal.....	27
Rolled oats.....	26
Bread, white.....	19
Crackers, soda ³	15
Corn flakes.....	15
Corn sirup ³	15
Orange juice concentrate, frozen.....	31
Strawberries, frozen.....	26
Beans, green, frozen ³	20
Peaches, canned.....	18
Tomatoes, canned.....	17
Peas, frozen.....	16
Sugar, beef.....	46
Average.....	26

¹ Some processing is involved for almost all animal products. However, the kinds and grades of meat listed here are sold mostly in fresh form in contrast to canned and processed products derived mostly from other kinds and grades of meat.

² Rough estimates, based on value of live hog imputed to lard in calculating byproduct value for pork.

³ 4-year average, 1953-56.

The farmer's share of the consumer's dollar as an average for all products and for individual products varies markedly over time. The average farmer's share for a market basket of food products increased from 40 percent in 1940 to 53 percent in 1945, and declined to 40 percent again by 1956. These changes were related primarily to changing relationships of agricultural and nonagricultural prices, not to changes in marketing efficiency. When farm and retail prices fall because of an increase in marketings, the farmer's share often declines because prices go down proportionately more at the farm level, not because marketing agencies become less efficient.

As noted, the farmer's share data show variations in the amounts going to farmers by types of food products. These differences reflect, on the average, the variations in the balance of resources used in the farm production of a product and those used in processing and distributing after farm sale. The share the farmer receives of the retail price of a product indicates how much of an effect a change in the farm price is likely to have on the retail price. Over time, the farmer's share data reflect changes taking place in the marketing system as well as changes in relationships between agricultural and nonagricultural prices. The farmer's share is not, however, a useful measure for studying changes in marketing efficiency either in the short or long run. Changes in marketing efficiency can affect the trend and/or level of the farmer's share but other factors generally have more influence. A measure of marketing efficiency would compare services performed with costs or charges, or it would measure services actually delivered with potential services obtainable from the resources used. The farmer's share does not do this. Also, it should be noted that the farmer's share is a percentage measurement that depends on the ratio of marketing charges and farm prices. It is based on gross returns to farmers and marketing agencies and does not reflect net returns of either group.

INFLUENCE OF MARKETING COSTS ON LEVEL AND STABILITY OF FARM PRICES

In a broad sense, marketing contributes both to a higher level and greater stability of farm prices. Specialization in production by commercial farmers would be impossible without the marketing system to bridge the gap between the farmer and the city consumer. It bridges the gap in several ways—in distance, in time, and in form. Because of the vast network of transportation and distribution facilities, today's market for most farm products is nationwide. Through the marketing system, products of the individual commercial farmer can reach almost any household in the United States. This reduces regional differences in prices resulting from local surpluses or deficits. The price variability resulting from seasonal and cyclical fluctuations in farm production and marketings is reduced by storage, refrigeration, and processing facilities that help provide a more even flow of products to consumers.

Processing has widened the market for many food products by making them available in more forms, in all seasons of the year, and to

consumers all over the country.⁴ This is particularly important for the more perishable farm products for which harvesting and marketing are concentrated during a few weeks or months of each year. In general, the more different uses found for each farm product, the more stable its prices should be at the farm level, particularly within a marketing season. An oversupply for fresh use can be diverted to processed uses.

A look at the shelves of today's supermarkets quickly shows the wide variety of processed and packaged forms in which food is available to the shopper. Supermarkets carrying 5,000 or more different items are not at all uncommon. "Oldtimers" sometimes talk nostalgically about the cracker-barrel days when there was less standardization and packaging of foods. While today's supermarkets sometimes may limit the customer's choice of buying or not buying marketing services in the form of added processing or packaging, it seems certain that more rather than less variety and choice are available to today's food shoppers.

The development of our modern marketing system also has made the farmer more dependent on the marketing system in several respects. Marketing agencies buy farm products; few farmers sell direct to consumers. However, the real market for farm products comes not from the first buyers of farm produce but from consumers. Regardless of fluctuations in farm output, the marketing system must be geared largely to consumers. The volume of food handled for sale to consumers depends on the number of consumers and their food requirements. The demand for farm products at the farm level is a "derived" demand. The marketing system is the mechanism through which the consumer demand for finished products is transmitted back to the farmer as demand for his raw materials. The efficiency of the marketing system can be evaluated in part on how well signals of changes in consumer demand are transmitted back to the farmer.

Marketing and marketing costs may tend to make prices more variable as well as less variable. The costs that make up margins are generally "sticky." They do not respond to changes in supply of farm products in the same way that prices do. Margins per unit are likely to be as high (or in some cases higher) for a large volume marketed as for a small volume. This leads us to the familiar proposition discussed in most agricultural marketing textbooks that demand for farm products is less elastic at the farm level than at retail. That is, with a given change in supply, farm prices will change relatively more than retail prices unless the margin changes in the same propor-

⁴ Many examples of foods sold in an increasing number of forms may be cited. One of the more interesting is the "common" Irish potato. Some of its many processed forms are potato chips, frozen french fries, canned potatoes, potato salad, instant mashed potatoes (dehydrated in packages), as well as the potatoes used in soups, TV dinners, and many other ready-prepared foods. The proportion of the potato crop used in processed form has risen steadily in recent years, increasing from an estimated 11 percent in 1952 to 22 percent in 1956.

tion. (Because of "sticky" costs, margins do not often behave in this way.) For example, if the farmer's share is 50 percent of the retail price, the percentage change in the farm price will be twice as large as the change in the retail price and if the farmer's share is 25 percent, four times as large, assuming that the spread between farm and retail prices does not change. Thus, the smaller the farmer's share, the greater the price changes at the farm level percentagewise. Any general trend toward marketing costs making up a larger part of retail prices would tend to make farm prices less stable (that is, the derived demand at the farm level less elastic).

How do changes in marketing costs affect farm prices? Because the farm price often is, in an elementary sense, what is left after marketing agencies have deducted their charges, changes in marketing costs are likely to affect farm prices. Basically, marketing costs may change for two reasons: (1) A change in the services performed by the marketing system and (2) a change in the costs of performing the same services. The effects on farm prices are likely to differ, depending on the reason for the change in marketing costs.

First, let us consider the impact of added services. Assume further that the additional marketing services increase costs and that they replace services previously performed by housewives. If the added services increase the demand for the product so that consumers buy as much as formerly at a price which covers the extra cost, the farm price should not change.

Housewives generally seem to be willing to pay for the costs of additional services. But processing and other added services do not necessarily add cost. Transportation of a product may be less costly in processed form than in the fresh form. This is true for canned or frozen concentrated juices. In such cases both consumers and farmers may benefit from the added processing.

Several other variations of changes in marketing services can be postulated. Marketing agencies may take over jobs formerly done by farmers in marketing their products. In this instance prices received by farmers would drop. Or services performed by the marketing system may decrease, which should lower prices at retail or increase prices at the farm.

Farm prices are more likely to be affected if marketing costs change because of changes in costs of performing the same services. To determine how they are affected can be likened to unraveling the incidence of a tax. If the full extent of the marketing-cost increase is passed on to the consumer in the form of higher retail prices, consumers will buy less. How much less will depend on the elasticity of demand; that is, how willing the consumers are to substitute other goods. With a decline in consumer purchases, prices will have to drop to move the same amount of goods, which means lower farm prices. Lower farm prices may mean that farmers will cut back their production

although this may take from a few months to several years. Thus, the effect of higher marketing costs will fall partly on the consumer and partly on the farmer. But, if the consumer is more responsive to changes in prices than the farmer, which is likely to be true at least in the short run, more of the effect of the higher costs will be borne by the farmer.

Whether cost increases are initially passed on to the consumer, deducted from the farm price, or absorbed by the marketing firm may depend on the market, or bargaining, position of the marketing firm; that is, the elasticity of demand and supply of the firm.

For example, if a processing firm is the principal buyer of a farm product in a particular market, cost increases are more likely to be reflected in a lower farm price, especially if the firm is selling its product in a competitive market. But, if a processor (or processing industry) is buying a farm product in a market competitive with many other buyers and its purchases are a small part of the total market, then this processor is more likely to either absorb a cost increase or raise its selling price. If the cost increase is general throughout this industry, it probably will be passed on. The individual firm may be selling a branded product for which it has a special demand; in this instance, it may raise its selling price. Sometimes a firm may increase both its costs and revenue by spending more money in advertising or other promotion and expand its market. These are only a few of the factors that may need to be considered in analyzing the effect of an increase in marketing costs.

Changes in some costs—for example, transportation—may affect some farmers more than others because of a differential effect. Prices of producers distant from the consuming market are likely to be lowered more by general increases in transportation rates than nearby producers and raised more by decreases in transportation rates. Likewise, local or regional variations in other cost factors also may affect the competitive position and returns of producing areas differently.

General increases in marketing costs, which are much more common than decreases, do not necessarily lead to lower farm prices. Costs of marketing farm products may increase because of general increases in wage rates that are part of a general rise in wage rates throughout the economy. Labor payments make up 70 percent or more of total national income, so that a general increase in wages may raise consumer demand for food enough to offset the effect of higher costs on farm prices.

VARIABILITY OF FARM AND RETAIL PRICES AND FARM-RETAIL SPREADS

In general, agricultural prices are more variable than nonagricultural prices. During periods of inflation and deflation, farm product prices are often the first to move and may move farther than other prices. Also, farm product prices tend to be more variable at farm than at retail because of the relative inflexibility of farm-retail spreads. Changes in farm-retail spreads are for the most part independent of the supply and demand factors affecting farm and retail prices. Changes in spreads over a period of time are determined primarily by changes in costs of all factors employed in processing and distributing operations.⁵ Long-time trends in these spreads tend to parallel trends in costs and prices in the nonagricultural section of the economy.

A study of price changes for farm food products during the period 1947-56 illustrates the greater variability of prices at the farm level. In 6 years of this period the average prices received by farmers for food products changed by 5 percent or more from the preceding year. In only 3 years did average retail prices of farm food products change by as much as 5 percent. The change in the farm-retail spread was less than 5 percent in all but 2 years of this period. A similar pattern held for individual food products (table 2). In general, yearly changes in retail prices exceeded those in the farm-retail spreads but this was not true of all products. But spreads were more variable than retail prices for beef, pork, and lamb, most items in the bakery and cereal products group, and several processed fruits and vegetables.

While farm-retail spreads are generally less flexible than farm and retail prices for long-term comparisons, they often are more flexible on a short-term basis. Monthly changes in farm-retail spreads may sometimes show little correspondence to changes in costs. The average monthly change in farm-retail spreads during 1947-56 exceeded the average change in retail prices of most food products given in table 3. For the meat items and several other products, spreads were more variable on a monthly basis than prices received by farmers (farm value).

⁵ Profits of marketing agencies also are a part of the total farm-retail spread but they generally make up a relatively small part of the total.

TABLE 2.—*Relative frequency of year-to-year changes in retail and farm prices, and farm-retail spreads, selected food products, 1947-56*

Item ¹	Year-to-year percentage change			
	Less than 5.0	5.0-14.9	15.0-24.9	25.0 or more
Market basket:				
Retail price.....	67	33	0	0
Farm value ²	33	56	11	0
Farm-retail spread.....	78	22	0	0
Meat products (3):				
Retail price.....	55	30	15	0
Farm value ²	33	37	22	8
Farm-retail spread.....	41	48	4	7
Dairy products (5):				
Retail price.....	69	28	3	0
Farm value ²	44	44	10	2
Farm-retail spread.....	72	26	2	0
Poultry and eggs (2):				
Retail price.....	54	33	13	0
Farm value ²	27	46	20	7
Farm-retail spread.....	60	40	0	0
Bakery and cereal products (6):				
Retail price.....	77	17	6	0
Farm value ²	42	42	6	10
Farm-retail spread.....	61	33	2	4
Fresh fruits and vegetables (13):				
Retail price.....	37	39	15	9
Farm value ²	18	36	18	28
Farm-retail spread.....	47	41	8	4
Processed fruits and vegetables (12):				
Retail price.....	60	32	5	3
Farm value ²	46	31	9	14
Farm-retail spread.....	62	29	6	3
Fats and oils (4):				
Retail price.....	62	27	11	0
Farm value ²	23	39	15	23
Farm-retail spread.....	58	38	4	0

¹ Data for market basket are based on average price received for all items in market basket. Data for product groups are based on data for individual products in groups. The numbers in parentheses indicate the number of items included in each group.

² Average price received by farmers for quantity of farm product equivalent to retail unit (adjusted for value of nonfood byproducts).

TABLE 3.—*Average monthly changes, in percent, in retail price, farm value, and farm-retail spread, selected food products, 1947-56*

Item	Retail price	Farm value ¹	Farm-retail spread
Beef (Choice grade).....	2.2	3.5	5.4
Pork (excluding lard).....	3.2	6.6	7.1
Lamb.....	3.5	3.8	3.9
Butter.....	2.1	2.3	3.4
Cheese, American process.....	.6	1.6	1.7
Evaporated milk.....	.8	2.1	2.1
Fluid milk.....	1.1	1.8	1.0
Ice cream ².....	.2	1.4	.5
Chickens, frying ³	2.8	5.6	5.2
Eggs.....	4.9	6.0	6.2
Apples.....	7.3	6.4	10.4
Lemons.....	4.5	17.8	9.2
Oranges.....	5.6	18.1	8.1
Beans, green.....	15.2	22.9	13.6
Cabbage.....	12.4	34.0	9.8
Carrots.....	6.2	18.5	7.1
Lettuce.....	13.5	27.7	10.7
Onions.....	9.1	22.8	10.7
Potatoes.....	6.8	11.4	7.8
Sweet potatoes.....	7.3	10.5	8.5
Tomatoes ⁴	17.9	33.4	17.4

¹ Average price received by farmers for quantity of farm product equivalent to retail unit (adjusted for value of nonfood byproducts).

² 1951-56.

³ 1949-56.

⁴ 1950-56.

The greater short-run variability in spreads is related to several factors. Lags in price adjustment are associated with the frequent price changes at wholesale, farm, and other market levels for many of the products in table 3. These lags lead to alternate widenings and narrowings in farm-retail spreads. The wide daily, weekly, and monthly fluctuations in marketings, characteristic of many farm products, cause price uncertainties and price risks for marketing agencies.

These firms generally do not aim or expect to equate costs (including normal profits) on each transaction but to average out over a period of time. The same principle applies to firms handling many products. They aim at averaging out margins for several products rather than equating actual handling costs on each commodity. In fact, it would be difficult for most firms to allocate costs to the different products handled.

A part of the month-to-month movements in farm-retail spreads can be attributed to more or less regular, recurring seasonal variations in the marketing and prices of farm food products. The average seasonal movement of margins for some of the meat products and fruits and vegetables is fairly large—often greater than the seasonal movement of retail prices. If the timing and direction of the seasonal movements of farm and retail prices and margins coincide, then the seasonal variation in margins would tend to lessen the seasonal fluctuation in farm prices. This coincidence of seasonal movements characterizes many of the fresh fruits and vegetables. But for beef and especially pork, seasonal highs in the margin tend to come at times when marketings are high, which accentuates the seasonal fluctuations in farm prices.

SUMMARY

No single or direct answer, uncomplicated by restrictive assumptions, can be given to the question of the relation of marketing and marketing costs to the level and stability of farm prices. In some ways marketing can be said to stabilize prices of farm products but it also may add to the instability of farm prices. Increases in marketing costs tend to lower farm prices, but under certain conditions these higher costs may tend to raise farm prices if they also raise consumer buying power. The demand-and-supply characteristics of each product, the causes of changes in marketing costs, the relation of these cost changes to other parts of the economy, and the length of the time period all may be significant in determining how a change in marketing costs affects the level and stability of farm prices.

Marketing and marketing costs are not, however, the primary cause of either instable or low-farm prices. The stability of agricultural production as a whole plus the inherent instability of production of many individual farm products overshadow marketing as a causal factor of instable farm prices. (These adjustment problems and possible solutions to them are the subject of other panels in this series.) But marketing should not be overlooked because of this. An efficient

marketing system does and can contribute greatly toward stabilizing and improving farm income. The efficiency of this marketing system, however, is not measured by the share of the consumer's dollar which it takes, nor do these percentage shares measure the net returns of either farmers or marketing firms. It is reasonable to expect that as the marketing system performs more and more services relative to agriculture that a larger share will go to marketing.

COSTS OF MARKETING MAJOR FARM PRODUCTS

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The only sustained effort to maintain an index of the cost of marketing food is that of the Department of Agriculture. Its annual reports on the food marketing bill and its quarterly reports on the farm food market basket provide two satisfactory barometers of changes in retail prices, farm values, marketing margins, and the farmer's share of the retail food dollar.

There are numerous problems in developing and maintaining meaningful statistical series for a large number of foods and a few major marketing costs and services. The selection of regular price series, imputing of values to byproducts, estimating shrinkage, assessing price-quality relationships, and the lack of good data on volume of products moved at different prices leaves much to be desired if a high standard of statistical accuracy is needed. But men do not stop measuring things even though their instruments are crude. Difficulties may arise, however, when these rough measurements are used as a basis for making decisions that should require more exacting data and analyses.

Statistical series are used to record the direction of change. They neither explain the cause of change nor its magnitude. The series on marketing costs are particularly lacking in this regard. The marketing bill series is the computed difference between the total retail store cost of domestically produced farm food sold to civilians and the farm value of the equivalent amounts of such products. This difference is the total of payments of agencies that assemble, process, and distribute food. Foods sold in restaurants and other public eating places are valued at retail store prices. The series includes all farm products and special breakdowns for meat products, dairy products, poultry and eggs, bakery, and cereal products, and fruits and vegetables.

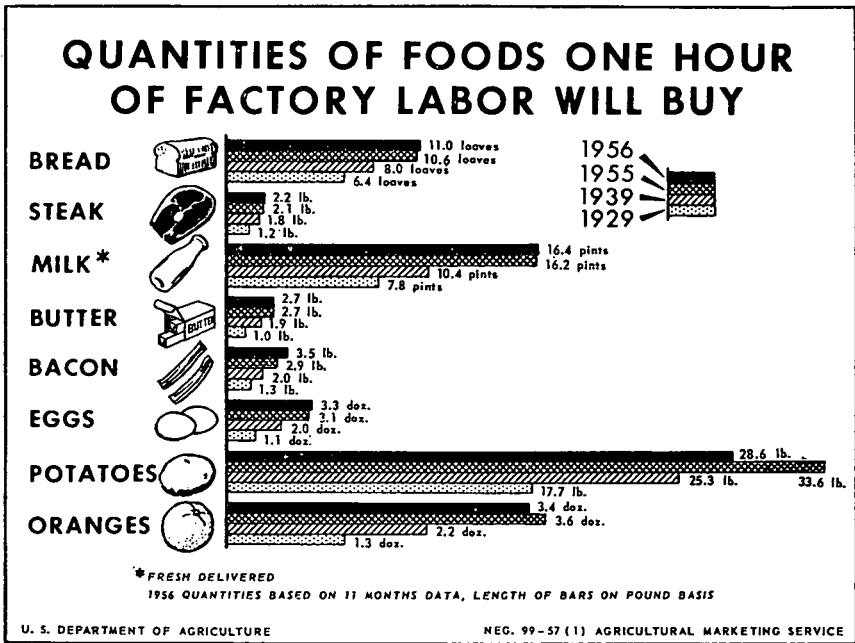
The market basket series is composed of the retail cost, farm value, marketing margins, and farmer's share of the retail cost for the average quantities of domestically produced food products purchased by the average wage-earner family in urban communities in 1952. The retail cost and farm value for a family market basket of food products are computed by multiplying the retail price and "equivalent" farm value of each of 60 foods by quantity weights. The farm-retail price spread is the difference between the retail cost and the farm value of the market basket. The farmer's share is the percentage that the farm value is of the retail cost.

The marketing bill series to a large extent reflects the changes in services and volume that take place in the processing and distribution of food products. It reflects a higher price level and additional marketing services. Because those added services are composed largely

of extra labor used in the additional preparation of food for home consumption, and because of a higher price level generally, marketing costs are increasing. While extra services may help increase costs, it must be kept in mind that such services have contributed heavily to the expansion of markets for the farmers who produce food. Advances made in temperature control, packaging, and improved handling techniques have done much to widen the markets for agricultural products and to make possible a better utilization of farm and marketing resources than would have been possible otherwise. Furthermore, the transfer of many food preparation services from the home to commercial processing plants contributes heavily to our rising standard of living and more free time for the homemaker.

While the number of food services performed for the homemaker outside the home has increased, comparatively speaking the homemaker, on an average, can now purchase as much or more food for an hour of labor than she could have bought in 1929, 1939, and 1955 (chart 1).

CHART 1



MARKETING COSTS: TRENDS—1913 TO DATE

Marketing costs and farm values for food have tended to move continually upward since 1913. On most occasions the rise has been due to a steady increase in the volume of food products marketed as well as to a rise in food prices. Food marketing costs have increased every year since 1940 (table 1). Both the volume and the total costs were about 4 percent higher in 1955, and a further rise in volume and total costs can be expected in 1957.

TABLE 1.—Marketing bill for farm food products purchased by domestic civilian consumers, retail cost and farm value, all farm foods and 5 major commodity groups, annual 1913-56¹

[Billion dollars]

Year	All farm foods ²			Meat products			Dairy products			Poultry and eggs			Bakery and cereal products			Fruits and vegetables		
	Farm value	Retail cost	Marketing bill	Farm value ³	Retail cost	Marketing bill	Farm value ³	Retail cost	Marketing bill	Farm value ³	Retail cost	Marketing bill	Farm value ³	Retail cost	Marketing bill	Farm value ³	Retail cost	Marketing bill
1913	3.53	7.41	3.88	1.35	2.26	0.91	0.62	1.23	0.61	0.45	0.66	0.21	0.44	1.42	0.98	0.55	1.44	0.89
1914	3.64	7.91	4.27	1.35	2.26	.91	.64	1.28	.64	.47	.67	.20	.49	1.62	1.13	.58	1.69	1.11
1915	3.63	7.99	4.36	1.21	2.16	.95	.66	1.33	.67	.48	.68	.20	.59	1.74	1.15	.56	1.61	1.05
1916	4.35	9.47	5.12	1.50	2.49	.99	.74	1.44	.70	.53	.75	.22	.68	1.99	1.31	.71	2.17	1.46
1917	6.05	12.40	6.35	2.03	3.03	1.00	.94	1.68	.74	.68	.94	.26	1.15	2.78	1.63	.97	3.10	2.13
1918	6.87	13.19	6.32	2.51	3.96	1.45	1.09	1.88	.79	.83	1.19	.36	1.05	2.45	1.40	1.04	2.72	1.68
1919	7.55	15.22	7.67	2.50	4.14	1.64	1.34	2.38	1.04	1.03	1.45	.42	1.21	2.90	1.69	1.13	3.33	2.20
1920	7.36	16.52	9.16	2.15	4.12	1.97	1.40	2.53	1.13	1.10	1.58	.48	1.17	3.16	1.99	1.30	4.21	2.91
1921	5.05	12.57	7.52	1.40	3.45	2.05	1.15	2.34	1.19	.77	1.16	.39	.62	2.42	1.80	.95	2.64	1.69
1922	5.19	12.88	7.69	1.56	3.49	1.93	1.14	2.31	1.17	.75	1.12	.37	.59	2.36	1.77	.99	2.97	1.98
1923	5.62	14.00	8.38	1.58	3.77	2.19	1.30	2.65	1.26	.83	1.24	.41	.59	2.43	1.84	1.03	3.15	2.12
1924	5.87	14.51	8.64	1.73	4.07	2.34	1.34	2.59	1.25	.86	1.31	.45	.67	2.52	1.85	1.06	3.31	2.25
1925	6.77	15.73	8.96	2.10	4.25	2.18	1.47	2.83	1.36	.96	1.41	.45	.87	2.81	1.94	1.15	3.60	2.45
1926	6.95	16.38	9.43	2.18	4.35	2.17	1.53	2.93	1.40	1.03	1.49	.46	.80	2.87	2.07	1.22	3.96	2.74
1927	6.72	16.23	9.51	2.04	4.25	2.21	1.62	3.09	1.47	.96	1.40	.44	.74	2.90	2.16	1.14	3.75	2.61
1928	6.94	16.27	9.33	2.11	4.28	2.17	1.69	3.19	1.50	1.05	1.53	.48	.74	2.98	2.24	1.13	3.47	2.34
1929	7.22	17.08	9.86	2.23	4.45	2.22	1.76	3.33	1.57	1.12	1.70	.58	.68	2.86	2.18	1.21	3.89	2.68
1930	6.33	16.15	9.82	1.94	4.25	2.31	1.57	3.13	1.56	.93	1.51	.58	.56	2.78	2.22	1.13	3.68	2.55
1931	4.66	13.06	8.40	1.37	3.53	2.21	1.25	2.66	1.41	.71	1.20	.49	.35	2.24	1.89	.86	2.84	1.98
1932	3.40	10.61	7.21	.91	2.67	1.76	.97	2.21	1.24	.54	.88	.34	.26	1.91	1.65	.61	2.29	1.68
1933	3.56	10.93	7.30	.92	2.61	1.68	.96	2.17	1.21	.48	.80	.32	.34	2.00	1.60	.73	2.59	1.86
1934	4.27	12.52	7.92	1.13	3.26	1.90	1.12	2.36	1.24	.58	.98	.40	.47	2.38	1.81	.80	2.83	2.03
1935	5.02	12.94	7.58	1.49	3.39	1.70	1.29	2.58	1.29	.75	1.09	.34	.52	2.41	1.75	.79	2.81	2.02
1936	5.78	14.29	8.51	1.79	3.79	2.00	1.42	2.81	1.39	.77	1.16	.39	.58	2.51	1.93	1.00	3.22	2.22
1937	5.98	14.18	8.20	1.90	3.95	2.05	1.49	2.90	1.41	.81	1.24	.43	.61	2.53	1.92	.95	2.76	1.81
1938	5.20	13.39	8.18	1.71	3.57	1.86	1.32	2.72	1.40	.77	1.16	.39	.41	2.42	2.01	.78	2.56	1.78
1939	5.17	13.37	8.19	1.69	3.54	1.85	1.32	2.76	1.44	.72	1.10	.38	.39	2.26	1.87	.86	2.79	1.93
1940	5.6	14.1	8.5	1.8	3.7	1.9	1.5	3.0	1.5	.8	1.2	.4	.4	2.3	1.9	.9	2.9	2.0
1941	7.1	16.3	9.2	2.5	4.3	1.8	1.7	3.4	1.7	1.0	1.4	.4	.5	2.5	2.0	1.1	3.3	2.2
1942	9.3	19.8	10.5	3.2	4.9	1.7	2.1	4.1	2.0	1.4	2.0	.6	.7	2.9	2.2	1.5	4.1	2.6
1943	11.4	22.3	11.1	3.6	5.2	1.8	2.3	4.3	2.0	2.0	2.7	.7	.9	3.3	2.4	2.1	5.0	2.4
1944	11.6	22.5	11.4	3.7	5.3	1.9	2.5	4.5	2.0	1.8	2.5	.7	.9	3.1	2.3	2.3	5.3	3.1
1945	12.6	24.4	12.5	3.7	5.0	1.7	2.6	4.8	2.2	2.3	3.1	.8	1.0	3.5	2.6	2.5	6.4	4.0
1946	15.7	30.8	15.6	5.2	7.3	2.4	3.5	6.3	2.8	2.4	3.4	1.0	1.3	4.2	3.0	2.6	7.2	4.7
1947	18.7	36.5	17.8	7.4	11.0	3.6	3.7	6.0	2.9	2.6	3.8	1.2	1.5	4.8	3.3	2.6	7.5	4.9
1948	19.2	39.0	19.8	7.6	11.6	4.0	4.1	7.4	3.3	3.0	4.3	1.3	1.4	5.3	3.9	2.4	7.6	5.2

1940	17.1	37.9	20.8	6.7	10.8	4.1	3.5	6.8	3.3	2.8	4.1	1.3	1.2	5.5	4.3	2.3	7.9	5.6
1950	17.7	38.9	21.2	7.4	11.5	4.1	3.5	6.9	3.4	2.5	3.9	1.4	1.3	5.5	4.2	2.3	8.0	5.7
1951	20.2	43.0	22.8	8.1	12.4	4.3	4.0	7.7	3.7	3.3	4.8	1.5	1.4	6.1	4.7	2.6	8.7	6.1
1952	20.1	44.5	24.4	7.7	12.5	4.8	4.3	8.2	3.9	3.1	4.6	1.5	1.4	6.2	4.8	2.9	8.6	6.7
1953	19.0	44.6	25.6	7.2	12.3	5.1	3.9	8.0	4.1	3.3	4.8	1.5	1.4	6.3	4.9	2.5	8.5	7.0
1954	18.3	44.9	26.6	7.2	12.5	5.3	3.7	8.1	4.4	2.7	4.3	1.6	1.4	6.5	5.1	2.6	9.8	7.2
1955	18.3	46.2	27.9	6.7	12.7	6.0	3.9	8.5	4.6	2.9	4.5	1.6	1.3	6.6	5.3	2.6	10.1	7.5
1956 ⁴	18.8	47.7	28.9	6.6	12.8	6.2	4.1	8.9	4.8	2.9	4.7	1.8	1.3	6.7	5.4	2.9	10.7	7.8

¹ The retail-cost estimates represent the cost at retail-store prices of all domestic farm foods that were both sold by farmers and bought by civilian consumers in this country. Farm food products sold in the form of meals are included but are valued at what the food would have cost in retail stores. Farm value is adjusted to eliminate imputed value of nonfood byproducts. The marketing bill, or total marketing margin, is equal to the difference between the farm value and retail cost except for the years 1933-35 and 1943-46 in which the marketing bill for some groups is adjusted for processor taxes or Government payments to processors.

² Includes vegetable-oil products, sugar, and other miscellaneous food products in addition to the 5 commodity groups given in this table.

³ The estimated farm values of milk, eggs, fruits, lard, and vegetable shortening used in bakery products were deducted from the farm values of other commodity groups and added to the farm value of the bakery and cereal products group.

⁴ Preliminary estimates.

NOTE.—Some of the data for 1947 and later years are revisions of previous estimates.

Marketing costs amounted to 61 percent of the retail cost of food in 1956 and the first half of 1957. Percentagewise and dollarwise marketing costs are at the highest level since 1940.

Because of the high degree of processing and personal services required to process and deliver cereal and bakery products to consumers, marketing costs on these products run considerably higher than for other foods. The total marketing costs for the fruit and vegetable group amounted to about \$7.8 billion in 1956 or 73 percent of the retail cost. Meat products require about 48 percent of the retail cost for processing and distribution, but poultry and eggs for which markets have expanded rapidly over the last several years, required only 38 percent for marketing costs.

Both volume and total costs were about 4 percent higher in 1956 than in 1955 and a further rise of 5 to 6 percent in total costs can be expected for 1957. Between 1940 and 1956 the volume of food marketed rose about 50 percent. However, the marketing bill (including the cost of services in restaurants and other eating places) increased from \$9 billion in 1940 to about \$34 billion in 1956. The Department estimates that \$4.5 billion of the \$25 billion increase was due to a rise in the volume of food marketed. About \$14.5 billion is attributed to a rise of 110 percent in the general price level which is reflected in marketing costs. The remaining \$6 billion was due to the cost of performing additional processing and marketing services in moving food from the farm to the consumer. These services included extra packaging, trimming, preparation, precooking, and meals purchased away from home. The introduction and widespread use of frozen foods, a process which permitted the preparation of highly perishable foods outside the home, contributed greatly to the growth in services to consumers. While the numerous services consumers purchased with food have contributed to the rise in marketing costs, many of these developments have reduced spoilage and shipping costs and made possible certain economies that are normally associated with high volume operations in processing and distributing.

There have been some adjustments in the structure of marketing since 1940; however, the pattern of costs that accompanied the change has not varied greatly. Labor continues to account for about 47 percent of the costs; transportation and associated charges about 13 percent; materials, other costs, and noncorporate profits 34 percent; and corporate profits before taxes 6 percent (table 2).

TABLE 2.—*Labor, transportation, corporate profits, and other costs for marketing farm food products, United States, 1939-56*

[Billion dollars]

Year	Labor ¹	Transportation (including labor)	Corporate profits ²		Other ³	Total marketing bill
			Before taxes	After taxes		
1939.....	3.7	1.0	0.4	0.3	3.1	8.2
1940.....	3.9	1.0	.4	.3	3.2	8.5
1941.....	4.1	1.2	.6	.4	3.3	9.2
1942.....	4.5	1.0	.9	.4	4.1	10.5
1943.....	4.6	1.0	1.0	.5	4.5	11.1
1944.....	5.0	1.1	1.0	.4	4.3	11.4
1945.....	5.5	1.3	1.0	.5	4.7	12.5
1946.....	6.7	1.6	1.7	1.0	5.6	15.6
1947.....	7.9	2.0	1.5	.9	6.4	17.8
1948.....	8.9	2.2	1.2	.7	7.5	19.8
1949.....	9.4	2.4	1.3	.8	7.7	20.8
1947-49 average.....	8.7	2.2	1.3	.8	7.3	19.5
1950.....	9.9	2.6	1.6	.9	7.1	21.2
1951.....	10.6	2.7	1.3	.6	8.2	22.8
1952.....	11.4	3.1	1.4	.6	8.5	24.4
1953.....	12.1	3.3	1.5	.7	8.7	25.6
1954.....	12.6	3.5	1.5	.7	9.0	26.6
1955.....	13.0	3.1	1.6	.8	10.2	27.9
1956 *.....	13.9	3.3	1.8	.9	9.9	28.9

¹ Relates only to food sold to civilian consumers and not to that sold to the Armed Forces or exported. The cost of labor in restaurants and other eating places is not included but the series includes the estimated cost of additional retail-store labor that would be required to handle in retail stores the food sold in eating places. These adjustments are made because the food served in these places is valued at retail-store prices when it is included in the retail cost from which the marketing bill is derived. The cost of labor employed in intercity transportation is not included because payments made for transportation also are compared with the total marketing bill.

² Total corporate profits are those received from the marketing of farm produced and domestically consumed food products by corporate establishments only and do not include those of nonincorporated firms. These profits do not include those of firms engaged in intercity transportation.

³ Includes other costs and noncorporate profits.

* Preliminary.

LABOR COSTS

This upward trend in labor costs since 1940 has been caused by an increase in the number of persons employed in processing and distribution activities to handle an increasing volume of products and in rendering the additional services required in the processing and distribution of semiprepared and prepared foods. In addition, an increasing number of technical, clerical, professional, and sales personnel were employed by marketing firms in an increasing effort to sell products. Many of these workers also were needed to maintain the system of managerial controls essential to the operation of large businesses and to take care of additional work requirements for reporting under various Federal and State social security, taxation and regulatory programs. It is estimated that the full-time equivalent of 5.2 million workers was employed in processing and distribution in 1956. This is approximately 33 percent more than in 1940. Corresponding labor costs were estimated at \$18.3 billion in 1956 or about 273 percent more than in 1940.

Between 1940 and 1957 an increasing spread of unionization in food processing and distributing industries established a workday and workweek with provision for overtime payments after a specified number of hours as well as other fringe benefits. In addition, various State and Federal legislation provided for increasing kinds and amounts of fringe benefits. Part of these higher labor costs has been offset by the greater productivity of labor during the 16-year period. The best available estimates show that unit labor costs have increased only about 140 percent even though total labor costs have gone up by approximately twice that amount.

TRANSPORTATION COSTS

Transportation rates and charges have followed the same trend as labor costs because transportation services are in the main a reflection of labor usage. There are a number of contractual limitations between labor and management in the transportation industry that restrict the cost benefits that might be gained from new technologies. These and other institutional factors may have to be changed before any reasonable improvement can be expected in transportation costs and efficiency.

CORPORATE PROFITS

Corporate profits of food processing and distributing concerns have ranged between 5 and 11 percent on invested capital before taxes since 1940. Such profits amounted to about \$1.8 billion in 1956, which exceeded the previous high of \$1.7 billion in 1946 and were 38 percent higher than the average of \$1.3 billion for 1947-49.

Generally speaking, profits in the food industry have been lower than in all manufacturing industries combined. Regardless of this, profits cannot be considered an inconsequential item in the food marketing bill. Profits averaged higher in 1956 than in any year since 1950 for leading food processing firms and for 8 of the leading chain retail food store companies (table 3). The small sample of food wholesaling companies used by the Department of Agriculture would indicate that food wholesaling profits were higher in 1956 than in the preceding year.

TABLE 3.—*Net profits (less provision for taxes on income) as percentage of stockholders' equity and as percentage of sales, leading food and tobacco companies, 1935-56*

PROFITS AS PERCENTAGE OF STOCKHOLDERS' EQUITY:

Year	Food processing companies							5 whole-sale food distributors	8 retail food chains	5 tobacco companies
	8 baking companies	7 grain mill products companies	11 meat packers	5 canning companies	10 dairy products companies	10 miscellaneous food companies ¹	51 companies combined			
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Average, 1935-39	8.1	10.4	3.6	5.6	7.9	9.8	7.4	-----	8.4	13.9
1940	7.9	9.8	5.4	6.6	8.7	9.2	7.7	-----	9.7	14.2
1941	7.6	9.5	8.6	10.5	11.1	10.8	9.7	-----	9.4	12.3
1942	9.5	8.0	8.1	8.4	11.3	8.7	9.0	-----	7.4	11.0
1943	9.3	10.2	7.9	8.6	11.5	9.1	9.2	-----	7.8	10.4
1944	8.7	10.3	7.2	9.1	10.1	8.2	8.5	11.2	8.2	9.7
1945	10.0	10.9	5.2	10.2	10.0	8.1	8.2	12.7	8.1	9.2
1946	18.3	13.2	9.9	18.4	17.0	12.6	13.6	27.3	18.1	11.4
1947	15.6	15.7	11.0	13.4	13.2	14.6	13.4	18.8	18.8	12.6
1948	17.6	14.6	5.6	9.6	12.5	13.5	11.3	16.1	16.9	14.4
1949	16.5	13.8	3.9	5.4	14.5	10.5	10.0	12.5	15.4	14.3
1950	15.5	13.4	5.9	15.3	13.3	12.7	11.5	10.0	13.8	13.1
1951	11.7	11.0	5.1	6.8	10.2	9.0	8.5	9.5	10.0	9.9
1952	12.1	11.0	3.2	7.5	9.9	9.0	8.1	5.4	9.8	9.5
1953	12.3	10.7	6.6	6.6	11.0	9.2	9.2	7.1	11.0	10.1
1954	11.3	12.4	2.7	7.8	12.1	9.9	8.8	7.5	10.9	10.5
1955	11.4	12.4	6.5	10.1	12.0	10.4	10.1	6.7	10.7	11.9
1956 ²	11.4	11.7	7.0	8.1	12.2	11.2	10.2	7.6	12.8	12.0

PROFITS AS PERCENTAGE OF SALES

	Food processing companies							5 whole-sale food distributors	8 retail food chains	5 tobacco companies
	7 baking companies	4 grain mill products companies	11 meat packers	4 canning companies	10 dairy products companies	10 miscellaneous food companies ¹	46 companies combined			
Average, 1935-39	7.1	4.2	0.9	3.1	3.1	8.6	3.0	-----	1.5	9.1
1940	6.3	4.6	1.4	3.5	3.2	7.9	3.2	-----	1.5	8.4
1941	5.3	3.5	1.7	3.9	3.4	7.8	3.2	-----	1.2	6.5
1942	4.8	2.6	1.2	3.1	2.9	5.5	2.4	-----	.9	5.1
1943	4.0	2.2	1.1	3.5	2.8	5.0	2.2	-----	1.0	4.3
1944	3.3	2.3	1.0	3.3	2.4	4.9	2.0	.9	1.0	4.0
1945	3.6	2.6	.9	3.8	2.3	4.0	2.0	1.0	.9	3.8
1946	6.0	2.8	1.7	6.1	3.5	6.0	3.3	2.2	1.7	4.0
1947	4.5	2.9	1.2	5.0	2.6	5.6	2.5	1.8	1.5	4.3
1948	4.9	3.3	.6	3.7	2.5	5.4	2.2	1.8	1.4	5.0
1949	5.0	3.6	.5	2.4	3.3	4.7	2.1	1.5	1.4	5.4
1950	4.9	3.1	.8	5.3	3.2	5.3	2.5	1.2	1.2	5.1
1951	3.5	2.3	.6	2.5	2.2	3.6	1.7	1.1	.9	3.8
1952	3.5	2.5	.4	2.7	2.1	3.6	1.6	.7	.8	3.4
1953	3.5	2.5	.8	2.3	2.3	3.6	1.9	1.0	.9	3.8
1954	3.4	2.9	.3	2.8	2.6	3.8	1.8	1.0	1.0	4.3
1955	3.4	3.1	.8	3.6	2.6	4.0	2.2	.9	1.0	5.0
1956 ²	3.2	2.7	.9	2.9	2.6	4.0	2.2	1.0	1.1	5.0

¹ Includes sugar and corn refining companies, processors of vegetable oils, and companies manufacturing a wide variety of packaged foods.

² Ratio of net profits to average of stockholders' equity at the beginning and end of the year. Stockholders' equity is excess of total balance sheet assets over liabilities.

³ Preliminary.

Source: Compiled from financial statements reported in Moody's Industrials.

While total profits of food processors and distributors are rising, unit profits per dollar of sales are lower now than they were in 1940. This reflects the high volume of business handled by most of the companies studied.

OTHER COSTS AND NONCORPORATE PROFITS

Fuel, electric power, containers, supplies, depreciation, rents, taxes other than those on incomes, interest on borrowed capital, and many other costs and the profits of unincorporated marketing firms increased from \$7.3 billion in 1947-49 to \$9.9 billion in 1956. Percentage-wise, these items took approximately 34 percent of the total marketing costs in 1956 compared to 38 percent in 1940.

MARKET BASKET: TRENDS—1935 TO DATE

The retail cost of foods in the market basket rose to \$1,036 (annual rate) in August 1957. This was the highest level since 1952. If present trends continue, retail prices for 1957 will approximate the high post-World War II level of 1951-53 (table 4).

TABLE 4.—*The farm food market basket: Retail cost, farm value, farm-retail spread, and farmer's share of retail cost, 1947-57*

Year and month	Retail cost ¹	Farm value ²	Marketing margin	Farmer's share
	Dollars (³)	Dollars (³)	Dollars (³)	Percent
1935-39 average.....				40
1947.....	911	467	444	51
1948.....	982	497	485	51
1949.....	928	435	493	47
1947-49 average.....	940	466	474	50
1950.....	920	432	488	47
1951.....	1,024	497	527	49
1952.....	1,034	482	552	47
1953.....	1,003	445	558	44
1954.....	986	421	565	43
1955.....	969	395	574	41
1956.....	972	390	582	40
1957 (first half).....	992	390	602	39
1956:				
January.....	947	369	578	39
February.....	942	365	577	39
March.....	942	373	569	40
April.....	951	381	570	40
May.....	964	395	569	41
June.....	991	405	586	41
July.....	1,005	407	598	40
August.....	988	403	585	41
September.....	988	402	586	41
October.....	987	398	589	40
November.....	981	390	591	40
December.....	979	389	590	40
1957:				
January.....	978	389	589	40
February.....	988	380	608	38
March.....	981	386	595	39
April.....	992	395	597	40
May.....	1,000	391	609	39
June.....	1,014	400	614	39
July.....	1,029	410	619	40
August.....	1,036	419	617	40

¹ Retail cost of average quantities of farm foods purchased per urban wage-earner and clerical-worker family in 1952, calculated from retail prices collected by the Bureau of Labor Statistics.

² Payment to farmers for equivalent quantities of farm produce minus imputed value of byproducts obtained in processing.

³ Comparable dollar figures not available. The farmer's share and index numbers of the retail cost, farm value, and farm-retail spread for the years 1913-55 were published in the April 1956 issue of the Marketing and Transportation Situation.

The farm value of foods in the market basket edged downward from 1952 through the first half of 1956. Preliminary statistics indicate a substantial recovery in farm prices for the third quarter of 1957. The preliminary figure for August gives the farm value on the market basket foods as \$419, an increase of \$28 over May 1957. The amount of this rise is in excess of any normal seasonal change.

The simultaneous rise in marketing costs and the fall in the farm value of foods in the market basket since 1951 have dropped the farmer's share of the consumer's food dollar to an average of 40 percent for the first three quarters of 1957. This is the lowest point since 1940.

The rise in marketing costs is associated directly with the disposable income available to the purchasers of food. This disposable personal income was 3.7 times greater in 1956 than in 1940. The total national income was approximately 4.2 times that of 1940. Inasmuch as these statistics on disposable and national income also are indicators of the national expenditures for labor, interest, dividends, rents, materials, supplies, etc., it stands to reason that marketing costs will rise or fall in direct relation to their component parts. In other words, total marketing costs are made up of payments to labor, capital, and land, the total varying with the amounts and prices of each item used in performing processing and marketing functions. The rise in marketing costs between 1940 and 1957 paralleled the rise in disposable personal income. The restraints imposed during World War II delayed some of the upward movement of marketing costs, but as soon as these restraints were removed in 1946 the rise was resumed at a remarkably rapid rate.

There is nothing mysterious about marketing costs per se. There are many problems that arise from the use of marketing cost statistics as a basis for judging the comparative efficiency of the marketing system over time. Essentially, total marketing costs reflect the inputs of labor, capital, and raw materials at specified prices. Either the amount of inputs or the prices of the inputs, or both, may change, thereby minimizing the value of any cost comparison over time.

Any comprehensive approach to a study of marketing costs must emphasize changes in inputs of labor, capital, raw materials, and qualities of end products, as well as the demand factors not directly associated with price or quality. If these comparative input, cost, and price data could be obtained by types of industries, reasonable progress might be made toward answering the question "Does marketing cost too much?"

Before real advances can be made toward improving marketing efficiency and lowering costs, there must be a demonstrated willingness to study and deal objectively with the contractual and institutional barriers to change. This requirement for real progress in cutting costs has both social and economic implications, neither of which we now are prepared to handle effectively.

SUMMARY

The trend of retail cost of food in the market basket has been up since 1947. A drop in 1949 and 1950 was followed immediately by a bulge during the Korean War. This was followed by a slackening

of prices in 1953, 1955, and 1956. Prices started upward in June 1956 and have continued to rise since that time.

The trend in the farm value of foods in the market basket has been downward since 1947. During 1956 the farm value reached its lowest level since 1946. There has been a noticeable recovery in farm food prices since May 1957, a condition that has been brought about by higher meat and poultry and egg prices and in part by the Government's program of removing large amounts of surplus food from regular marketing channels for sale in foreign countries under the conditions governing the disposal of farm surpluses. The trend of marketing costs has followed closely the trends in costs of labor, transportation, interest, rents, supplies, and other items that make up the total cost of processing and distributing food. Inasmuch as marketing services are performed primarily with labor, there is every indication that labor costs will continue as the most important factor in determining the level of all marketing costs.

The gaps in the statistical and analytical information on marketing costs, practices, and operating efficiency are real obstacles to developing more comprehensive analyses to aid in a solution of marketing problems. Much of the economic data which your committee must use as a basis for its findings are meager and inadequate. The data do not provide as sound a basis for establishing cause-and-effect relationships as you might wish. Nevertheless, the information is sufficient to help you delineate the major issues facing those who seek lower marketing costs. These are (1) a rising price level, (2) the sale of an increasing number and types of services with food, and (3) the contractual and institutional barriers that prevent or delay improvements in processing and distribution that are now available through improved technologies.

INCREASING EFFICIENCY IN MARKETING AGRICULTURAL COMMODITIES

Herman M. Southworth, The Pennsylvania State University

I have been asked to discuss the efficiency of agricultural marketing and the potential contribution of increased marketing efficiency toward solving the farm problem. For this purpose I assume that efficiency refers specifically to the relationship of marketing services performed to the costs incurred in performing them. Other witnesses will discuss the effectiveness of the marketing system in promoting the sale of farm products or widening their distribution, and the possibilities of increasing farm income through better integration of farm production and demand, or through regulating the quantity and quality of supplies so as to achieve more orderly marketing. I shall therefore exclude such topics. I shall also largely avoid detailed statistical discussion of the relationships of costs, margins, and farmers' returns, since these data, also, fall within areas assigned to other witnesses.

FOOD SUPPLY: A PROBLEM IN LOGISTICS

To begin with, then, I should like to point out that by any standards except our own we have a highly efficient system for marketing farm products in the United States. To illustrate this, I should like to draw some comparisons with our military supply program in World War II. At the height of the war we had some 12 million persons in the Armed Forces, though by no means all of these were fed outside of civilian channels. A large proportion of them, of course, were spread over several theaters of war in various parts of the globe, and the establishment and maintenance of supply lines for food, as well as other materials of war, was a spectacular logistic achievement.

By way of comparison, however, let us consider supplying food to the New York City metropolitan area. This area alone has some 13 million people requiring to be fed every day—more than were in the Armed Forces at the height of the war.

Furthermore, the civilian population does not eat from standardized menus planned through a quartermaster corps. New York City housewives expect to be able, any day of the week, to obtain any of several thousand different items of food that their fancies may dictate for the day's meals of their families.

The Army, to be sure, had difficult problems of devising special rations and other processed foods, in special types and sizes of packages, designed to meet the needs of troops under various conditions of operation. But the food stores in the New York area regularly stock a much greater variety of foods, raw, processed, and precooked, and packaged to meet the needs of large families and small, not to mention all types of restaurants and institutions.

The metropolitan population, of course, is concentrated in a single consuming area—though so highly concentrated that this in itself poses formidable problems of traffic movement. But it draws for its food supply upon all the varied producing areas of the United States and upon other lands throughout the globe.

Furthermore, the Nation's food-marketing system supplies the daily needs not only of this concentrated metropolitan area but of some 160 million other consumers spread throughout the length and breadth of the land, in large cities, small towns, and rural areas. It supplies not just basic food requirements, but all the vast array of foods and food services demanded for our modern, high level of living. The normal peacetime supplying of foods and other farm products to the civilian population of the United States thus constitutes a logistic problem beside which the military supply operation of World War II pales.

Perhaps the most remarkable contrast is that the civilian supply goes on reliably, day in and day out, year in and year out, without benefit of a central chain of command. It operates through the millions of independent daily decisions by farmers, by consumers, and by the multiplicity of shippers, receivers, processors, storers, wholesalers, retailers, and other marketing agents that bridge the long gap between. Their decisions are independent in the sense that no one tells them what to do. Coordination comes about through the economic forces of the market place—and through the continuity of customary practice.

We are justly proud of our military achievements in wartime logistics because they had, so to speak, to be achieved overnight. The civilian marketing system has developed gradually over the whole period of history of our country. But in thinking of its efficiency it is instructive to ponder the task of suddenly creating it from scratch. A comparison with wartime logistics helps us to imagine this. Even so, the task is almost beyond our ability to conceive.

OUR DEPENDENCE UPON EFFICIENT MARKETING

How the rise of our wealthy industrial economy has depended upon the freeing of most of our labor force for other employments than producing foods and fibers is widely recognized. Technological advances in farming with highly specialized, commercialized production have brought this about.

That this achievement has been equally dependent upon technological and organizational progress in marketing is less widely recognized. Yet locally specialized areas of farm production must have access to wide markets. And urban industrial centers must be able to draw upon distant sources for their daily needs of food. Without an efficient marketing system capable of bridging this gap cheaply, neither would be possible. The costs of handling, transporting, processing, storing, and distributing the basic necessities of food and fiber would more than eat up the savings from geographic specialization in production.

To illustrate, the benefits of early railroad development to urban food consumers are described by Cummings.¹ The implications for farmers' market opportunities are equally obvious.

* * * Perishables could be brought from greater distances
in rail cars * * * and, as commercial dairying, market gar-

¹ *The American and His Food*. University of Chicago Press, 1940. Pp. 53 ff.

dening, and horticulture which previously had been confined to the environs of urban centers spread over wider areas, foods rich in vitamins and minerals—milk, fruit, and leafy vegetables—became more plentiful.

Most New Yorkers in 1840 had to drink swill milk which came from cows fed with distillery mash and stabled within the city limits. The situation was changed by the construction of the Erie Railroad, which during the year 1842–43 carried more than 3 million quarts of milk to the city. Three years later it carried more than twice this amount, and in 1848–49 more than 9 million quarts were delivered. * * *

The price of milk dropped and consumption increased markedly. * * * A writer in 1851 set the annual per capita consumption of milk in the city at 204 quarts, almost 4 times the figure of 10 years earlier. * * *

* * * During this decade the Camden & Amboy Railroad, cutting through the Pea Shore region of New Jersey, a fine garden and fruit area along the east bank of the Delaware River, ran a special express train of 1 or 2 cars, known as the Pea Line, to pick up perishable produce. Many farmers planted peach trees and specialized in horticulture. * * *

The Erie Road likewise stimulated truck farming in Rockland County. On a single night in June 1847, the milk train brought 80,000 baskets of strawberries to New York. By 1855 the strawberry business of the city was said to be the largest in the world. * * *

* * * In the last week of May 1833, only those New Yorkers who were willing to pay \$1.50 a quart could eat strawberries, yet the residents of Baltimore were, at the same time, enjoying this fruit at a cost of only about 12 cents a quart.

Extension of steam lines into the great natural hothouse of the South enabled city dwellers to enjoy fresh fruits and vegetables for weeks to months longer. In the forties and fifties New York drew heavily on Norfolk, and a great truck-gardening industry grew up in its vicinity. Farther southward the growers of the Carolinas and Georgia responded to urban demands * * *

BASES FOR INCREASING EFFICIENCY

We are concerned here, however, not so much with the achievements of the past as with the possibilities of further improvement. Three observations support the belief that these possibilities are substantial: the age and structure of the industry itself and the cumulating evidence of extensive improvements possible through wider application of present knowledge; the prospect of changing needs to be served, incidental to general growth in population, rising living standards, and changes in patterns of living; and the expectation of continuing progress in basic technology and management methods capable of application to marketing.

The marketing of farm products is carried on by a heterogeneous industry. It includes many of our largest firms and a multitude of small ones, many of our oldest and some of our youngest. Even for

individual commodities, marketing typically involves enterprises that vary widely in age and size, and their activities typically are decentralized and relatively uncoordinated.

Such an industry structure has advantages from the standpoint of flexibility and adaptability. It provides great opportunities for the competitive play of inventiveness and ingenuity. Yet it also is susceptible to inefficiencies that competition is slow to remedy.

IMPEDIMENTS TO EFFICIENCY

The day-to-day essentiality of the industry is not conducive to rapid adoption of improvements. Supplying the food needs of a city is not an activity that can be shut down for a retooling period in switching to a "new model." Established modes of operation can be improved piecemeal, but large-scale overhaul may be precarious except as it comes about gradually through a succession of small changes.

This problem is intensified by the complexity and decentralization of the industry. Individual firms can adopt internal improvements. But more extensive innovations often depend upon simultaneous developments in several sectors of the industry. The development, in the last century, of refrigerated shipments of meats, for example—upon which the western livestock and meatpacking industries as we know them today depend—required more than the invention of a satisfactory refrigerator car. It required obtaining the reluctant cooperation of the railway lines, establishing a far-flung ice industry for servicing cars on route, developing slaughtering establishments—and supplies of animals for them—capable of furnishing chilled meat in the necessary volume for shipment, establishing facilities to receive rail shipments and organizing marketing channels for handling and distributing the meat. This took nearly a generation to accomplish. More recently, development of the frozen food industry was hampered for a decade or more by the lack of transportation facilities that would reliably keep products in transit at the subfreezing temperatures required, and by the lack of proper refrigerated handling equipment among wholesale and retail distributors.

Even improvements that individual firms can institute internally sometimes appear to be adopted slowly in marketing. The inertial resistance to change of a long-established industry may be involved in this, plus the fact that, relatively speaking, it is not a rapidly expanding industry. Perhaps more important is that many improvements involve technological and managerial skills that seem beyond the reach of smaller firms, which likewise may have difficulty commanding the investment capital needed to equip themselves for more efficient operation. At the same time, the larger firms, with substantial investments in existing methods, may be reluctant to accept the costs of obsolescence that change would involve, so long as their smaller competitors or new ones do not force this upon them.

Regardless of such speculation on causes, it seems obvious that many of the activities involved in marketing are less readily susceptible to the standardization, routinization, and mechanization of processes that have made manufacturing, or even commercial farm production, so efficient in the United States. Many of the operations are intermittent rather than continuous, dispersed rather than concentrated in location, and involve the handling of products whose

variation in size, shape, and other physical and chemical characteristics is inherent in their biological origin. Marketing also involves interpersonal relationships as between buyers and sellers that are harder to organize and routinize than in physical productive operations.

ESTIMATION OF EFFICIENCY

To estimate the overall efficiency of agricultural marketing, or even its rate of increase, is difficult. Harold Barger has recently made an aggregative statistical study of distribution generally (excluding processing), in which he has estimated the long-time growth in labor productivity. (Labor productivity is not, of course, the same thing as efficiency, but its increase is likely to indicate increase in efficiency, especially in an economy in which the price of labor is increasing in comparison with other inputs.) He concludes:²

According to the best available estimate, output per man-hour in distribution (wholesaling and retailing combined) rose 1 percent yearly over the period 1869 to 1949. This rise shows no evidence of retardation. This result compares with average annual increases in man-hour output of 1.9 percent for agriculture, 2.6 percent for mining, and 2.3 percent for manufacturing. The less rapid rise in distribution is confirmed by the relative sparsity of technological innovations when comparison is made with the other industries mentioned.

He gives no separate estimates for distribution of farm products as compared with other commodities.

EVIDENCE OF INEFFICIENCIES

Apart from such aggregative estimates, detailed studies of individual operations in many different types of firms have demonstrated substantial opportunities to increase efficiency in agricultural marketing. The results of research along these lines by the Department of Agriculture and State experiment stations have been presented to Appropriations Committees of the Congress in support of requests for funds to support such work. Improvements in equipment and methods of handling apples in packinghouses, for example, have made possible as much as two-thirds reduction in labor requirements. Similar improvements in cotton warehouses have enabled operators in the Mississippi Valley area to reduce their charges more than 25 percent. Methods have been developed for mechanical aeration of stored grain that permit cooling it at only half the cost of conventional turning. New loading techniques for watermelon and for peaches have made possible substantial reductions in transit damage. Similarly with wholesaling, retailing, and other operations—systematic research typically reveals substantial opportunities for savings.

Broader studies, as of the assembly of milk from farms, the size of processing plants, and city delivery, similarly have shown possibilities for substantial cost savings if overlapping in transportation could be

² Distribution's Place in the American Economy Since 1869. National Bureau of Economic Research: No. 58, General Series. Princeton University Press, 1955, p. 52.

reduced and the sizes of individual plants increased. The progress in modernizing outdated city produce markets is well known.

Proposals along such lines are harder to put into practice because they typically involve interrelationships among firms; single firms cannot act upon them independently. Yet there is reason to suspect that some of the most important opportunities for increasing efficiency are to be found here. Ten years ago Prof. John D. Black, commenting upon the renewed emphasis on marketing research and extension provided by the Research and Marketing Act of 1946, stated as a first "guidepost" for such work, "The alternative approach now needed is in terms of marketing systems as wholes and trying to find ways of organizing them on more efficient lines."³ Dr. Black's prescription is equally valid today.

At the outset I stated that, by any standards except our own, our marketing system for farm products is highly efficient. It is likewise progressive. Department of Agriculture estimates of marketing costs,⁴ for example, indicate an increase of 50 percent from 1947-49 to 1956, in average hourly earnings of workers in food marketing, but an increase of only 27 percent in labor cost per unit of product marketed. This would reflect an increase in labor productivity of around 2 percent a year—perhaps more if full allowance were made for increased services provided.

This is a creditable record, that doubtless reflects, among other things, the contribution that expanded public research, educational, and service programs have made to increased efficiency. Yet the findings of this research clearly indicate that we still have a considerable way to go in bringing marketing efficiency up to the level that present know-how would permit. In view of the structure of the industry, the speed with which this level is approached will be significantly affected by the extent of publicly supported research and educational and technical assistance.

CONTINUING OPPORTUNITIES FOR IMPROVEMENT

Merely obtaining general application of present knowledge to existing situations, however, does not exhaust the opportunities for increasing marketing efficiency. The possibilities for improvement are greatest in periods of active growth and change. The most striking change in food distribution in recent years, which has provided substantial opportunities for increasing efficiency, centers about the growth of supermarkets in suburban shopping centers. This came about in response to the movement of population to the suburbs and the growth of automobile shopping. What changes the future holds in patterns of living and how they will affect food distribution needs we do not know, but we can be sure that there will be some. The resurgence of population growth in the United States—the imminence of an increasing rate of new household formation as the large generation of "war babies" begins to reach marriageable age—plus the prospect of continuing rise in income levels, assures this. A counter-

³ Guideposts in the Development of a Marketing Program, *J. Farm Econ.*, 29: 616 (August 1947), p. 626.

⁴ U. S. Department of Agriculture, *Marketing and Transportation Situation*, July 1957, p. 10.

part of continuing rise in income levels is continuing increase in wage rates, that will maintain pressure upon marketing firms to make more efficient use of labor. Such a situation should be conducive to use of ingenuity and initiative in devising and experimenting with new methods of distribution that offer promise of improvement.

Meanwhile, rapid technological advance in the economy generally means that new developments should be continuously arising susceptible of profitable application in marketing. The rapid growth of systematic research in scientific management and organization should be similarly fruitful. Thus it should be possible to keep our level of know-how advancing ahead of application. This will be the longer range basis for more efficient marketing. Its achievement will require an effective research program, with adequate emphasis upon basic research along with applied.

We live today in an age of research. Supplying our people with their most elementary needs—for food and fiber products—is at least as susceptible to improvement through research, and as important a field for such effort, as other industries. And efficient supply of food and fiber products involves marketing and distribution equally with production on the farm. Progress in this field will continue to be important for the general economic progress of the Nation.

HOW FARMERS BENEFIT

I have so far argued that there continue to be substantial possibilities for savings through making the marketing of farm products more efficient, that new opportunities for doing so will continue to arise in our progressive economy, and that it is important to overall economic growth and development that we vigorously pursue improvement in this sector. I turn now to what is the focal issue of these hearings: Where does the farmer stand in this? Does he get any benefit from making marketing more efficient? Can efforts in this direction make a substantial contribution to solving the problems of commercial agriculture?

Certainly the savings resulting from more efficient marketing create the possibility of benefits to farmers. They mean that, in the total process of producing and distributing foods and other farm products, less resources are used, less cost is incurred, than would otherwise be the case. The question is one of allocation of these benefits: Who gets them? To what extent do farmers share in them, as against consumers, at the other end of the chain, or as against those groups in the middle who make their living directly from marketing?

As regards the last group, the marketing agents themselves, we depend basically upon competition to prevent them from hanging on to the benefits from cost savings, and to force the passing on of these benefits to those from whom they buy and those to whom they sell—ultimately to farmers and consumers. Firms that are first in successfully instituting more efficient practices gain in initial advantages. But as the practices become widely adopted, if competition is effective, this advantage is only transient; the benefits must ultimately be shared.

As a practical matter, the benefits of increased marketing efficiency do appear to be shared in substantial part, at least. This can be inferred, for instance, from the Department of Agriculture estimates

of the marketing bill for farm food products and its components. From 1947-49 to 1956, for example, the total bill increased by \$9.4 billion. Of this, \$4.9 billion can be accounted for simply by the increase in volume of food marketed. The remainder, \$4.5 billion, went for increased labor costs, increased freight rates, increased taxes, increased prices of other cost factors—plus any increase in marketing firms' profits per unit of sales. During this period, however, wage rates of workers engaged in marketing are estimated to have risen about 50 percent. Had there been no increase in labor productivity, or had none of the savings from this been passed on by the marketing system, such a rise in wage rates would alone have sufficed to increase the marketing bill some \$5.5 billion (again after allowing for the increase in volume)—more than the actual increase attributable to the higher prices of all cost factors including labor.⁵ We may infer from this not only that labor productivity must have increased, but also that the resulting savings must in substantial part, at least, have been passed on, to the benefit of farmers and consumers.

ALLOCATION BETWEEN FARMERS AND CONSUMERS

The next question, then, is how such benefits are shared between farmers and consumers. This question does not have a simple all-or-none answer. The farmer, of course, benefits directly to the extent that farm prices are higher than would otherwise be the case. He also benefits indirectly to the extent that savings passed on to consumers in lower retail prices encourage them to buy more farm products, thus broadening the farmer's market. To an extent, there is a multiplication of benefits, such that the whole is greater than the sum of the initial savings passed on.

Basically, however, the allocation of benefits between farmers and consumers at any time turns upon the current terms of trade—whether there is a buyers' or a sellers' market. This varies from time to time and from commodity to commodity, depending upon demand and supply conditions. In a period of agricultural surpluses, like the present, the major advantage lies with the consumer. In other periods, as during the war, the opposite situation prevails. This is the normal, automatic result of operation of the competitive market, which directs benefits of all sorts to those whose products are in strong demand and withholds them from those who are producing in excess of what the market will readily absorb.

⁵ Details of these calculations are as follows :

	<i>Billion</i>
(1) Total marketing bill, 1956.....	\$28.9
(2) Total marketing bill, 1947-49.....	19.5
(3) Increase ((1) - (2)).....	9.4
(4) Increase in volume marketed, 1956 over 1947-49, 25 percent.	
(5) Increase in total marketing bill attributable to increase in volume ((2) × (4)).....	4.9
(6) Increase attributable to other factors ((3) - (5)).....	4.5
(7) Labor cost, 1947-49.....	8.7
(8) Increase in labor cost attributable to increase in volume ((7) × (4))..	2.2
(9) 1956 labor cost on basis of 1947-49 wage rates and productivity ((7) + (8)).....	10.9
(10) Increase in hourly earnings of workers engaged in marketing, 1956 over 1947-49, 50 percent.	
(11) Cost of wage increase on basis of 1947-49 productivity ((9) × (10))..	5.5

Source of data : U. S. Department of Agriculture. Marketing and Transportation Situation, July 1957, pp. 8 ff.

The situation here is essentially analogous to that of improvements in the efficiency of farm production itself. The more progressive farmers realize a relative advantage in net income from their efficiency. But competition appears to be highly effective in forcing agriculture to share the benefits of its efficiency. This is because it serves basic, stable needs, and the demand for its products is less expansible than for many other kinds of goods.

The effects show up most strongly in periods, like the present, of oversupply relative to demand. But over the years, commercial farmers as a group have come to enjoy higher standards and levels of living. They have shared in the rising income that characterizes our progressive economy.

CONCLUSIONS: RELATIONSHIP TO CURRENT PROBLEMS OF COMMERCIAL AGRICULTURE

My conclusions, therefore, are as follows:

1. The pursuit of marketing efficiency cannot replace other policies for dealing with the farm problem. Basic policy must be directed toward improving the terms of trade for agriculture. This implies efforts to curtail surplus production, supplemented by efforts to expand market demand for farm products. (In our competitively promotional economy, considerable effort in this direction may be necessary just to maintain agriculture's market position.)

2. Vigorous pursuit of marketing efficiency can, however, aid efforts more directly aimed at balancing demand and supply. It can make these efforts more easily workable, and less burdensome both upon the Government and upon agriculture itself. Efforts to increase marketing efficiency will make the greatest contribution in this regard if they are accompanied by continuous surveillance of the effectiveness of competition within the marketing system, to assure that the benefits of efficiency are passed on.

3. Progress in agricultural marketing is, meanwhile, an important component in national economic progress, upon which, in the longer run, farmers along with everyone else depend for rising incomes and higher levels of living.

MARKETING COORDINATION AND BUYERS' REQUIREMENTS

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I. MAJOR QUESTIONS

The issue posed by the subcommittee is: "How are buyers' requirements for volume, quality, and uniformity changing, and what are the implications for producers?"

Any separation of the food industry into separate functional levels or segments is purely formal. The food production and distribution system to an ever-increasing extent is coordinated closely. Changes appear simultaneously in all segments. It is quite impossible to identify any single line of causation or any particular functional level in which major changes are generated.

The food system of the United States has always been in a state of flux. There have been large-scale production and nationwide distribution of some foodstuffs for many decades. Some segments of the food industry have always been large enough to transmit specifications to suppliers, to develop their own product mixes, to establish their own brands, to promote their own products by a variety of devices, and perhaps to influence directly or otherwise the determination of prices and margins. However, until a few years ago, such concentration of volume was largely localized among food processors. In general, such large processors, along with smaller ones, procured their supplies on an open market, taking that which was available from producers and processing it without any direct control upon volume or type of production by farmers. Such processors often maintained their own wholesale facilities or in nonperishables moved products through merchant wholesalers. The great bulk of sales reached consumers through retail outlets too small to maintain their own product mix, product variation, promotion, pricing, procurement policies, or their own production and wholesaling facilities. This, in general, is the institutional context within which both agricultural analysis and agricultural policy have developed. The usual specification of the agricultural problem and of agricultural policy may no longer be useful.

II. THE MAJOR CHANGES

Considering the food system as a whole, two basic changes have occurred in the last two decades.

First, the scale of the retail store has increased sharply. Physical methods of operation at retail have also been revolutionized. These dramatic changes at the retail level have been associated with simultaneous changes in all other segments of the food industry. As large retailers have grown big enough to develop their own price, brand, promotion, and procurement policies—as they have acquired their own facilities through various forms of integration or through informal

coordination among suppliers—there has been a correlative decrease in the effectiveness of pricing, branding, and promotion policies among many of their suppliers. However, enterprises in many segments of the food industry are now able to manipulate the product, the demand for the product, and, perhaps, to some measure, the bases for determination of its price. Once such full-scale profit policy could be exercised only by the processors. Now all elements of profit policy can be used at several different levels of the production process.

Second, marketing now is a systematically coordinated process whereby both the wants of consumers and technical conditions of production are reflected through a tightly coordinated chain of retailers, wholesalers, processors, and producers by a variety of devices in addition to price itself. This coordination of food marketing takes many forms, including outright ownership; a variety of contractual or informal understandings; and, perhaps, most important for the future, emergence of new types of suppliers closely interrelated with the new types of retailers.

With the change in market structure, enterprise organization at all levels of the system has shifted accordingly. Throughout the system as a whole, product development, product engineering, procurement, production, and merchandising have become closely coordinated. Within each enterprise, internal organization and policies have shifted to facilitate simultaneous control over all of these closely interrelated functions. There have been parallel changes both in methods and scale of production. A variety of new management devices has emerged. To an increasing extent, the food industries are taking on the characteristics of commercial enterprises in other parts of the American economy.

These major changes have affected the requirements which farm producers must meet in order profitably to participate in this new system of processing and distribution.

III. THE ANALYTICAL FRAMEWORK

Appraisal of the impact of these changes upon producers requires an analytical framework. The two broad changes outlined above have emerged largely in response to the legitimate enterprise-profit objectives of individuals. In part, they have been dependent upon new technology. However, in order to achieve many of them, market structure had to be shifted. For any commodity or market, market structure can be defined in terms of three measures: (1) The effect of changes in volume of sales or procurement by a single enterprise upon prices in its own market, (2) the degree to which the products of the several separate enterprises are differentiated, and (3) the degree to which entry into procurement or sale in the market may be impeded.

Within this definition of market structure, it becomes possible to describe, to analyze, and to appraise the major shifts in the policies and procedures of enterprises at all levels of the food system in terms of five categories which together include all the factors affecting the profit account of any firm: (1) Changes in the scale and method of production, which partly govern their costs; (2) changes in the components, the scale, or the method by which they procure products and services used, which also affect costs; and (3) changes in their mer-

chandising policies, (a) the nature and number of products they sell; (b) the degree to which they control volume, (c) the degree to which they differentiate their products, and (d) the degree to which they manipulate demands.

Successful development of production, procurement, or merchandising policies automatically affects (4) the structure of the markets among the firm's suppliers, competitors, and customers.

Generally speaking, any changes in production, procurement, and merchandising sufficient to affect market structure must be accompanied by (5) changes in internal organization, policies, and procedures of the enterprise.

IV. THE FOOD RETAILERS

No major changes in production, procurement, or merchandising occur in a single food commodity line alone. Within a single commodity system, no major change occurs in any one segment alone. There have been sharp changes in the distribution system of the American economy as a whole.¹ In a rapidly expanding economy, there has been a steady increase in relative volume sold through retailers, a correlative long-run relative decline in sales through wholesalers, a stable relative markup by wholesalers, an increasing retail markup as volume and services performed at retail have increased, and a long-run increase in the combined wholesale-plus-retail markup. The apparent relative decline in wholesaling volume to a large measure merely reflects the absorption of wholesaling functions by retailers.

Within this economywide context of expanding size and importance of retailing, the changes in the food industry are also most obvious and, perhaps, most important at the retail level. There is no unique, single-direction line of causation from retailing back to farm production. All levels of the food system are, of course, affected by general economy influences. Further, the food system is, to an increasing extent, a mutually determined one in which changes in any segment or in any enterprise are fully dependent upon concomitant changes elsewhere. Specification of the changes among retailers in terms of the classifications set out in section III provides a framework whereby the changes in the entire food-market structure may be described, and their effects upon particular segments may be appraised.

A. Production scale and methods

The retail foodstore leads in a pattern becoming general to all retailing.² One-stop automobile shopping has led to a completely new food operation in terms of product, product mix, size per outlet, physical methods of operation and organization, and types of stores and companies.

(1) *Number of stores by sales distribution.*—In 1952, there were some 377,000 grocery and combination stores. In 1956, there were some 310,000 such stores. This represents an average mortality per year, largely concentrated in small stores, of more than 16,000 units. Supermarkets, with annual gross sales of at least \$375,000 per outlet, have increased since 1952 from 4.4 to 8.7 percent of all stores. The

¹ See appendix table IV-1. (All appendix tables for this paper are included in appendix B, p. 769 ff.)

² Some characteristics of retail foodstores in 1954 are shown in appendix table IV-2.

percentage of all grocery-store sales made by these supermarkets has risen from 43.8 to 62.5 percent. Thus, less than 9 percent of the stores now move more than 62 percent of total United States sales in the grocery business. These stores—27,000 of them—are able to develop their own product specifications and their own procurement, branding, and merchandising policies. Many are able to absorb wholesaling functions and facilities. There has been some change in the relative position of independent and chainstore units within this supermarket class. There has been a faster relative increase in the number of independent stores in the supermarket class as well as in their sales, but chainstores still do a little more than half of the 62.5 percent of total grocery business done by supermarkets.³

Superettes—stores doing from \$75,000 to \$375,000 per year—now represent some 23 percent of all grocery and combination stores. Nearly all of these are independent. They do about 27.6 percent of the total business. These stores, as a percentage of all grocery stores, have not declined in relative importance from 1952 to 1956. There has, however, been a consistent downturn in the percentage of total sales made through these outlets. Only 5.9 percent of superettes were affiliated with chains in 1956.

Small stores doing less than \$75,000 per year constituted 68.7 percent of all grocery stores in 1956. They did 9.9 percent of the business. Since 1952, these stores declined from 75.6 percent of all outlets. Much more important, their share of sales dropped from 21.5 to 9.9 percent.

If all types of food-carrying stores are included, the pattern of concentration is quite as strongly defined.⁴ In the face of increasing sales in all types of foodstores, there have been sharp decreases in number of stores in all areas, with the relative decline most sharply pronounced in grocery stores and confectionary outlets.⁵

Certain facts are clear. The issue is not chain versus independent. The issue is that a few large retailers in all parts of the United States, comprising less than one-tenth of stores, are doing almost two-thirds of the business. Some 20 percent of intermediate stores are doing about one-fourth of the business. Just as in farming, there are a large number of small stores—nearly 70 percent of the total—which do less than 10 percent of the total retail business. Two problems are involved: (1) Whether policy should be formulated to retain the small-family unit or to ease its transition, and (2) the impact upon other parts of the food system of the rapid and accelerating development of large-scale retailers able to develop production, procurement, and merchandising policies of their own.

The grocery outlet is the dominant vehicle by far for retail trade in foods.⁶ Over the years of the last two decades, there has been little relative change in the total market position of chains and independent grocers.⁷ The corporate-chain percentage of total business has held fairly steady at around 36 percent of the total volume over the last decade. There has been an increase in the relative share of the total food business done by independents affiliated with voluntary or co-

³ See appendix table IV-3.

⁴ See appendix table IV-4.

⁵ See appendix table IV-5.

⁶ See appendix table IV-6.

⁷ See appendix table IV-7.

operative groups, ranging now at something over 44 percent of the total business. The increase in business by affiliated independents is paralleled by a decrease to less than 20 percent of the total business now being done by unaffiliated, independent stores.

The total volume of sales through grocery and combination stores now exceeds \$40 million, as compared with a fifth of that 20 years ago.

The most striking aspect of the size distribution of retail stores is the increase in supermarket sales. The number of stores in this classification has much more than tripled in the past 15 years. The sales have increased more than tenfold in the past 15 years. From 1940 to 1955, the share of the total grocery market held by supermarket outlets increased from 24 percent to more than 55 percent. Size of retail outlets continues to increase.⁸ Thus, the development of scale of outlets is not a matter for the future. To a large measure, the pattern of large-scale retail outlets is firmly settled and has been so for a decade.⁹ Average sales per store per year have increased for most classes of outlets.¹⁰ Thus, in 1948, stores doing at least \$500,000 a year made 6 percent of independent grocery sales. In 1953, these large stores accounted for one-fourth of the sales.

Quite as striking is the development of new supermarkets. Most of these aim at an initial weekly gross of at least \$30,000, or \$1,500,000 per year. New stores 20,000 square feet or more in size, in general, do a minimum of \$20,000 a week. Half of them do \$50,000 per week and over. This is an annual gross of more than \$2,500,000 per retail outlet per year.¹¹ Stores of 15,000 to 20,000 square feet rarely do less than \$10,000 per week, and in 1955 almost one-fifth of them did a weekly gross of more than \$50,000. Independent grocery stores, taken alone, are changing similarly. Generally, there is a close relationship between weekly gross sales and physical size of the outlet.

The increased percentage of sales attributed to large stores reflects the rate of new supermarkets construction more than any other factor. Nearly all of the recent increases in volume are the result of increases in supermarket sales and construction. The increase in volume handled by the large stores represents a real increase in physical tonnage.¹² In general, the smaller stores have not increased their business, either physically or in dollar terms. By far the greater part of the actual increases is attributed to new stores in the supermarket class. As of now, the small grocery store appears to be expiring. By 1960, more than 90 percent of total sales volume will be done by re-

⁸ See appendix table IV-8.

⁹ See appendix table IV-9.

¹⁰ See appendix table IV-10.

¹¹ See appendix table IV-11.

¹² "Supermarket increases outpaced those for the grocery-store business as a whole, where sales went from \$34.8 billion in 1954 to \$37 billion in 1955, a rise of only 6.3 percent. In point of fact, however, almost all the grocery-store 1955 gain was as the result of supermarket activity. Subtracting supermarket volume from total grocery-store volume in both 1954 and 1955 discloses that the remaining true grocery and combination store sales experienced practically no change at all. The increase in sales for the supermarket industry was decidedly enhanced by a notable rise in tonnage, since the prices of food products dropped 2.2 percent for 1955 as compared to 1954, based on the retail food price index of the Bureau of Labor statistics. Calculations made by Super Market Merchandising's research department, of industry volume in 1955, lead to the additional conclusion that the big gain was almost wholly the result of new market construction. Previously existing units may have increased their tonnage, as adduced by the foregoing figures on the decrease in retail food prices, but, in terms of actual dollar volume, on the average, there was little or no change. New stores, however, with their higher average volume, exerted the force that pushed sales up beyond \$20 billion in 1955" (1955 Reached New Peaks in Sales and Stores, reprinted from the January and February 1956 issues of Super Market Merchandising, pp. 10-11).

tail stores large enough to develop a complete enterprise policy. They will be able to use virtually all physical efficiencies and to perform processing, packaging, and labeling functions. The larger retailers will have either absorbed the wholesaling function for many commodities or will otherwise become affiliated with wholesalers.

(2) *Physical size distribution.*—The physical size of retail food outlets is increasing rapidly in all regions in terms of space devoted to retail selling, stocking, parking, and in total. Of new markets built in 1955, virtually all had parking lots. On the average, the parking lot was 27,600 square feet. The relative portions of total store area devoted to selling, to service, and to parking are shown in appendix table IV-12. There are some regional differences with relatively larger operations developing in the Pacific area.

The large foodstore is the key unit in most new shopping centers. Close to one-half of the new, large supermarkets are being built in new shopping centers.¹³ Markets have become increasingly elaborate in physical equipment, and operations are increasingly mechanized. There is a definite long-run tendency to increase hours of operation per day. This also increases for practical purpose the relative size per store. Customers per store and sale per transaction have been increasing for several years. Provision of clerk service, delivery, credit, and similar facilities has decreased substantially.¹⁴ There are still regional differences in the size of outlet, but the pattern of concentration in terms of any reasonable criterion of size is firmly established and is general throughout the country.

(3) *Items handled.*—The increase in average sales and in average physical size of retail outlet has been paralleled by changes in the number of items handled. The average number of items per store rose from about 800 in 1928 to more than 5,000 in 1956, and there are predictions of about 6,000 items per store by 1960. The increase has been concentrated mainly in convenience food items and in nonfood products.

The increase is not all concentrated in new products. The average number of items in each old-line brand has also increased sharply.¹⁵ On the average, for every 3 new items, 2 old ones disappear in the bitter struggle for stocking, reordering, shelf space, facing, and promotion. Household supplies, drugs, toiletries, and baby foods are the major new items.

A comparison of selected departments as they appeared in markets built in 1950 and in 1955 shows that the percentage carrying drugs and cosmetics went from 89.1 percent in 1950 to 99 percent in 1955; housewares, from 45.1 percent to 88.4 percent; magazines, from 33 percent to 67.7 percent; stationery, from 33.7 percent to 79.8 percent; toys, from 14.1 percent to 68.7 percent; and hardware, from 23.4 percent to 57.6 percent.¹⁶

¹³ Super Market Institute, *Facts About New Super Markets Opened in 1955*, p. 3.

¹⁴ *The Progressive Grocer*, *Facts in Grocery Distribution*, 1954 edition, p. 13.

¹⁵ " * * * Back in 1928 a good store handled some 800 different items, by 1946 this had grown to about 3,000, it rose to about 4,000 in 1950, and at the close of 1955 a well-stocked supermarket was carrying some 5,000 items. The bulk of the increase in number of items has come from many sources. New lines, such as frozen foods, drugs and toiletries, synthetic detergents, housewares, toys and soft goods have added hundreds of items not formerly sold in the food store. Convenience foods such as baby foods, flour mixes, complete canned and frozen dinners have swelled the store order list. Furthermore, each of the old-fashioned food lines has grown by leaps and bounds due to the increased number of brands and sizes in each" (*Ibid.*, 1956 edition, p. 6).

¹⁶ 1955 Reached New Peaks * * *, *op. cit.*, p. 9.

The number of units of each of these items sold per week is generally very low. The increased gross sales and increased physical tonnage reflect increased number of items. Problems of out-of-stock, ordering, stocking, space allocation, departmental spacing, and promotion have been serious. However, as an overall index of the rapid change in the number of products not existing 5 years ago, nearly 20 percent of all sales in grocery stores fall in that class.¹⁷ Some 45 percent of grocery department sales involve items not stocked as short a time as 5 years ago. At present, the introduction of new items appears to be accelerated.

(4) *Tonnage and inventories.*—Sales in terms of physical tonnage have increased about 25 percent since 1948. There has been no relative increase in tonnage held by retailers in inventory. The average retailer inventory for 40 grocery items is 1.1 months' supply, down from 1.4 in 1948.¹⁸ Nonavailable items average about 5 percent by number with about 3 percent out-of-stock and some 2 percent in-stock but out-of-shelf.¹⁹ Changes in pack and packages have decreased out-of-shelf rates.

(5) *Departmental size.*—The changes in size of store by sales, by areas, and by physical turnover have been paralleled by sharp changes in store organization. Packaging of perishables is general. In the new stores, virtually all of the meat, produce, and cooked foods departments are on a self-service or largely self-service basis.²⁰ About two-thirds of the bakery departments are so organized also. In most stores, nearly one-half of the average sales floor is used for sales of perishables. There appear to be few significant differences among the percentage of sales, the percentage of gross profit, and the percentage of floor space assigned to particular classes of commodities.²¹ Some 45 percent of space is assigned to groceries, about 27 percent to meats, and about 17 percent to produce, with the remainder distributed among dairy products, frozen foods, and bakery goods. Relative sales and relative gross profit distributions are not greatly different. In general, the self-service stores and the larger retail outlets have gone much more heavily into nonfood or special food items than have the partial self-service and the clerk-service outlets. These latter classes have specialized more heavily in fountain and lunch service than the big stores, although this service is declining.²²

The development of prefabricated and fully or partially precooked foods is only now beginning. Allocation of space and internal organization may be sharply affected by the development.

(6) *Physical operations.*—Changes in physical methods of operation appear to have been initiated about equally by all types of large retailers. The effect of these changes can be measured roughly by several indices. There is a fairly stable set of relationships between weekly sales volume, average number of checkout stands per store, and average weekly customer transactions per store.²³

¹⁷ The Progressive Grocer, op. cit., 1955 edition, pp. 6-7.

¹⁸ A. C. Nielsen Co., Today's Look at Tomorrow's Marketing Opportunities, an address to Grocery Manufacturers of America, Inc., by J. O. Peckham, p. 29.

¹⁹ Ibid., p. 31.

²⁰ See appendix table IV-13.

²¹ See appendix table IV-14.

²² See appendix table IV-15.

²³ See appendix table IV-16.

As measured by sales per employee, which have been rising for a decade, labor efficiency seems to increase with sales per store but ultimately reaches a limit.²⁴ Sales per customer and sales per checkout stand apparently increase indefinitely with store sales volume.²⁵ Sales per square foot of area tend to decrease with increases in store size.²⁶ There is no simple measure of relative physical efficiency associated with retailer size. However, all data available indicate that the scale and method of operation efficiencies available out of increased size of store are thus far virtually untapped.

There is ample indication of changes to come. Motorized checkouts, express lanes, parcel-pickup stations, and carryout belts and conveyors are already found in some very large outlets. New methods of physical organization and operation are being introduced in most big units. The layout of all types of store space is changing constantly. Backroom price marking is general.²⁷ Larger stores do much stocking after closing hours.²⁸ Sales volume is heavily concentrated in all regions on Fridays and Saturdays. Thus, there is some physical slack on other days in most of the big outlets. Nearly all major companies and affiliated groups have developed specialists in various physical operations for each major department.²⁹ Grocery retailers are quite as well organized with respect to personnel selection and training programs as are other types of businesses.

(7) *Increasing mechanization.*—New convenience foods and non-food items may yield further engineering advantage to larger units. Automation is already underway in warehousing, item selection, ordering, billing, inventory control, display building, and carryout. Experimental units have been built for automatic shelf stocking and price marking, and the complete card-punch store may ultimately be developed. In short, there are indications of substantial physical or engineering advantage in cost as volume increases.

However, rising expense ratios indicate that enhanced physical efficiency has not fully offset rising factor prices.³⁰ Declining percentage profit margins have partly offset increases in operating expense ratios. Thus, the modern food store differs from its small-scale parent not merely in size of the unit and number of items. In terms of physical operations, it is a completely different creature. The prospect now is for even larger outlets and perhaps quite different operating methods. There are indications for the future of still greater sales per store, more spacious layout and appointments, more luxurious facilities, more new products—especially precooked foods and convenience items—more parking space, changes in the checkout and the bundling operations, and increased mechanization in stocking and prepricing.

Small retailers cannot achieve these methods. People who supply the retailers must either adjust to the requirements of these new methods or persuade the retailers to abstain from their introduction.

(8) *Size of companies.*—Establishment of new stores has not been heavily concentrated in the largest companies in recent years. How-

²⁴ The Progressive Grocer, op. cit., 1955 edition, p. 15; also, 1953 edition, p. 15.

²⁵ Super Market Institute, op. cit., p. 10. Also, Zimmerman, M. M., The Supermarket (New York: McGraw-Hill Book Co., Inc., 1955), p. 143.

²⁶ Super Market Institute, op. cit., p. 8.

²⁷ Ibid., p. 10.

²⁸ Ibid.

²⁹ Super Market Institute, op. cit., p. 13.

³⁰ Super Market Institute, The Super Market Industry Speaks, 1956, p. 10.

ever, there has been an accelerated merger movement. During 1955, there were some 45 mergers involving 1,600 stores. Most of these involved only nine firms.³¹ Various reasons are cited for mergers: (1) protection of retail market position; (2) scale advantages; (3) better locations than available at new sites; and (4) advantages in financing through geographical dispersion, large resources, and integration of manufacturing and distributing facilities. The prospect is for further encouragement of integration of medium-sized regional chains.³²

Most of the larger chains are integrated vertically. The 4 largest chains, which now handle about 18 percent of total food-store business, all own and operate bakeries, milk-processing plants, coffee-roasting plants, and numerous distributing warehouses. Some of these companies also operate canneries, general packaging, egg exchanges, butter and cheese factories, laundries, bottling plants, poultry and meat dressing facilities, and produce-packing plants. The largest chains, both national and regional, also maintain integrated purchasing departments.³³

Many reasons have been advanced to explain vertical integration in the food industries.³⁴ Among these are included interrelations of cost and demand functions at different levels of the food system through market imperfections. The physical input-output relationships of different stages of production and marketing may be quite closely inter-related. Further, there may be an indefinite decline in average cost per unit of performing certain functions with a market too narrowly constricted to induce a nonintegrated enterprise to enter.

Quite as important, integration appears to be induced by uncertainty with respect to future market conditions. Risks may be reallocated among the various levels of productoin thereby. As retailers try actively to control the specifications of products acquired by them, they may find it necessary to enter into coordinated or integrated relationships with their buyers. Very often the optimum size of the supplier unit is very much smaller than the optimum size of the purchasing unit. Thus, with market uncertainty, it may be desirable from the viewpoint of the purchaser to obtain certainty of supply, the required specifications, and delivery terms through some formal or informal coordination of successive stages of the production process.

In many parts of the system, there are diseconomies of integration through ownership or otherwise. For a variety of technical and market demand reasons, different types of coordination or integration are appearing in different types of enterprises.

Summary.—In the past 20 years, there has been a significant increase in the relative volume of food reaching consumers through the grocery

³¹ Applebaum, William, and David Carson, *Supermarkets Face the Future*, Harvard Business Review, vol. 35, No. 2, March-April 1957, p. 129. Also, National Association of Retail Grocers, *The Merger Movement in Retail Food and Grocery Distribution* (Chicago, January 1956), p. 11.

³² See Collins, Norman R., and John A. Jamison, *The Impact of the Changing Structure of the Food Market Upon the Agricultural Producer*, paper delivered before the Western Farm Economics Association Annual Meeting, Las Cruces, N. Mex., July 16, 1957 (to be published in *The Journal of Marketing*). See, also, *The Progressive Grocer*, op. cit., 1957 edition, p. 17; and *Moody's Industrial Manual, American and Foreign* (New York: Moody's Investment Service, 1956), pp. 1073-74.

³³ Collins and Jamison, op. cit.

³⁴ See Mueller, Willard F., and Norman R. Collins, *Grower-Processor Integration in Fruit and Vegetable Marketing*, paper presented at the annual meetings of the American Farm Economic Association, August 30, 1957 (to be published in the *Journal of Farm Economics*, December 1957).

outlet. There has been a sharp decline in relative sales through specialty stores. The proportion of total food expenditures moving through eating and drinking places has risen from about one-tenth to more than one-sixth over the past 20 years.³⁵ Farm consumption has decreased to about one-half its former status. Consumers now make about two-fifths of their food purchases in grocery stores. The hotel, restaurant, and institutional trades together handle more food volume than this, but little is known about the operations of such outlets.

Taken together, these are the compelling facts: In 1956, some 27,000 large stores out of some 310,000 retail outlets did almost two-thirds of the total grocery business. Some 23 percent of the medium-sized stores handled more than 27 percent of the total business. Thus, about 30 percent of the stores are doing more than 90 percent of the business. The remaining two-thirds do less than 10 percent of retail volume. Large retailers are increasing their relative shares of the total food business. It is doubtful that wholesalers, processors, producers, or consumers can soon reverse this trend. Thus, each of the other groups is faced with two alternatives: (1) to adjust himself to the requirement of this new retail trade; and (2) where these requirements may be hostile to his own interests, attempt to induce or require the large retailers to make changes.

The final impact of these changes in retailing upon other segments of the food-market system is not yet clear. Procurement policies impinge directly on producers as well as on processors and distributors. New retail merchandising policies directly affect processors and distributors and ultimately affect both producers and consumers.

B. Procurement by retailers

There have been 2 major changes in the past 15 years in procurement procedures by retailers. First, retailers have become large enough in some local or regional markets to develop their own merchandising policies and thus to require suppliers of some food products to sell to the retailers on a straight price-specification basis. Secondly, retailers have become large enough to require many suppliers to adjust the terms of delivery and of services to the physical requirements of the new types of retailing.

Failure by suppliers in many regional markets to meet these two major conditions may involve danger of losing a major fraction of business in those markets. For suppliers adjusted over many decades to selling their own promoted brands through small-scale outlets, adjustment to such terms may involve drastic reorganization of the supplier's enterprise. Failure to adjust may involve costs so high compared to new enterprises that bankruptcy may be threatened.

There are allegations in some local markets that dominant buyers exist among the larger retailers.³⁶ There are also allegations that price, product, or delivery terms granted to dominant buyers by their suppliers seem to be extended almost immediately to all other large buyers. There are discussions among the trade in some markets of the implications to retailers of large-scale buying, just as large processors once feared the implications of large-scale selling and buying when

³⁵ See appendix table IV-17. Relatively little published analysis of hotel, restaurant, and institutional markets is now available.

³⁶ For a description of two supermarket operations as big business, with a listing of retailer-owned facilities such as warehouses and processing plants, see Zimmerman, *op. cit.*, pp. 161-162.

they were the only large-scale units in the food system. There is violent controversy with respect to alleged hostile interests of firms in the various segments of the food industry. Allegations of undesirable patterns of price determination do not seem thus far to have been substantiated. This much is true: the implications of small-number theory with respect to collusion or nonprice competition at retail do not seem to be supported by the facts of the case.

In procurement of perishables on a specification-price basis, retailers specify physical standards, volume, and delivery terms within narrow tolerances. Then, as a rule, the retailers receive price offers from suppliers able to meet the specifications. Most of the larger retailers require direct delivery from plants to stores or to central warehouses. Thus, branch houses of national packers and of old-line wholesalers are foreclosed from this trade.³⁷ As the specifications of retailers become more stringent, the scope for product branding, promotion, and pricing policy by processors or other suppliers diminishes. Many large retailers do not directly solicit offers. Some of them will not haggle with respect to price. In this sense, many large retailers have meticulously avoided the appearance of directly affecting prices and margins. Nonetheless, the percentage of total retail food business in some regional markets done by individual retailers is claimed to be sufficiently large almost certainly to assure some impact upon price determination.

Firm price lists are used increasingly. Some retailers spread their purchases systematically in order to avoid dependence on suppliers and, further, to avoid establishment of consumer attachment to particular brands. Nonprice ties among retailers and suppliers are infrequent.

Some large retailers justify integrated production units and partially controlled or directly coordinated supplying units in terms of criteria other than the general cost-function interrelationship of market demand interrelationships noted above. They consider that these units may save selling costs, maintain quality control, and provide a yardstick on other suppliers. It is conceivable that some control over procurement price might sometimes be obtained. Retailer labeling of items bought by them in bulk is common. In consequence, in many cases, specialized suppliers have developed to service large retailers almost as if they were integrated departments of the retailer.³⁸ In some regional markets, there is cooperative processing among the larger retailers.

The change in scale at retail leads to direct procurement by retailers of specification items on a cordwood basis, without selling expense, and often at a minimal margin. In consequence, the status and market position of many old-line firms and markets have deteriorated.³⁹

³⁷ See appendix table IV-18.

³⁸ "These retailers sometimes referred to as organized independents have for the past several years shown higher sales gains than unaffiliated retailers. Wholesale houses that are retailer-owned or that sponsor voluntary groups likewise are going ahead faster than wholesalers who are not affiliated with their retailer customers. Wholesaler-retailer teamwork, now a working reality, is one of the strongest forces in the food industry." (The Progressive Grocer, op. cit., 1956 edition, p. 16.)

³⁹ A recent survey indicates that, among sectional chains and local supermarkets, 80 percent of the stores surveyed were carrying more private label goods than 5 years ago. The national chains were not included in this survey, but it is assumed from past performance that they are even more inclined to use private labels. Although only 5 percent of the firms surveyed felt that private labels draw customers better than national brands, they felt that the increased brand control and store differentiation were sufficiently advantageous. Zimmerman, R. G., *The Third Revolution in Food Distribution*, 28th Boston Conference on Distribution (Boston: Retail Trade Board, 1956), p. 76. (Survey by Super Market Merchandising conducted in 1955 covering 99 companies controlling 1,600 supermarkets.)

(1) *Scale and method.*—The physical scale and the methods of procurement by retailers have also changed. Market-supply areas have widened in many cases. Large-scale nationwide suppliers seem to hold an advantage over the local processors and distributors who are closely oriented to large retailers primarily in highly differentiated products. Methods and scale of transportation of some perishable products are shifting drastically in patterns not yet understood by the trade. The wholesale selling function as it used to be known is declining. Large retailers cannot be serviced by a supplier's street salesmen. The wholesale function seems in fact to be taken over by retailers rather than to be eliminated. Some of the new channels from production to retail often approximate the straightline specification channels normally used to sell in government and large institutional outlets. The declining franchise of many wholesaler or processor brands precludes effective resistance to the procurement requirements of retailers by many suppliers.⁴⁰ There are few, if any, national processor brands which hold a dominant franchise in all local markets in the United States.

Voluntary and cooperative procurement by independent markets is still confined largely to groceries but is spreading rapidly to other products. About 70 percent of independent supermarkets are affiliated and almost 65 percent of superettes are so organized. More than half of the very small stores procure their materials from unaffiliated wholesalers.⁴¹ Affiliated retailers do about 70 percent of total independent grocery business, although only about 60 percent of independent markets are so affiliated. Many regional chains participate in affiliated wholesale operations. Unaffiliated independent retailers did less than 20 percent of the total volume of business in 1956.⁴² One-third of the companies owning supermarkets, with 81 percent of the stores, now operate their own central warehouses, and 45 percent of the companies participate in group wholesaling. Less than one-fourth have no central warehouse or affiliation.⁴³ The typical affiliated procurement agent operates for practical purposes almost exactly as does the centrally owned purchasing unit. In the voluntary group, an old-line wholesaler sponsors independent grocers and provides merchandise, advice, promotional material, management aids, and usually a group label. The cooperative groups are retailers who jointly own and operate a wholesale unit. These voluntary and cooperative stores are estimated to do slightly more business than the chains. They operate almost exactly like the chains, with preprint order books and what amounts to cash terms.

Wholesale margins of these groups are very low.⁴⁴ New methods of sale to them are required. Processors must first have their products

⁴⁰ For one estimate of the importance of private brands versus national brands, see Weiss, E. B. *The New Battle of the Brands—Distributors' Advertised Brand Versus Manufacturers' Advertised Brand*, Printers' Ink, October 20, 1950, pp. 23-24 and 56.

⁴¹ See appendix table IV-19.

⁴² See appendix table IV-20.

⁴³ Super Market Institute, *The Super Market Industry Speaks*, 1956, p. 12.

⁴⁴ "Much of the credit for the phenomenal growth of independent supermarkets and their growing share of sales is due to the sharp reductions in wholesaler margins that enable the modern retailer to buy his grocery products at prices that in turn enable him to be price competitive and still earn a satisfactory net profit on sales. Tangible proof of this wholesaler achievement is found in Progressive Grocer's first nationwide study of wholesaling. It reveals that leading wholesale grocers have reduced their margin by more than 25 percent since 1950.

"By what means has this average reduction been accomplished? The majority of whole-

entered on the order books of such wholesalers in order ultimately to get their products on the shelves of independent retailers and thus available to consumers.

In summary, there are two major types of procurement agencies now: the direct buying chains and the direct buying associated groups. Both types are extending into the perishable fields. Drop shipments generally pass through the wholesaler for both groups. The wholesaler function, therefore, is not in effect being eliminated but has generally by either of these two means been integrated with the retail function. In consequence, the first direct impact of the changing requirements of retailers impinges primarily upon the processor groups.

C. Merchandising

Merchandising policy can be classified in terms of: (1) the commodity mix, (2) product differentiation, (3) promotion, and (4) price policy.

(1) *Product mix.*—The commodity mix seems to be governed by two broad objectives: (1) to facilitate one-stop, total household shopping, and (2) to shift kitchen operations into the food industry through convenience items. Demand for new product lines followed a sequence of fresh-frozen products, including entire meals, more than 600 other prepared items, kitchen and other household appliances along with pushbutton food and bathroom items, a series of specialized products for different age groups, and new experimental methods of preservation. The optimum size and operation of the retail store will change with techniques and new product mixes.

(2) *New items.*—Increases in sales volume appear to have been concentrated in new convenience products, the prices of which have been constant or decreasing over time. Sales have also been increased for other kinds of products which are new in terms of flavor, color, size, package, or other attributes often introduced in a combination deal. Consumers seem willing quickly to shift to new products, and mass mediums can make new products known quickly. Some retailers believe that promotion is most effective for new products introduced at the outset of development of the line.⁴⁵ Convenience-items sales have increased far faster in the past few years than those of other food and grocery items.⁴⁶ Frozen foods, soaps and detergents, drugs, cosmetics, beauty aids, toiletries, and household supplies have contributed most heavily to the increase. Changes seem to catch hold in the Southwest, but they spread quickly.

In 1940, only 29 percent of independent stores handled frozen foods. In 1951, 92 percent carried them.⁴⁷ There appears to be gradual shifting toward frozen specialty items, especially the prefabricated products.⁴⁸ Frozen concentrates were not sold prior to 1948. In 1955, estimated sales of these products were 760 million pounds. Similarly, sales of prefabricated specialties have increased rapidly in the

salers give most of the credit to the preprint order form, a sales method that increases average store purchase and reduces wholesaler costs at the same time. The preprint order form is now used by over half of the Nation's leading wholesalers and accounts for 86 percent of retailer purchases. Wholesalers using the preprint order form have an average margin of 5.5 percent compared with a margin of 7.5 percent for wholesalers who travel salesmen." (The Progressive Grocer, op. cit., 1956 edition, p. 9.)

⁴⁵ A. C. Nielsen, op. cit., pp. 12-13.

⁴⁶ Ibid., p. 7.

⁴⁷ See appendix table IV-21.

⁴⁸ See appendix table IV-22.

last 5 years. Sales of frozen seafoods have also increased sharply. In general, sales of frozen fruits are not above the 1946 levels. Sales of frozen vegetables have increased. Available data indicate a shift toward increasing prefabrication.⁴⁹

(3) *Nonfoods*.—Recent gains in retail sales volume are greatest in housewares, dishes, toys, and stationery. There have been moderate gains in health and beauty aids, cooking utensils, kitchen tools, magazines, and outdoor and picnic supplies. Sales of paper, hardware, and soft-goods items have not been increasing much. Most retailers push the high-profit items. Optimum measures of preselling, minimum turnover or gross margins, inventory control, and cleanup sales are yet unsettled. Rack jobbers will probably be used until retailers acquire know-how.⁵⁰ Essentially the same physical procedures are used as for foods. Costs of handling and selling are not precisely known. Nonfoods are probably a plus in volume with far better margins than on foods. In the past 5 years, the sale of health and beauty aids in food stores has almost tripled, rising from \$340 million in 1951 to well over \$800 million in 1956.⁵¹

(4) *Brand battle*.—Retailers often state that they push their own labels because they consider that: (1) Their own names are a better consumer pull than packer names; (2) their shelves, bins, and cases should be used mainly to promote their own products; (3) margins are usually better on their own labels; and (4) they avoid being underpriced by a competitor. Accordingly, they prefer to stock only those packer brands which are difficult to duplicate or which have a strong consumer pull.

Packers without strong brands are reduced to bulk suppliers of specification items with no real merchandising policy. Nearly every major retailer either processes for his own label or engages others to pack retailer labels. Some packers allege that if they refuse to pack for a retailer label in response to proffered private label business, they thereby foreclose volume and sale of their own products. If they accept such proffers of private label business, they may lose merchandising control over product, brand, and promotion. Further, they may have no long-run assurance of stable volume of private label sales. Some packers accept private label business and simultaneously increase promotion of their own brands.

On the other hand, some retailers state that very few nationally advertised food brands have a compelling franchise in all parts of the Nation. Retailer brands are common in meat, dairy, delicatessen, bakery, and frozen-food departments. While most retailers carry many packer brands in groceries, they say that no single regional or national brand must be carried in order to attract customers.

Some packers claim that methods of retail display and pricing are designed to depreciate processors' or growers' brands. Retailers reply that many branded items are in fact undifferentiated in the sense that they command no premium. New products, effectively differentiated, enable processor to build a product image and to control selling themes, advertising, pricing, packaging, display, store position, and point-of-

⁴⁹ See appendix table IV-23.

⁵⁰ Zimmerman, M. M., *op. cit.*, p. 240.

⁵¹ See appendix table IV-24.

purchase promotion. Once the product is duplicated by retailers or by other processors, these means of profit policy are gone. Thus, the battle of brands is a major focus of the pattern of change.

Retailers and packers appear to agree that there are well-established consumer loyalties to retail stores. Retailers carefully nurture this loyalty. However, retailers say that some but no specific packer brands which are in fact effectively differentiated and promoted must be carried to maintain consumer loyalty to the store. Of the top brands in 1940 which had lost leadership by 1956, less than one-fourth declined in importance because they were out-advertised and out-promoted. More than three-quarters of them bowed to new or improved products.⁵² Real differences among many brands of old-line foods are widely claimed to have diminished. The retailer can control display, point-of-purchase promotion and, therefore, impulse buying; but packer promotion of a strong brand often forces him to give effective display. The little data available indicate that no national brand of foods has truly national distribution; no brand dominates all regions; the rates of change in market position among national brands are about the same in all regions; about one-fifth of them are exposed to less than half the total foodstore traffic; the average exposure percentage of national brands is declining; and such brands may lose market position mainly because they lose real differentiation from other national brands or retailers' brand.⁵³ Sale of major advertised brands still exceeds sale of retailer brands in grocery departments. However, the scope of merchandising policy open to packers may still be narrowing.

(5) *Retail advertising and promotion.*—Retailers large enough to affect procurement practices and margins, and also able to differentiate their own products, can use virtually every device for advertising and promotion within their own regions. As retailers control more determinants of profit, such capacity for control generally decreases in other segments. The entire battery of advertising media and methods is increasingly used by large retailers.⁵⁴ In some States, fairly small retailers advertise on a cooperative basis. Retailer-controlled store promotions are general. There has been a marked movement to trading-stamp plans and other continuing premium plans over the last few years.⁵⁵ Retailers engage market-research units also, just as processors do. Advertising and retail promotion are carefully planned and tested but, as elsewhere, no precise appraisal appears possible.

Most important, retailers can now compete effectively with any other segment of the food industry in promotion. They control many of the instruments of demand manipulation. Retail sales methods, organization, and administration have indeed changed drastically; but these may be lesser changes than those imposed upon processors and distributors. Even if processor brands are presold to consumers, sales methods must be geared to the new scale and methods of retail procedures. "Selling"—in the old way—of cordwood products may be useless or even damaging to the producer. Sales methods in retail buying are identical with those used for many products in the govern-

⁵² A. C. Nelsen Co., op. cit., p. 14.

⁵³ *Ibid.*, pp. 17-22 and 36-39.

⁵⁴ Super Market Institute, *The Super Market Industry Speaks*, 1954, p. 22.

⁵⁵ *Ibid.*, 1955, pp. 24-25.

mental or institutional trade. Processing and distributive margins for such goods have been substantially reduced.

Price competition among many large retailers is brutal both in procurement and sale. But the merchandising program of the large seller of any item at any level of the market system is a combination of any and all means by which demand can be manipulated favorably—the product mix, quality, wrap, pack, package, style, brand, advertising, and other promotion. Any successful manipulation of demand by any of these means leads almost immediately to efforts duplicated by competitors. Some retailers seem sensitive of statutory limitations on methods of merchandising and procurement.

More than \$233 million were expended for advertising of foods, food beverages, and confections in 1954. There is no exact information easily available with respect to the amounts so expended by retailers either as general advertising or for their own sponsored brands. Methods of advertising in local markets cover so wide a variety of instruments that exact aggregation of outlays between retailers and suppliers would probably be virtually impossible.⁵⁶

(6) *Retail margins.*—Retail percentage margins have drifted downward over the last 25 years. Margins have been quite flexible. In general, they have been applied by retailers on a commodity-class basis with relatively simple bookkeeping. Large retailers do not confuse size of margin per item with size of contribution to net total receipts. They have not supported resale price maintenance, unfair practices, or minimum markup laws.⁵⁷ Price wars are not frequent. Only rarely will large retailers meet local competition item by item and day by day.

There are no data accurately reflecting markups or margins in wholesale or retail parts of the food industry at any time. However, fragmentary data for particular areas and periods support consideration that percentage margins on foodstore sales have dropped sharply in the past three decades.⁵⁸

D. Market structure

(1) *Mergers.*—Market structure, as defined above, has shifted sharply in recent years with mergers as a major instrument. In 36 mergers reported for the first 9 months of 1955, 6,100 stores were involved. More than 50 important mergers occurred in the whole year. About half of the deals involved companies with less than 25 units. Reasons offered include difficulty in finding locations; offers are high—about 5 percent of the merged stores were acquired by nonfood companies; and tax laws. Mergers seem to accelerate private brand development.⁵⁹ New capacity, scale, and techniques from mergers have broken old distribution channels, eroded old price protection and methods, stimulated pressure for volume by processors, broadened the product mix in foodstores, heightened entry into nonfood items, de-

⁵⁶ See appendix table IV-25 for media distribution.

⁵⁷ Zimmerman, M. M., op. cit., pp. 119-120.

⁵⁸ See appendix table IV-26.

⁵⁹ "The trend to private brands, already given impetus since World War II, may gather further momentum as a result of past and future mergers. When the strong advocate of private brands, usually the large chain, acquires a smaller company that had confined itself to so-called national brands, share of total display space given to private brands must certainly increase in acquired or merged stores." (The Progressive Grocer, op. cit., 1956 edition, p. 5.)

preciated old brands, eliminated the old pricing principle of the high margin, and slowly seem to be putting most foodstuffs on the fast-turnover basis common to products lacking firm consumer attachment.

(2) *Size—unit and company.*—The total United States position of major chains has not greatly improved. Regional chains are growing, and many develop comprehensive merchandising programs as do many single-outlet units. Increases in size per unit and in size of company mean that retailers are not likely again to be subordinate in methods or precision of merchandising. Changes in both processing and production will largely reflect retail changes. Similar operations are appearing in the institutional trade, which in some areas accounts for nearly a third of total food business. Again, older types of distributors must either adjust to the new requirements of retailers or defeat them in the battle of brands. A price-leadership structure, both in procurement and in merchandising, exists in many regions. Independent retailers are closely organized and can now use many policies developed by larger companies. Nearly all retail groups in all regions now have a price policy; elasticity is limited both in buying and in selling. When services are differentiated, cross elasticities also diminish. As scale and methods of operation change, entry elasticity falls. Market structure can be defined in these terms. As the retail component moves away from the atomistic classification, other components move toward that structure.

E. Enterprise organization

(1) *Management structure.*—Food retailers are no longer untrained general merchants who sell bulk items or branded products with no real differentiation, promotion, or price policies. These are large businesses, with high average income and investment and staffed by carefully selected and trained officers. Company executives carry broad responsibility.⁶⁰ The store manager is also a major executive, often with 100 subordinates and occasionally 250. Changes in firm structure, policies, and procedures are general, but few governing principles are discussed in formal academic literature. Yet, changes in scale and methods of production, procurement, and merchandising could not have occurred without correlative management changes, especially for older firms and often as a matter of survival. Here, one principle emerges—most of the activities of the firm are inter-related. Activities jointly related to the enterprise profit account must be subject to a single authority with a single results stream and parallel report structure. Activities not so related must be decentralized.

(2) *Marketing organization.*—Marketing now seems to encompass coordination of products, package and label, promotion, sales methods and organization, practices, and market testing. Enterprise management is emphasizing leadership, coordination, and planning rather than specific technical know-how. The general trend toward market orientation is evidenced by new structuring of companies, status for marketing jobs, titles, policies, procedures, corporate alignments, and new marketing functions—especially in research. Where the firm is large and can vary its product or promotion, marketing depart-

⁶⁰ Zimmerman, M. M., op. cit., pp. 159-162.

ments extend far beyond selling. Where a competitive market structure exists at transfer points and where bulk products are sold, no market policy can exist and the enterprise should be organized accordingly.

(3) *Decentralization*.—Decision making is being decentralized. Some decisions cannot in fact be made above a particular level. In other cases, there is no scale advantage in central decisions or central staff or service functions. Again, what seems to be the governing rule is slowly emerging: If at any administrative level a decision of one unit constrains the decisions of others, joint profit maximization requires an authority and folding of results. If the decisions are practically independent, then a coordinating authority may be fatal to profit maximization. This principle seems to affect control and appraisal of products, of line and staff functions of all types, and of both market and administrative territories. Management is beginning to center around product lines rather than market functions. The integration into marketing of all related functions has created a complex of unsolved difficulties and devices for solution.

Old-line wholesale selling facilities and methods are virtually obsolete in some trades. Internal transfer pricing among functional departments is ineffective, and correlative profit centers seem to be disappearing except where atomistic competition exists at transfer points. Otherwise, transfer prices neither measure nor induce departmental efficiency and may be hostile to combined profit maximization. Companies, therefore, try to create the required conditions or eliminate functional organization. Thus, rigid departmentalization by functions and the exclusive sales franchise are also disappearing. With differentiated products, actions taken by one functional unit in fact limit actions open to related units. Separate departmental profit targets are only by accident consistent with maximum total profits for all related functions. Both authority and results, therefore, center around commodities.

Many staff and line services are clearly interrelated among all units of larger companies—budgets, large or volatile inventories, long-run investment, governmental and labor relations, law, credit and banking policy, overhead allocation, product and processing standards on differentiated products, brands and labels, some types of promotion, auditing, results analysis, and performance appraisal. Even so, central units are yielding nominal control over decisions actually beyond their capacity or offering no scale advantages or other interrelationship.

(4) *Sales organization*.—Processors and wholesalers are adjusting sales organization and methods to the new requirements of retail and institutional outlets. These outlets procure on a bid basis and by direct channels. Thus, sales departments are being integrated into marketing departments often including product development and engineering; manufacturing, inventory planning, and control; promotion and advertising; sales administration, planning, and management, and market research. There is not yet agreement on proper organization for marketing many different food products from many areas to many different classes of buyers in many different markets. Preoccupation with sales volume and margins is yielding to concern for total profit. Postwar competitive pressures for new products and for full-line selling have shifted product and sales planning to top management, including the controller. Effective reorganization

reflecting the new marketing concept is not easy. Primary departments owning inventories and making sales must be coordinated with such operating functions as commission selling, purchasing, transportation, insurance, or construction. Both must be integrated with staff units. Decentralization requires formulation of policy delegations and effects a change in profit centers. Related decisions among units at the same administrative level must be coordinated. The two major problems are (1) specification of decision-making units with a parallel stream of results and (2) integration with service units. Analysis of these changes is almost nonexistent.

(5) *Other segments.*—The fabric of recent change is such that none of the major shifts in any firm or segment could easily occur without the others. Thus, in treating changes at retail, many of the related adjustments in other sectors have been touched. Management adjustments are general. Therefore, only a few observations relevant to other functions are offered.

V. WHOLESALING

Wholesale sales have increased sixfold since before the war, labor productivity has risen, and both margins and expense ratios have fallen sharply.⁶¹ As in retailing, number of units is declining for general line grocery wholesalers, but sales continue to rise rapidly.⁶² Cash-and-carry, self-service wholesaling through affiliated warehouses is now nearly universal. In the business of 20 years ago, warehouses were multistoried, with hand operation, traveling salesmen, credit, wagon and rail delivery, small orders from many wholesalers, wholesaler brands, and high expense ratios for assembly, packing, and invoicing. As chainstore retailing developed, independent retailers had to buy cheaply and operate at low cost in order to survive. Now, large supermarkets, especially with sales over \$20 million annually, own central warehousing facilities.⁶³ Some 230 retailer-owned wholesalers serving more than 37,000 stores operate without salesmen, deliver on schedule, and finance themselves through cash sales. Merchandising and store-operation counsel are provided systematically. Profits are returned mainly as dividends. Average expense is often lower than in chain operations. Through some 450 voluntary wholesalers with nearly 90,000 affiliates, the retailer may buy from the sponsor, use a chain name, and receive supervision in store layout, operation, and merchandising.⁶⁴

With increased lines and limited brands in each, both classes, wholesaler-sponsored cooperatives and retailer-sponsored voluntaries, have large independent retailers full competitive with chains. Highly efficient and large-scale plants have developed.⁶⁵ The preprint weekly order form virtually eliminates sales expense, a cash basis, and drop shipment. Self-service procurement by retailers is believed to depreciate most wholesaler brands.⁶⁶ It also accelerates consumer advertising and in-store promotion. Larger retailers are rapidly turning to

⁶¹ See appendix tables V-1 to V-5 for general description of food wholesaling.

⁶² See appendix table V-6.

⁶³ See appendix table V-7.

⁶⁴ Converse, Paul D., *Twenty-five Years of Wholesaling: A Revolution in Food Wholesaling*, the *Journal of Marketing*, vol. XXII, No. 1, July 1957, p. 47.

⁶⁵ See appendix table V-4.

⁶⁶ Weiss, *op. cit.*, p. 36.

direct procurement from their own warehouses, although some 45 percent of the largest companies are affiliated with wholesalers. Rack wholesaling for nonfood and specialty items may be taken over after experience is gained by retailers. Affiliated groups are increasingly oriented to retailer profit. They are moving from their own labels and long-margin items toward those yielding highest profit to retailers. In a sense, wholesaling is becoming an integrated department of retailers rather than a self-contained set of independent, profit-seeking units.

Employment in wholesaling did not change substantially between 1929 and 1939, but in the following decades it rose at a somewhat faster rate than that for retailing.⁶⁷ The dominance of the regular wholesaler in the grocery business was still marked as little as 10 years ago.⁶⁸ In 1939, nearly half of wholesale grocery sales were made through regular wholesalers. Manufacturers' sales branches moved well over one third of total volume—excluding chainstore warehouses in both cases. The latter class had decreased by 1948. By 1955, 43 percent of wholesalers were working through the sponsorship method and making 72 percent of the sales. For privately owned wholesalers, 80 percent of the sales were on a sponsorship basis. Of retailer-owned wholesalers, 47 percent were voluntary sponsors, and they accounted for 48 percent of the sales.⁶⁹ Recent rates of gain in total sales have been almost zero for the unaffiliated wholesalers. Among independent groupings, both the voluntary and cooperative wholesalers noted increased volume in the neighborhood of one fifth of 1956 over 1955.⁷⁰

Changes in the size distribution of wholesalers have in general paralleled the developments described above at retail. There are a large number of extremely small wholesalers whose share of total wholesale business is declining. In fact, relative declines are general for food wholesalers doing less than \$10 million per year. The extremely large wholesale organizations doing over \$10 million gross sales per year have been increasing their absolute and relative business.⁷¹ Analysis of year-to-year changes in absolute and relative share of the wholesale business by size classes discloses essentially the same long-run trends as those so clearly defined in the retailing segment.⁷²

Recent rates of gain in sales also emphasize the increasing dominance of the large wholesaler paralleling the rise of the large retailer.⁷³

As for the retailer, number of items handled by grocery wholesalers continues to increase.⁷⁴ The retailer-owned and the voluntary groups are carrying more products than the privately owned wholesalers. The number of products carried is generally considerably smaller than that carried in the retail food and combination stores. Only about one-tenth of the grocery wholesalers are handling fresh meats. However, more than one-fourth of them handle fresh produce. There is some indication that wholesaler handling of these products on a group basis will increase. Except for drugs and toiletries, grocery wholesalers

⁶⁷ See appendix table V-8.

⁶⁸ See appendix tables V-9 and V-10.

⁶⁹ See appendix table V-11.

⁷⁰ See appendix table V-12.

⁷¹ See appendix table V-13.

⁷² See appendix table V-14.

⁷³ See appendix table V-15.

⁷⁴ See appendix table V-16.

carry relatively few of the nonfood products, the importance of which is increasing at retail.⁷⁵

There has been a continuous increase in the annual average inventory turnover in the past decade. This increase approximates about 25 percent. As in other aspects of the food business, there are apparent scale advantages in terms of inventory turnover. In general, the largest wholesalers turn their stock rather more frequently than the smaller ones.⁷⁶

Most wholesalers are now operating as something other than private profit-making organizations—either as cooperative or voluntary associations or as direct departments of corporate chains. In either event, sponsored brands have become general. There are few data available on long-run trends in advertising expenditures by food wholesalers, although it is likely that such spending is less important today than it was when wholesaler brands were strong. Even when such data are published, it is difficult to determine the degree to which advertising nominally generated by wholesalers in fact represents advertising outlay by processors or by retailers.

There is some evidence of systematic long-run decline in the nominal markups or margins by wholesale groceries. The apparent decline in relative margins may, however, be serious. Assumption by retailers of many of the functions once performed by independent wholesalers quite naturally is reflected in a lower nominal margin among wholesalers. However, as in all other phases of business, there is evidence that relative margins decline as size of the individual wholesale grocery outlet increases. Thus, in 1950, the margin for small wholesalers was 8.6 percent and for the largest class was 6.4 percent. The 1955 estimates for these figures were 7.3 percent for the smallest class and 5.0 for the largest class.⁷⁷

To a greater extent than any other part of the food system, the wholesaler group seems to have adjusted almost completely to the requirements of the new type of retailing. In the process, however, it has lost much of its status as private business.

VI. PROCESSORS

Processors selling differentiated products have had to change operations and policies in order to conform to retail trade requirements. Many established products and merchandising methods are no longer acceptable to retailers. Many retailers can specify product delivery and other terms and then can require price offers. Consumer control by processors has generally diminished. Even so, the battle is not over. Many processors have altered enterprise structure both to adjust to changes and perhaps to control some of them. They have developed direct-sales merchandising, especially for bulk or specification items. High-speed and full-capacity operations are being built. The crucial importance of effective differentiation and promotion is being recognized. Product planning, new product development, and engineering have become major functions closely coordinated with manufacturing, procurement, and sales. Processors seek so to develop, promote, and price their own products that retailers will find it profitable to give

⁷⁵ See appendix table V-17.

⁷⁶ See appendix table V-18.

⁷⁷ See appendix table V-19.

them space within a fairly broad price range and reasonably free of variation from small changes in product, price, or promotion by competitors. Generally, there are few merchandising advantages from national operation in handling most cordwood foods.

Some old companies recognize that some scale advantages will permit price competition that retailers cannot meet by other channels. Actually, differentiated products can acquire and hold shelf space. Accordingly, they seek new products and new methods of preservation which cannot easily be duplicated either by retailers or by specialized processors satisfied to sell to retailer specifications. And they are also integrating their management structure for the purpose of coordinating the entire process of planning, production, and sale of effectively differentiated items. Promotions of all sorts have been accelerated. Processors of all types still provide a lively competition which is different but no less active.

Processors of foodstuffs generally have continued to expand their promotional activities. Thus, in terms of dollar outlays, there was almost a two-thirds increase in expenditures between the years 1948 to 1954.⁷⁸

The dollar importance of the food-processing industry has increased sharply as the convenience and prefabricated items have increased in sale. Thus, value added by manufacture to food and kindred products has been increasing rapidly.⁷⁹ Despite such increases, processors are faced with difficult problems in shifting equipment and facilities to meet the demands for new products. There are also difficult internal adjustments facing many processors with respect to control over consumer demand through product variation or other means, the increasing length of product lines, and the necessity for coordinated promotional programs. In general, it is doubtful that the consumer brand franchise of the processing trade has been greatly enhanced in recent years.

VII. RETAILER-SUPPLIER RELATIONSHIPS

Retailer profit policy now involves considerable control over the commodity mix, the brand, promotion and advertising, and pricing policy. In all elements of their profit policy, retailers are becoming less dependent upon supplier influence. A greater amount of purchasing by retailers now rests on a price-specification basis, involving direct sale and direct methods. Increase in this kind of sale decreases the profit policy potential of suppliers. This has induced them to strip down to a specification type of organization. It has also forced processors and other suppliers to seek effectively differentiated products.

VIII. PRODUCERS

The basic changes in retailing, wholesaling, and processing are reflected in major changes in product, scale, and method of operation of growers in livestock, poultry, fruits, and vegetables. Cooperative pro-

⁷⁸ Approximate distributions of advertising activities by processors among alternative media are shown in appendix table VI-1.

⁷⁹ U. S. Bureau of the Census, *Census of Manufactures: 1947* (Washington: Government Printing Office, 1949), pp. 21-22. (Statistics of Industry, vol. 2.) Also, *Preliminary Report, 1954 Census of Manufactures, General Statistics for the United States, by Industry Group and Industry: 1954 and 1947* (Washington: Government Printing Office, 1956), pp. 4-5. (Series MC-G-1.)

ducers who process wholesale branded commodities have also been affected. The nature of the changes, their causes, interrelationships, effects, and possibilities for control do not seem to be fully explored.

However, the demand at farm level depends largely upon organization and operation of the marketing system. Specifically, the increasing power of the retailers means that farmers must gear themselves to deal directly with such retailers or with specialized agencies serving as suppliers to the retailers. In general, today's type of market structure requires specified physical attributes, uniformity of such attributes over time and space, and specified regularity in delivery as the major attributes for effective handling at subsequent stages of the food system. Producers in many areas and for many commodities do not, in fact, produce for the kinds of markets represented by the old auctions or the public stockyards or the commodity exchanges. In general, these markets absorbed whatever amounts and types of products were produced by farmers who in general had no direct understanding of the relationship between desired patterns of production and retailer demand specifications. In general, the large-scale retailer and wholesale units are tending to bypass the old open markets. The marketing and distribution channels between the consumer and the producer are tending to shorten. Thus, the new requirements of the new types of retailers have come to impinge sharply upon the agricultural producer.

The kinds of supplies once produced for the open agricultural market do not in general satisfy most of the requirements of the large retailers for a large and stable supply of a uniform product meeting specified attributes. Many of the old terminal markets were designed primarily to collect the heterogeneous output of small individual producers for classification and sale to individual distributors at whatever price they might bring. The large retailer cannot and, to an increasing extent, does not depend upon this type of market.

To an unknown extent, direct purchase or various forms of f. o. b. purchase have increased at the expense of old-line terminal market sales. A wide variety of forms of direct or indirect integration and informal coordination among retailers and suppliers have developed. Buyers of farm products now attempt actively to influence the specifications of products offered by farmers. Increasingly, the attributes of farm products desired by the mass of retail distributors are those which are consistent with large-scale retail selling on a self-service basis. As the size of retail operations increases, the profit position of such retailers increasingly depends upon attributes of the products handled. Appearance, size, and condition are essential to attractive display. Adaptability of farm products to these requirements is highly desired by retailers. Internal layout of nearly all stores is now on the self-service basis. Accordingly, handling ease has become important. Agricultural producers must henceforth consider the size and weight of master containers, the processors' operations intermediate between them and the retail store, and the box size and package shapes which are essential to efficient operation by retailers.

Temporal stability of uniform products is equally important for perishable and nonperishable items in order to correlate with the carefully programed activities of large-scale retailing and of related suppliers.

Thus, as specifications of necessary products and delivery attributes for farm products become more clearly defined, a new set of variables affecting farm price appears. The demand at the farm level—and consequently the profit position of the farmer—depends increasingly upon actions taken by other producers and other marketing agencies. The increasing interdependence of the profit positions of farmers, of processors, and of distributors is one of the reasons for the increasing development of formal and informal methods of coordinating the actions at different levels of the food system.

In the West, and particularly in the fruit and vegetable canning industries, vertical integration among processors and farm producers has developed for largely the same reasons, inducing similar developments in adjusting to the requirements of retailers. These interrelationships among distributors and growers involve a variety of functions and take a variety of forms.⁵⁰ A variety of cooperative or bargaining contract relationships which have developed early in western fruit and vegetable canning appear to be extended to other commodities. In procurement of cattle for block beef operations, another and quite dissimilar set of relationships appears to be emerging.

The increased number of product specifications alone would limit the effectiveness of price as a means of inducing producers to turn out products with the required specifications. The more detailed the specifications required for programing into the complex food system now developing, the less possible it becomes to reflect such requirements to producers through price alone. Accordingly, retailers and processors have undertaken other methods of persuading producers to make available the appropriate types of commodities in the appropriate volume and time.

Very often, the physical operations of production, processing, and distribution must be carefully coordinated to achieve the kind of attributes ultimately desired at the retail level. Nearly always, the physically optimum scale of farm production is relatively small as compared with the physically optimum volumes of production for processing or distribution. The old-fashioned procedure of grading and sorting on terminal markets is no longer satisfactory as food processing and distribution changes from the old "batch" hearth to a modern continuous-flow process. To facilitate such a system at the processing and retailing levels, the producers' decisions with respect to basic stock, management, timing, and other operations must be geared directly into the requirements of the processing and retailing segments. Some western marketing cooperatives have carefully attempted to induce their producers or in some cases to require them to adopt production practices geared to the requirements of the processing and retailing trade. In general, these requirements have not yet been specified by government or other agencies.

IX. SUMMARY

The sweeping changes general to the American economy have been most marked in the food industries. The changes are closely inter-

⁵⁰ U. S. Farmer Cooperative Service, Proceedings of the Conference on Fruit and Vegetable Bargaining Cooperatives, held on January 12-13, 1957, Chicago, Ill. (Washington, D. C., 1957). 68 pp. Processed.

related with respect to the various functions of a given firm and to the functions of firms in different segments of the production process. One way to classify this flux is suggested by the outline of this report. The main sectors involved are consumers, retailers, wholesalers and other distributors, processors, and producers along with operating and service groups. For each enterprise, the profit account can be specified in terms of production, procurement, and merchandising policy; firm structure; and market structure. Any combination of these two sets of attributes would provide a reasonable basis for study. I would like to know what the changes have been and are—their causes, interrelationships, effects, and susceptibility to control. These questions are not presently answered.

As generally defined, the "farm problem" involves chronic disparity of income among certain parts of the agricultural industry and instability of income among others. The problems alluded to here are of a completely different type. In agricultural areas which are not "sick"—which are not afflicted with chronic disparity or instability of incomes in general high-income periods—the major issue now before producers is adjustment to the emerging needs of new classes of retailers, other distributors, and processors. The question at issue primarily is the nature of the product to be produced and the kind of organization at the grower level necessary to adjust to the requirements of the rest of the system. Ultimately, public policy with respect to these issues will have to be defined. It is doubtful that such public policy can be formulated until the requirements of the total system are more clearly known.

VERTICAL INTEGRATION OF PRODUCTION AND MARKETING FUNCTIONS IN AGRICULTURE

John H. Davis, Harvard University

In line with the suggestion in the committee's letter inviting me to participate in its study, I shall address my remarks to the following questions:

1. Would the vertical integration of production and marketing functions contribute to the economic stability and progress of commercial agriculture?
2. Is such development practical and feasible?
3. Is it desirable?

CLARIFICATION OF TERMS

I shall use the term "vertical integration" in its usual sense of denoting the linking of successive business functions or operations through ownership or contractual arrangements. In addition, I shall discuss certain other vertical structures which traditionally are not thought of as integration. To denote these I shall use the term "vertical arrangement." When referring to both types I shall employ the more general term, "vertical structures."

The answer to the questions under consideration can be seen more clearly if due cognizance is taken of certain basic facts and forces which have characterized the technological evolution of the past 175 years.

VERTICAL INTEGRATION PREDATES TECHNOLOGICAL ERA

In the total food-fiber phase of our economy (which I shall refer to as agribusiness) vertical integration is not new, having existed for centuries prior to the technological revolution. Such integration was characteristic of the era of a self-sufficient agriculture in which practically all phases of production, processing, and distribution were performed by the farm unit. Then, the typical farm family produced its own farm supplies, raised its crops and livestock and processed, stored, and distributed its farm commodities. Under such conditions the vertical integration of our food and fiber economy was almost complete. Furthermore, such integration was a function of agriculture itself, since all operations were directed and performed by the farm as a business entity and since decisions at all levels were made by the farm operator.

SEPARATION OF FUNCTIONS IN INTEREST OF EFFICIENCY

Along with the increasing tempo of the technological revolution in agriculture has come a gradual dispersion of functions from the farm to business—a trend that is still going on. In many instances,

functions leaving the farm have broken into even smaller fragments in terms of ownership and management. The dominant force behind this trend has been economic—each operation gravitating toward a state of optimum efficiency with respect to organizational structure, location, and size of unit.

Early to leave the farm was the spinning and weaving of cloth, and the milling of flour. Then, with the invention of the steel moldboard plow, the reaper, and so forth, the manufacture of farm supplies assumed a significant off-farm status. Gradually, also, the processing of food followed suit as technology in this field increased and as the developing industrial centers provided markets for the output of new food factories.

So great has been the transfer of functions from farm to business that today our farms are left largely performing the specialized operations of growing crops and raising livestock for market—farmers generally even buying in processed form much of the food consumed by the farm family itself.

The magnitude of this transition and the general dimensions of the on-farm and off-farm phases of the food-fiber sector of our economy, as it exists today, are reflected in the following figures. In the year 1954, farmers purchased from off-farm sources some \$16 billion of inputs which were not produced on the farms where used.¹ Following harvest, farmers sold some \$30 billion of products to processing-distribution firms which, in turn, converted such products into consumer items for which the ultimate buyers paid a sum of \$75 billion. When one adds to this total such items as imported foods and fibers, seafoods, and fabrics made from synthetic fibers, the aggregate consumer bill for 1954 is raised to over \$90 billion.

Also, in 1954 the combined operations of the agribusiness sector of our economy utilized about 35 percent of our national working force—one-third of which were employed on-farm and two-thirds off-farm. The total capital investment involved in this undertaking was greater than that of the balance of American industry, combined.

COUNTERFORCES IN DIRECTION OF VERTICAL STRUCTURES

Simultaneous with the trend toward the dispersion of functions there has emerged a complex of counterforces pushing in the direction of vertical structures—some of which tend to link related on-farm and off-farm functions, and others to relate only off-farm functions.

VERTICAL INTEGRATION

Entering the arena of vertical structures through the route of vertical integration have emerged such devices as the farmer co-operative, the business-farmer contract, large-scale farms which maintain their own services, processors who operate their own farms and joint farmer-business ventures.

Before briefly considering each of these in turn, it is interesting to note that all of these devices have emerged largely as the result of voluntary action on the part of farmers and businessmen, acting

¹ Included in this, of course, were such items as feed grains and feeder livestock which originated from other farms.

individually or in groups, rather than through direct Government action.

The farmer cooperative.—The farmer cooperative is one of the oldest types of vertical integration within the food-fiber sector of our economy. Basically, it is a device whereby a group of farmers band together to provide off-farm services for themselves of a type that no single farmer can efficiently provide for himself, because a single production unit is too small to support such enterprise. The use of this device has been widespread, reaching into such varied functions as the manufacture and handling of farm supplies; the storage, grading, processing, transporting, and merchandising of farm commodities; rural electrification; telephone service; irrigation; and insurance. In many instances the depth of vertical integration has been extended by the federation of farmer cooperative units through successive levels until some have achieved regional and national status. In addition, these organizations have created national trade and educational associations to serve their needs.

Today, some 20 to 25 percent of all farm supplies and farm products are handled cooperatively through one or more phases of operation. However, if one considers the total of all off-farm operations included within the agribusiness sector of the economy, farmer cooperatives probably perform little more than 5 percent of this aggregate.

Business-farmer contracts.—About as old as the farmer cooperative is the business-farmer contract form of vertical integration. Here, in general, the initiative for such an arrangement has come from the businessman rather than the producer. Early to emerge was the processor-grower contract that has characterized the food canning industry. For years most food canning has embodied such arrangements. A similar device is common in the production of certain seeds. Here, the seed firm contracts with the grower in precise terms as to variety, production practices, quality, quantity, and price. The use of hybrid seeds has given impetus to this type of activity.

More recently the use of the business-farmer contract technique has spread to the poultry field, particularly the broiler and turkey phases. Here, too, business has taken the initiative—particularly feed manufacturers who contract with the farmer to supply on credit the chicks or poults, the feed and other supplies. Frequently, also they contract to provide production supervision, veterinary services and a forward sale of the birds to a dressing plant. For his services, the farmer gets a stipulated fee or earning plus a right to share in profits. Currently, more than 90 percent of all broilers are grown on such a contract basis.

Moreover, this technique is spreading into egg production and gives promise of extending into hog growing and cattle feeding. Today under somewhat different circumstances, much of the commercial milk production takes place under business-farmer contracts which set forth terms of quantity, quality and price and which provide for pick-up services. Here, frequently growers contract with processors on a group bargaining basis.

In terms of volume and scope, the business-farmer contract device ranks close to the farmer cooperative as a technique of vertical integration.

Large-scale farms.—Another device of vertical integration within agribusiness is the creation of farm units which are large enough to warrant the ownership and/or control of supply, processing, and distribution agencies of their own. This, of course, is the type of integration that has characterized industry. But in agriculture it has gained only limited headway. Even in the case of the relatively few very large farms that do exist, there is no clear evidence that the economy of vertical integration has been the major force leading to the creation of such farms. Many of the largest units came into being before the technological era was well advanced.

There exists no clear evidence that this type of integration will gain great ascendancy in the future. However, certain types of specialized vegetable production may tend in this direction.

Business-operated farms.—Along with technology there has emerged some trend toward vertical integration of the type in which business firms operate farms to produce commodities for their own use. However, this tendency has been mostly limited to specialized fields in which the control over the growing of the product has unusual importance, such as seed production; where the manufacturing operation is integrally inseparable from the production of a farm product, as in serum manufacture; or where a farm provides a means of utilizing a byproduct, as in feeding the waste from a sugar mill.

In addition there have been instances in which meatpackers and retailers have entered such ventures as cattle feeding and where retailers have operated dairies. However, some such efforts have later been abandoned.

Aside from specialized situations of the types enumerated, there is little evidence to indicate the likelihood of a great surge toward business-operated farms. In general, business probably can fare better by letting the farmer assume the hazards of production.

Joint farmer-business ventures.—During recent years a number of instances have emerged in which farmers and business firms have joined forces in a common venture entailing vertical integration. In general, this has related to such activities as research, promotion, and market development. Illustrative of these organizations is the National Cotton Council; the Livestock-Meat Board; the American Dairy Association; the National Dairy Council; and the National Soybean Council.

In general, efforts of this type have been fostered by organizations and associations of farmers and business firms, rather than by individual farmers and firms.

VERTICAL ARRANGEMENTS

As indicated earlier, certain types of vertical structures for linking related functions have emerged within agribusiness which do not constitute vertical integration in a strict sense of the term. Important among these are marketing agreements and market orders (which hereafter will be referred to as agreement-orders) and farm price support programs.

Marketing agreement-order.—The marketing agreement-order is a vertical device for relating a given supply of a commodity to a prevailing market-demand situation by differentiating between uses in terms of quality and price—all for the purpose of enhancing the

total revenue of the growers. Effective agreement-orders exercise a strict control over both quality and use of product by classes as a means of influencing price. Maintaining a multiple price system, they run counter to the principle of classical economics, that the demand for the marginal unit of supply will set the price for the entire market.

A marketing agreement-order is a sort of hybrid between a private venture and a government program. It exists by virtue of special legislation that imposes compliance on minority farmer interests who may oppose them and upon commercial handlers of the product. Also, an agreement-order exists by virtue of special latitude granted by Congress under the antitrust laws. The Federal orders impose no direct control measures over farm production. However, in the case of certain specialty crops, grown largely in a single State, there are instances where State laws authorize production control over commodities regulated by a State-sponsored agreement-order.

Agreement-orders do not carry with them the right to use the funds of Commodity Credit Corporation to acquire or hold stocks from the market. They do not seek to change the organizational structure, corporate or noncorporate, of the farm and business units that are subject to their provisions. While they are supervised by the Office of the Secretary of Agriculture, each is governed by a control board composed of representatives of producers, business, and the public.

Marketing agreements now have been in operation on a few commodities for more than 20 years and currently are in force in some 70 milksheds and 30 fruit and vegetable crops. The number of agreements in force has almost tripled since World War II. However, to date none have been attempted for any commodity on a national basis.

Government price support programs.—Supplementary to the several types of vertical structures already discussed, has been the evolution of government price support programs. Inherent in such programs are certain properties of vertical linkage with respect to on-farm and off-farm phases of agribusiness. These programs have the effect of at times reducing the flow of commodities on the free market by giving farmers the alternative of committing their stocks to the Commodity Credit Corporation at the support level. The net result is that during periods of surplus supplies such programs tend to increase the price of supported commodities, both for the farmer and for the buyer of his product. In this respect they have had considerable influence on farm prices during the postwar period.

If a government support program is continued year after year for a given commodity, not only do farm operations become conditioned by it, but so too do the operations of off-farm business firms which handle and store the stocks held by Commodity Credit Corporation.

Unlike the several types of vertical integration which have emerged with technology, and unlike marketing agreement-orders, Government price-support programs are administered and operated by public officials, entail the accumulation of commodity stocks in the hands of the Government, and involve the use of a sizable quantity of public funds. In general, such programs provide incentive for high-volume production rather than high-quality output which is tailored to meet a specific market demand.

Regardless of certain inhibiting side effects with respect to adjustments in agriculture, on balance it seems fair to state that price-sup-

port programs have constituted a major force for vertically relating supply and demand in commodity markets during the past 25 years.

VERTICAL INTEGRATION OFF-FARM

Not all vertical integration within agribusiness has had the effect of organically tying on-farm and off-farm operations more closely together. This particularly has been true of the development of chain-store merchandising in the food field. Here, in most instances, the integration of the firm has been in two directions: Vertically to combine such functions as wholesaling, warehousing, financing, transporting; and horizontally to include multiple-unit operation. Similarly, certain processors have expanded horizontally as well as vertically to encompass a number of commodities—some of which are highly competitive, as in the case of margarine and butter.

The effect of this type of development depends on the policies followed. Without doubt, a large, integrated firm possesses certain advantages for market development, particularly with respect to quality control, product development, and market promotion. However, it also has a stronger bargaining position with respect to procurement—a bargaining position which could be used to weaken the farmer's relative strength in the market.

VERTICAL STRUCTURING TIED TO HORIZONTAL INTEGRATION

Simultaneous with the thrust toward vertical structuring has come a corresponding thrust toward horizontal integration. These two drives, both largely products of technology, have been closely interrelated—the former tying together successive stages of a given economic process and the latter welding together units performing similar operations at a single stage. Horizontal integration has made vertical integration both more feasible and more purposeful, and vice versa.

To illustrate, farm enterprises join together horizontally, either through a cooperative or by merger of several small units into a larger one, in order to be able to accomplish desired objectives, vertically; food processors expand horizontally to encompass a variety of commodities in order to develop a market on a multicommodity basis, and retail food firms reach out horizontally through the development of multiple-store units in order to move vertically to perform for themselves such functions as wholesaling, financing, assembling, warehousing, processing, and promotion. Even farm price-support programs unite farmers horizontally in order to influence prices vertically.

While, throughout this paper, major emphasis is placed on vertical structuring, this being the subject assigned me, such vertical structuring would have been largely impotent if corresponding integration of a horizontal nature had not been taking place at the same time. In large measure, the economic effects that flow from vertical and horizontal structuring are a joint product of the two forces.

LIMITATIONS OF EXISTING DATA

Existing data are not adequate to permit the development of conclusive findings with respect to the questions set forth in the committee's letter inviting me here. (I shall have more to say later about

the need for further studies in this area.) Even so, I now shall venture to be more specific, with the caution that the committee should consider the comments of the next two sections to be somewhat more in the category of hypotheses than statements of fact.

FACTORS MOTIVATING AND FACILITATING VERTICAL STRUCTURING

The motivation toward vertical structuring has come from several directions, including a desire for the following:

1. Greater efficiency.
2. Ability to make new or improved end products, requiring greater precision.
3. Assured source of supplies or raw materials, both at production and processing levels.
4. Strengthened competitive position.
5. Spreading or shifting of risk.
6. Greater price stability, particularly at the producer level.

The ease with which vertical structuring can be achieved seems to depend on conditions such as the following:

1. The natural limiting, by such factors as soil, climate, and/or the perishability of product, of the production or trade area of a given commodity.
2. The existence of an opportunity for economic gain through differentiation by grades and/or size of product.
3. The presence of the possibility of more orderly marketing through processing and/or the scheduled delivering of product to market.
4. The presence of a demand situation which gives incentive for an extensive effort toward market development.

In general, commodities strong with respect to the above characteristics have tended toward vertical integration and/or the use of marketing agreements, whereas those not so situated have tended to gravitate towards support-type programs. There are, of course, notable exceptions, the major one being red meats, which have remained more or less free from any type of vertical structuring. No doubt, also, the type of leadership present in each commodity situation has been an important factor in determining the course of such commodity.

EFFECT OF VERTICAL STRUCTURING ON PROGRESS AND STABILITY

One of the questions posed in the committee's letter inviting me here was: Would vertical integration of production and marketing functions contribute to economic stability and progress in commercial agriculture? A second question was: Is such development practical and feasible?

Turning, first, to the second point, the answer is that vertical structuring not only is practical and feasible; it has been taking place in certain phases of agribusiness for years, and now has extended in one form or another and in varying degree into much of it.

With respect to the first question, doubtless vertical structuring has contributed to progress. In fact, the two seem to be inseparable—the former being a byproduct of the latter. The effect of vertical structuring on economic stability in commercial agriculture is more diffi-

cult to assess because it involves forces moving in so many directions, including those culminating in horizontal integration. My belief is that, in general, all types of vertical structuring have contributed some toward economic stability, at least at certain levels.

At the same time one must admit that, under certain circumstances, it is possible for vertical structuring to add to instability. I suspect that integration that takes place entirely off farm may have this effect, at times, with respect to the farming sector. This particularly may be true where integration takes place exclusively in the marketing phase of agribusiness. Also, this likely would be true of situations in which vertical structuring has had the effect of obstructing or delaying necessary adjustments.

Some may argue that economic instability in agriculture has actually increased during certain periods while integration has been taking place and that, therefore, integration has not consistently contributed to economic stability. My answer is that here we have to look for the net effect of a complex of forces, some of which have set in motion new thrusts that tend to upset stability, particularly during the time interval required for the economy to adjust itself to an innovation, and some of which have pressed toward stability. So great and so rapid have been the upsetting forces in recent years that counterforces, including those of vertical integration, have not consistently resulted in real economic stability in agriculture.

The very existence of marketing agreements and farm price-support programs testifies that vertical integration alone has not achieved economic stability to the degree desired by producers. Even so, I believe it has been an influence pushing in this direction, particularly in those instances where such integration includes both production and marketing functions.

Now I turn to the third and last question—is vertical structuring desirable? My answer is that this depends on the manner in which it functions. While its results doubtless have been mixed, on balance I believe the positive outweighs the negative. Anyway, strictly speaking the issue is somewhat academic in view of the fact that it apparently is inescapable in the technological era in which we live. Hence, the more basic issue would seem to be—how do we make use of vertical structuring in agribusiness in a manner that is mutually beneficial to the commercial farmer, to business, and to the public?

As already indicated, my answers to these questions do not satisfy me. However, at present adequate studies have not been made from which satisfactory findings may be drawn.

NEED FOR AN INTEGRATED POLICY

The preceding discussion points up the need for an integrated food-fiber policy—an agribusiness policy, so to speak. Policy formulation needs to take place on a basis as comprehensive as are the problems of agriculture and in a manner that interrelates all pertinent facts, both vertically and horizontally. In brief, the need is for an integrated policy on an agribusiness scale. By this I mean the development of some mechanism or forum in which interested groups may exchange views and formulate policies together in an effective manner.

I congratulate this committee on organizing these hearings on a comprehensive basis of this type. I trust that its efforts will prove pro-

ductive in pointing out the need, generally, for a similar approach to our food-fiber problems.

NEED FOR INTEGRATED RESEARCH

Of course, sound policies cannot be formulated without adequate facts and findings on which to base them. Today such facts and findings do not exist. Here, too, we need an integrated approach on an "agribusiness" scale.

The truth is that our research structure has not kept pace with technology. Our research institutions are lagging behind the needs of the times. At the national level the problems of food and fiber no longer are confined to the Department of Agriculture, but cut across almost all of Government, particularly the Departments of Commerce, Interior, and State. At the university level they encompass the disciplines of certain physical sciences and phases of the schools of business and engineering, as well as the colleges of agriculture.

Yet, food-fiber research continues on a compartmented basis. The same is true in large measure of the training of researchers. In developing food and fiber research for the future, we need to be bold in seeking sound answers, even willing to explore entirely new approaches to problems. We should concentrate on utilizing the productive capacity of our farms in a manner mutually beneficial to farmers and the public. Among other things, we need to know more about many of the issues being raised by this committee. Equally important, we need to know how to fit facts and data into a sound overall policy.

Nor will it be sufficient to concentrate only on economic studies. In formulating a food-fiber policy we are dealing with people as well as things—people, rural and urban. Among other things, we need to consider the future status of the family farm. To adequately answer the questions confronting us, it frequently will be necessary to bring together a team of researchers, drawn together from several disciplines of learning.

To stimulate research and policymaking on the comprehensive and integrated scale needed, I suggest that Congress consider earmarking certain research funds for use only on research of this type—research to be done by institutions equipped to undertake studies on such scale. This need not mean the creation of new research institutions, but, rather, a cooperative pooling of efforts by existing institutions.

With respect to the subject of this paper, such research should explore the strong and weak points of vertical structuring as it has developed in the past and then analyze and evaluate alternative courses for the future, pointing out the strength and weaknesses of each possibility. Also, it should analyze and evaluate proposals that have not been tried, including ways of expanding the industrial use of farm products and plans for differential pricing, following the precedent set by marketing agreement-orders.

Concurrent with all of this it is important, even paramount, that we analyze and reappraise the role of producer organizations—both those of general and commodity types. Vertical integration is placing a new heavy responsibility upon organized agriculture which

today it is not well prepared to carry. Particularly important is the question—should farm organizations lead or follow in the trend toward vertical structuring? Similarly, there is need to reappraise the role of trade organizations in the food and fiber fields. In this fast-moving era we cannot afford the luxury of fuzzy thinking and ill-considered actions.

If adequate steps are not taken promptly to bring agriculture into harmony with the forces of technology, then agriculture probably will lag even further behind industry, in terms of economic well being. This would be serious to the whole economy. On the other hand, if appropriate steps are taken promptly they can provide a basis for an increasingly prosperous agriculture and for a better-fed Nation in years to come. In order to think and act more soundly, we must have better and more complete information, and then we must objectively weave this together into a sound, integrated national food and fiber policy.

In conclusion, may I, for the sake of clarity, point out that my emphasis here on vertical structuring should not be taken to imply that I believe it alone is the answer to farm problems. I do not. Rather, it reflects an attempt to focus my remarks on the specific issues outlined in the committee's letter inviting me here.

THE CONTRIBUTION OF MARKETING AGREEMENTS AND ORDERS TO THE STABILITY AND LEVEL OF FARM INCOME

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I. INTRODUCTION

As the Federal agricultural programs of acreage controls and marketing quotas, with nonrecourse loans for storable crops, were developed for the "basic" crops, other types of programs have been developed for perishables and crops not viewed or classified as "basic." These latter types of programs include marketing agreements and orders which in their early stages were applied to a wide variety of crops and products. As experience accumulated, however, marketing agreements and orders were developed and issued for a more limited list of farm products.

Much attention has been attracted by the Federal agricultural programs for the so-called "basic" crops, with their inventory accumulations held by the Commodity Credit Corporation and with the discussion of the level of nonrecourse loan rates expressed in terms of a legislatively defined "parity price." The attention to the "basic" crops, however, has diverted adequate recognition of the situation and developments which have occurred in some of the "nonbasic" commodities. It may perhaps have been inevitable that this should have occurred in view of the physical volume, dollar value, and geographical distribution of the "basics" with their very many producers widely scattered. Yet, one result has been that relatively few legislators, administrators, citizens at large, and even students of agricultural policy have more than a superficial knowledge of the programs for "nonbasics"—particularly the types of programs known as agricultural marketing agreements and orders.

This paper is directed to consideration of agricultural marketing agreements and orders. The objectives are to consider in general terms the following major points: What are marketing orders and agreements? What are their objectives? How do they operate? What are their results? What contribution do they make to the stability and level of farm income in the framework of national policy? These points are first set forth (sec. II) in a broad perspective survey so as possibly to be of some convenience and interest to harassed legislators and inquisitive citizens at large who may not be initially concerned with particulars. Then is presented (secs. III and IV) more detailed consideration of marketing agreements and orders—their various provisions and types—with attention given to particulars for the convenience of and use by staff men, pressed administrators, and others active in the formulation and management of marketing agreements and orders.¹

¹ Secs. III and IV, together with a selected bibliography, are included in appendix B, p. 799 ff.

II. A PERSPECTIVE SURVEY

What are marketing agreements and orders?—Authorized by and based on enabling legislation, marketing agreements and orders are economic institutional devices formulated so as to enable an industry group to affect the marketing of a particular crop or commodity. In legislative and administrative aspects, however, there are important distinctions between “marketing agreements” and “marketing orders,” although the two phases are often incorrectly used interchangeably. A “marketing agreement” is a voluntary arrangement between an authorized government agency and individual producers or handlers of a particular commodity produced and/or marketed in a specific area, and the terms of the agreement are binding on only those individuals who sign it. A “marketing order,” in contrast, is binding on and uniformly applicable to all producers and/or handlers of the product for which the order has been instituted. Although “marketing agreements” historically preceded “marketing orders,” the latter now heavily dominate because experience indicated that industrywide compliance was necessary if the intent of the program was to be achieved.

With a marketing agreement and/or order program in effect, an industry may be authorized to undertake certain actions affecting the marketing of its commodity. Such actions differ depending upon the particular program being considered and upon whether the program is based on Federal legislation or the legislation of certain States. Both the Federal Government and various States have enabling legislation for marketing agreements and/or orders. The differences between the Federal and State programs involve standards and administrative procedures, and there are wide differences among State programs. For example, under Federal legislation a marketing order is permissive for only a clearly specified list of products; under California or New York legislation, for example, almost any agricultural product is eligible to have a marketing order. Federal orders are oriented to volume control and/or quality regulations. State programs, however, may include one or more provisions such as the following (depending on the particular State considered): Volume control, quality regulation, advertising and promotion, and research.

A recent survey completed by the author indicates that at present there are some nine States with general enabling legislation for the establishment of agricultural marketing order programs. In addition, there are six other States which have special legislation for particular products, as the Florida Citrus Commission, which carry on functions provided for by orders in other States.

The results of the survey emphasize a major distinction between Federal and State programs. The former is limited to volume and/or quality regulation while State programs generally include other or additional provisions. Yet, it should be emphasized that all State programs do not permit volume regulation; only five of the States referred to above permit volume control. Even among those five States, there are certain limitations, and volume control is permitted—as in the Federal legislation—only after legislatively specified criteria are met and procedures are followed.

It may be stated that, in general, the Federal orders include supply-affecting provisions (volume control and/or quality regulation), while the State orders may also or only include demand-affecting provisions (promotion and advertising and research) with a wide variety of permissive provisions prevailing among the States having legislation for marketing programs.

While answering the question—"What are marketing agreements and orders?"—by indicating the types of provisions permissive under them and distinguishing between Federal programs and the differing types prevailing in various States, it is necessary to note that so far consideration of milk has been excluded. Here, again, there are distinctions to be made—between milk and other farm products—at both the Federal and State levels.

Federal legislation (originally under the Agricultural Adjustment Act of 1933 and currently under the Agricultural Marketing Act of 1937) provides for orders establishing minimum prices to producers of fluid milk. Since 1936, when 6 Federal milk marketing orders were in effect, the increase in the number of milk markets under Federal orders had increased to 65 by the end of 1946. It is important to note that only in the case of milk does the Federal legislation provide for the setting of prices as such; Federal orders for other products do not provide for the direct setting of prices.

But in addition to Federal milk marketing orders with their direct setting of minimum prices to producers, there are some 17 States with laws providing procedures for setting producer prices; of those 17 States, 14 also control resale prices of fluid milk to consumers.

Thus, we find that an essential difference between marketing programs for fluid milk and other products, in both the Federal and State legislation, is that in the case of milk direct price setting is involved; while for the other products, the orders have provisions for influences which affect price rather than providing for direct setting of prices.

The preceding comments suggest that an answer to the question, "What are marketing agreements and orders?" may be set forth in the following terms: Economic institutional devices, formulated so as to include specific provisions which affect the supply, demand, and/or price of a specified commodity, with the specific provisions included depending on whether the program is authorized by Federal or State enabling legislation and under which particular state legislation the program is operating.

What are their objectives?—The legislatively specified objectives of marketing agreement and order programs are written in general language. The overall objective of Federal marketing programs, as written in the Agricultural Marketing Act of 1937, is "to establish and maintain * * * orderly marketing conditions for agricultural commodities in interstate commerce * * *." The California State legislation, for example, includes objectives as "to enable agricultural producers, with the aid of the State, more effectively to correlate marketing of their agricultural commodities with market demands therefor * * * establish orderly marketing * * * provide for * * * development of new markets * * *" with the standard "* * * that such marketing order * * * will tend to reestablish or maintain such level of prices of such agricultural commodity which is adequate to maintain such level of prices for such agricultural commodity as

will provide a purchasing power for such agricultural commodity which is adequate to maintain in the business of producing such agricultural commodity such number of producers as is necessary to fulfill the normal requirements of consumers thereof." Other States with marketing order programs generally have similar objectives. Such phrases as "orderly marketing," "prevention of economic waste," and "more effectively to correlate the marketing of agricultural commodities with market demands" are not uncommon, although their meanings are not spelled out in the legislation or order programs.

But the real intent of the legislation and the operation of the programs is to improve returns to farmers. Although the legislation recognizes consumer interests and the Federal or State administrator is directed to consider them, they are secondary to the improvement of returns to producers. The farm-income improvement is to be attained through the operation of the marketing program provisions which affect the supply and/or demand or price of the product in a way such that income returns to producers are increased. Application of the Federal order provisions (except for milk) is limited to situations where farm prices are below "parity price" (except for seasonal variation and quality standards in certain Federal orders). State orders generally make no reference to parity prices and are not limited by them. Such improvement is expressed often by the thought of "stabilizing farm price and income"; yet, stabilization of prices by itself need not always lead to income improvement. Further, the objective of "improving farm income" cannot be divorced from the immediate or short-run situation in contrast with a more lasting or longer run situation. Such questions merit further comment which appropriately falls in later points to be discussed.

For the present we may indicate an answer to the question, "What are the objectives of marketing agreement and order programs?" in the following terms: To improve farmer returns through the use of program provisions which affect the supply and/or demand or price of the commodity whose marketing is regulated by the program.

How do marketing agreements and orders operate?—Legislation explicitly sets forth the procedures and administrative criteria to be followed in the establishment and operation of marketing orders. Briefly, the initiation steps include discussions between industry representatives interested in an order and officials of the Federal or State Department of Agriculture; the drafting of a proposed order; the holding of a public hearing at which proponents and opponents of the proposed order present their views; a review of the accumulated evidence and testimony by the staff of the Department; the mailing of the proposed order to all directly affected and eligible to vote assent or dissent; the necessary requirement of majority approval; and the final approval by the Secretary (or State director) who declares the order's issuance and its effective date.

To insure that a marketing order has the approval of a majority of the industry concerned, the legislation requires that at least a specified minimum of the voters approve of the order. The definition of such a majority differs among States, and the Federal legislation has its own criteria.

In the Federal legislation, a distinction is made between "orders with marketing agreement" and "orders with or without marketing

agreement." For the former, the majority requirement is that handlers of not less than 50 percent of the volume of the commodity have signed a marketing agreement (for California-Arizona citrus fruits, handlers of not less than 80 percent of the volume must sign a marketing agreement); and in addition to such approval by handlers, approval must also be given by at least two-thirds of the producers by number or by volume (an exception again pertains to California-Arizona citrus for which two-thirds of the producers by number is required). Federal orders without a marketing agreement may be made effective by the Secretary, however, if producers approve by the required majority, while handlers refuse to approve as specified above, and if he determines that "the issuance of such order is the only practical means of advancing the interests of the producers of such commodity pursuant to the declared policy."

The above details are noted only for the purpose of emphasizing that through legislative criteria an attempt is made to ascertain the existence of broad support for an order before it is declared effective. The industry must support its desire for an order through voting approval by some form of a majority before an order can be available to the industry. Contrary to some misconceptions, marketing orders are not imposed on an industry without its majority approval or by administrative fiat.

Also, contrary to some misconceptions, once an order is effective, the industry cannot do only or all that it may desire. Administrative and procedural requirements, as specified in the enabling legislation and the order, must be adhered to. For example, if the order does not include volume-control provisions, volume-supply regulation cannot be practiced by the industry through the order.

To assist in the operation of the orders, each Federal program has an administrative committee; some States have advisory boards or marketing commissions. The members of the Federal administrative committees are drawn from industry participants and are appointed by the Secretary. The same applies to most States; for others, State officials, ex officio, hold appointment. But the main point is that the industry members participate in the operation of the program. Such participation, however, does not (in the case of Federal orders or those of most States having them) necessarily mean that the administrative committee or advisory board makes decisions. Rather, they only recommend to the Secretary or the State director of agriculture (an exception, for example, applies to the State of Washington where the State director of agriculture is an ex officio member of the commodity commissions and his function is limited to such membership rather than including overall and primary responsibility). In most cases, particularly in the Federal orders and in States with legislation modeled after that developed in California, the industry committees or boards assist the Secretary (or State director) and recommend to him; final authority and responsibility rests with him in light of legislatively specified procedures and standards.

The costs of administering and operating marketing orders are borne by the industry members through assessments on them as specified in and limited by the legislation and order. Such assessments are used to pay for the employment of a manager and staff which most orders employ for enforcement of standards used by the order, for

office expenses, and such. Where advertising and research are involved, as in some State orders, industry assessments also support such activities. For that reason, among others, marketing agreement and order programs are often called self-help programs: The industry is contributing its own funds to help itself. But aside from such financial aspects, the programs are viewed as self-help because a basic part of the philosophy behind them is that the industry, through its representatives, gets together, considers its problems, discusses them, and recommends specific actions intended to remedy specific ills with which the industry believes itself to be faced. The idea is that industry men closely familiar with the problems of their industry are in a position to appraise them and propose remedial actions.

A summary reply to the question, "How do marketing agreements and orders operate?" may be phrased as follows: Based on legislatively specified criteria of an industry majority, industry representatives presumed to be closely familiar with the industry problems consider permissive remedial actions and recommend them to final decision-making authority specified in the legislation.

What are the results of marketing agreement and order programs?—Because of the diversity of types of marketing programs and order provisions, no simple yet meaningful overall generalization can be set forth. What can be said, however, is that marketing agreement and order programs are not an all-powerful and reliably infallible cure of all types of marketing problems.

With close to a quarter century's experience with Federal and State marketing programs, certain tendencies are recognizable. One of these is that there has been an increasingly marked interest on the part of agricultural industries and commodity groups. Although initially instituted during the depression years of the early and middle 1930's, marketing programs have continued on through the years of postwar prosperity in the country at large and in some particular agricultural industries. The desire for Federal marketing orders, as evidenced by producer and handler voting, remains unabated. The use of State marketing programs continues, and last year 2 additional States (New York and Wisconsin) enacted enabling legislation for marketing programs.

In the case of fluid milk, regulated under Federal milk-marketing orders or under special legislation for milk control in certain States and both instances involving direct price setting, a certain degree of price stability has been introduced. Wild and wide price gyrations with attendant milk-price wars do not now generally occur—definitely far less frequently than formerly. The short-run effects are likely to have been increased returns to producers, although the long-run effects on producer income are more difficult to distinguish because of shifting consumption patterns and substitution potentials between fresh-market milk and processed milk. A major result of milk-marketing orders is that large segments of the fluid-milk industry have taken on some characteristics of a regulated public utility with particular reference to pricing. Yet, economic control of milk marketing exists in areas free of governmental regulation but where price determination is strongly influenced by dominant and effective producer bargaining associations or by large integrated private distributors.

The results of marketing agreements and order programs for farm products other than fluid milk are highly varied. For the large number of programs which have been in effect for only a short period, there is one presumption—that the program was highly effective and terminated when its objective was attained and the need of the program no longer existed. Or there may be another presumption—that the program failed to achieve favorable results and was for that reason terminated. Study of the record suggests that the second presumption is definitely more acceptable. The record indicates, in fact, that those programs judged to be effective tend to continue in operation. This implies that marketing agreements and programs generally do not have once-for-all favorable results which eliminate further desire for the program; on the contrary, the long-lived marketing orders—and some have been in operation for as much as two decades—are usually judged to be the successful programs by participants.

To specify further recognizable results of marketing agreement and order programs, it is necessary to distinguish between types of programs and their control provisions. For those programs which have volume-control provisions, it is also necessary to distinguish between within-season and interseasonal controls. Within-season volume control can for some products lead to increased producer returns in the short run. But the income effects of interseason volume control may be elusive and temporary, particularly when marketing programs are used as substitutes for necessary production adjustments. Experience and analysis indicate that where chronic and persistent overproduction occurs, marketing programs are at best only a palliative to provide time and aid for easing into basically necessary production adjustments.

Marketing-order provisions concerned with quality control (inspection, grade, size, and maturity standards) are widely used in both Federal and State programs. Quality control in various ways has a long-established position in agricultural marketing. The evidence suggests that quality-control provisions, utilized to reflect market and consumer preferences and attitudes, have a valid role in marketing and result in long-run benefit to both producers and consumers. But when inspection standards and quality control are established to serve as and are used as a mask for volume control, the results are the same as those for outright volume control.

Where advertising and sales promotion is one of the provisions, as is the case in some of the State marketing orders, an objective is to improve producer returns by increasing the demand for the product. Privately sponsored advertising and promotion have a long history. Industry advertising through marketing programs, however, is intended to supplement rather than replace private activities along that line. The use of a State marketing order for advertising insures that everyone in the industry must contribute to the financial support of the advertising and each participant's contribution is proportional to the volume he markets.

Most producers and handlers seem to have great faith in the effectiveness of promotion and advertising. Yet, objective and substantive results to support such faith are extremely difficult to isolate. But such is the case with advertising in general, not only that which is promoted through marketing orders. Despite that fact, however,

business in this country is advertising minded and promotion prone; and agricultural producers in that respect do not differ from other businessmen.

Based on several situations where an industry has had a long-time, well-planned, and large-scale promotion program through a State marketing order or similar institution (such as canned cling peaches and wine in California, or citrus in Florida), one can cite evidence which suggests that market demand has been expanded through advertising and promotion. (Advertising and promotion are not carried on under Federal orders, although under the National Wool Act of 1954 a "self-help" promotion and advertising program is financed by deductions from incentive payments to producers on their marketings of shorn wool and unshorn lambs.) But whether the gain in markets resulting from promotion is less than, equal to, or greater than what would have come about had the same amount of money been forfeited by the industry through equivalent price reductions is a question to which no empirically supported answer is available to this writer. Yet, "the answer" does seem clear to many who believe that nonprice competition through advertising and promotion has distinctive and beneficial results for producers.

Provisions for "research" are included in a number of the State marketing order programs. (Research is not carried on under Federal orders.) The permissive research activities include technological research to improve crop varieties, mechanical equipment, processing methods, and to bring about more effective disease and pest control. Benefits may come from a reduction in the cost of producing established products or increased returns resulting from new products. Permissive research activities also include economic research on problems ranging from the organization and development of data-reporting systems to analyses of the operation and effects of marketing programs.

The only unique feature about marketing order sponsored research (aside from the fact that all participants in the industry contribute to the cost of the research proportionately to their volume) is that the industry can have research done on special or unique problems that otherwise might not receive the attention the industry believes is merited. In other respects, marketing order research is comparable to research sponsored by any other organization or group. The results depend on a combination of the researchers and the type of problem on which they are working.

A summary answer to the question, "What are the results of marketing agreement and order programs?" is extremely difficult to formulate because of the varied consequences depending on the particular provisions considered and the blurring of the long run and the short run; yet, the following statement is offered as suggestive of this writer's views based on his studies and experience: The results of marketing agreement and order programs are too often judged in terms of their effect on 1 year's price rather than in terms of net returns over a period of years. Marketing agreements and orders by themselves are only devices and tools; they do not automatically bring solutions to marketing problems. As with other tools, the effectiveness and results of such marketing programs depend on the skill and judgment of the operators and the nature of the problems involved. Continuous interseason volume control generally aggravates rather

than eases the problem for which the program was introduced to solve; such programs are not an effective substitute for basically necessary production adjustments. Within-season volume control can alleviate short-run imbalance in supplies for the benefit of producers and without adversely affecting consumers. Demand affecting provisions of marketing agreements and orders provide a means for the industry as a group to sponsor activities (such as advertising and sales promotion) of potential benefit to the industry at large. The results of such activities need not differ from the results of similar activities carried on by individuals or private groups.

Contribution to the stability and level of farm income.—From the view of agricultural policy, there is the question of the potential contribution of marketing agreement and order programs to the stability and level of farm income. Related to that question is another: For which farm products or types of products are marketing agreement and order programs suitable or feasible? In terms of the principles involved, one might assume that such marketing programs are applicable to all types of farm products. The Federal legislation, however, specifies that although marketing agreements may be effectuated for any farm product, marketing orders are limited to a particular list of commodities (fruits and vegetables for canning or freezing are excluded except asparagus, olives, and grapefruit for canning or freezing). The legislation in the various States having marketing programs varies with respect to products for which agreements or orders may be made effective; some of the States have no limitation while other States specifically exclude certain farm commodities.

Experience with Federal agreements and orders, or similar devices such as licenses, has covered a wide range of agricultural products, particularly during the middle 1930's and the prewar years. In some States—California, for example—marketing orders have been introduced for a wide list of farm products. Yet, as experience accumulated, there has been a tendency toward the use of marketing agreement and order programs generally for particular types of classes of commodities. An informal set of criteria has evolved indicating the products for which marketing agreements and orders are suitable or feasible in an operating sense.

Such criteria cannot be articulated in precise or numerical terms or in a clear and systematic formal framework. Rather, the criteria are in the form of suggestive guideposts developed from operating experience over a period of a quarter century. And within such a set of criteria exist exceptions which, in each case, must be considered from the view of the special circumstances pertaining to the case and its unique circumstances. From an overall view, however, the exceptions are relatively few rather than numerous.

The criteria for judging the suitability of products for marketing agreement and order programs, in terms of conditions conducive toward their development and maintenance, may be summarized as follows: The nature of the demands for the product must be such that there can be developed and operated a program, the results of which are believed by the participants to be beneficial to them; a community of interests—in particular, marketing problems—should exist among the participating growers and/or handlers; the production of the

product is rather concentrated in particular areas, and the areas are sufficiently small so that there is considerable similarity of production and marketing conditions among the growers; and some actively interested organization, as a farmers' cooperative or other commodity group, participates through educating the growers about the program, urging them to vote, sponsoring able men to sit on the administrative committee or advisory board, encouraging the adoption of amendments to meet changing needs, and nourishing acceptance of the view that the operation and survival of the program is vital for the benefit of the group. These conditions generally tend to be found in farm products as fruits and vegetables, tree nuts, and various specialty crops; and marketing agreement and order programs have been in recent years most frequently used for such farm products (aside from fluid milk which has its own legislation and control regulations).

In consideration of the types of farm products for which marketing agreement and order programs are suitable, recognition must also be given to the position of the product in its competitive environment. The vigorous use of some of the provisions of the programs can generate repercussions of interproduct and interarea competition. Examples may be cited where the excessive application of volume-control provisions engendered increased competition from products closely related in consumption or produced in other areas with a resulting loss in relative market position of the program commodity. The use of advertising and sales-promotion provisions to bring expanded sales outlets encourage other products related in consumption to undertake promotion and advertising. Thus, marketing programs can at times serve as a mechanism for generating interactions among products and producing areas. In other terms, marketing agreement and order programs do not isolate a commodity from competitive influences; rather, they can be strengthened unless the provisions of the program are used with restraint and with a view toward the longer run effects of the program.

Such considerations, in conjunction with the types of products for which marketing programs are suitable, have a bearing on the aspects of stability and level of national farm income. On one hand, the overall or aggregate relative value, volume, and number of producers involved in products suitable for marketing order programs does not loom large in relation to national totals. And on the other hand, unless the programs are operated so as to bring only moderate—but possibly lasting—income increases to producers (to restrain increased competitive pressures from other products and areas), greater instability rather than stability can be introduced to farm income. Thus, the inference can be made that use of marketing agreement and order programs is not likely to be an effective means of significantly raising the average level of national farm income over a period of years or significantly reducing the instability of national farm income over a number of years. The contribution of Government-industry marketing programs to the stability and level of farm income lies in a less comprehensive framework with substantially more modest proportions.

For particular farm products, however (those suitable for marketing agreements and orders), their judicious use can contribute moderately but in a meaningful way to lessening the instability and rais-

ing the level of farm income of the producers of those products. Although such impacts may not be significant on national farm income, they can be substantial and worth while from the view of the particular groups of producers participating in the program. Within such a relatively modest framework, marketing agreement and order programs contribute to the stability and level of farm income.

The above concluding inferences indicate that Government-industry marketing programs have a role—a limited but meaningful one—in the kit of tools and institutions bearing on farm income. As the tendency continues of developing farm programs by trial and error, as the practice continues of utilizing simultaneously various types of programs which often are inconsistent with each other, and as our national farm policy rests on the operation of programs which in combination compose a patchquilt-like configuration, marketing agreement and order programs can be considered as one of the patches. Such an operational framework may be almost inevitable in our political, economic, social, and cultural environment. One might visualize, however, a situation where our national farm policies and programs would be grounded in a set of principles derived from a rational and realistic formulation of long-run as well as short-run relations between agriculture and the rest of the economy, recognizing the interactions within agriculture, from the view of the growth and stability of the economy at large.

That such a visualization is utopian rather than realized may be viewed as an indictment of the contribution of economists. Their relative neglect or deemphasis in recent years of still definitely important subjects, such as functional distribution theories and terms of trade between competing groups as well as noncompeting groups, perhaps is related to the fact that there is not available a comprehensive, conceptual, and empirically substantiated framework—general distribution theory, one may prefer to say—to meet the needs of the times and within which farm policies and programs can be rationally formulated. One may set forth the view that such a framework is a prerequisite to a real and lasting advance in the formulation and operation of farm policies and programs; and in such a framework, institutions as marketing agreement and order programs would perhaps have a limited but meaningful role to play in the determination of the level and stability of farm income.

Two additional sections are included in appendix B :

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V. ASSISTANCE TO FARMERS IN MAKING FARM AND
PERSONAL ADJUSTMENTS
(PAPERS FOR PANEL E)

ASSISTANCE TO FARMERS IN MAKING FARM AND PERSONAL ADJUSTMENTS

UTILIZING EXISTING AGRICULTURAL SERVICES TO FACILITATE FARM ADJUSTMENTS¹

L. F. Miller and J. S. Plaxico, Oklahoma State University

Commercial farmers in the United States have made significant adjustments in their patterns of resource use during recent years. These changes have contributed greatly to the productive efficiency of the agricultural plant and have aided, to some extent, in maintaining the income position of those farmers who made them. However, there is every indication that further important resource adjustments will be required in the years ahead. The necessity for farm adjustments over the foreseeable future arises in part from the fact that resource use and incomes in agriculture are currently out of balance with those in other segments of the economy. In addition, expected dynamic changes in the general economy may call for an acceleration of resource adjustments within agriculture.

The authors of this paper contend that any proposed solution to the agricultural income problem which fails to encourage adjustments in resource use is both unwise and unrealistic. Yet, in view of the economic and institutional organization of the farm and non-farm economies, resource adjustments in agriculture alone may be a socially inefficient means of solving the income problem even in the commercial sector of agriculture. The position of the authors may be stated in three propositions:

(1) There is a serious need for continuation and perhaps acceleration of adjustments already taking place in resource use in agriculture.

(2) Resource adjustments, by themselves, are not likely to solve the problem of achieving satisfactory returns for the resources that remain in agriculture.

(3) Both social and economic consequences should be considered carefully before adoption of any program which might lead to extreme changes in the economic organization of agriculture.

Thus, it is our opinion that policy should encourage resource adjustments within agriculture, and between agriculture and other segments of the economy, but that the overall income problem should also be attacked on other fronts.

¹The views expressed are those of the authors and do not, in any sense, represent an official viewpoint of the university.

INDIVIDUAL ADJUSTMENT PROBLEMS

Different individuals within commercial agriculture face quite different adjustment problems as the industry as a whole adjusts along anticipated lines. The nature of an individual's adjustment problems and opportunities faced depends on his age, education, training, financial position, the type of product produced, and his farm location. The different personal situations and their effect on adjustments may be grouped as follows:

(1) Individuals with the necessary education, capital position, managerial ability, and health may enlarge and reorganize their farming businesses into units which will allow them to remain in agriculture.

(2) Young persons in commercial agriculture who lack the capital resources, technical training, or managerial ability to compete effectively in agriculture, but who have the training and qualifications for other types of employment, may find nonfarm employment.

(3) Individuals on farms who cannot meet the qualifications set forth in (1), and who are deterred from moving out of agriculture by age, health, training, resources, or personal preference will become the subsistence farmers of tomorrow.

It appears that one important goal of policy should be to assist persons now in agriculture to make adjustments (1) or (2) and to minimize the number that fall in No. (3). Such a goal would be consistent with economic progress.

BARRIERS TO ADJUSTMENTS

Several economic and social factors will limit the rapidity with which individual farmers will be able to make adjustments in the decades ahead. Major barriers expected to limit adjustments by individual farmers are (1) lack of information and education, (2) lack of capital, and (3) risk. The information and educational problem will be considered in detail in the next section, but the lack of capital and risk barriers need to be reviewed briefly at this point.

The redistribution of farm units among fewer persons and the increase in the total volume of capital which will be required in agriculture pose a tremendous problem. Clearly, the present structure of the capital market is a serious impediment to an individual attempting to obtain control of resources sufficient for an economically efficient unit with the potential to grow and make adjustments. Unless the capital market can be modified in some fashion, capital limitations will be a serious barrier to optimum adjustments in agriculture.

Most types of farming are subject to large risks attributable to price variability and to yield variations arising from vagaries of weather, insects, disease, and other hazards. In the fact of such risks, farmers are understandably reluctant to make substantial modifications in their farming operations. For example, persons who have sufficient equity to expand their operations into more efficient units are frequently slow to do so because of the added risks associated with the use of high percentages of borrowed capital. In a similar fashion, farmers producing products for which demands are relatively weak are reluctant to alter their systems because of the uncertainties and new skills involved in entering into the production of the alternative products.

Persons who face an unpromising future in agriculture are reluctant to transfer to another industry because of the risks and uncertainties involved in liquidating farming assets and in changing residences and employment. Information can, to some degree, reduce uncertainties within agriculture and uncertainties involved in changing from agriculture to a nonagricultural industry.

A PROBLEM OF SOCIETY

The adjustments to be made in the commercial segment of agriculture must come about through cumulative effects of individual decisions of commercial farmers, aided by public programs and policies. Thus, in the decade ahead, persons in the agricultural industry and potential entrants into the industry face extremely important individual adjustment decisions. The type of adjustments which seem indicated must be made by individual farm families; however, it is important to recognize that the question of agricultural adjustments is an important one for society as a whole because most of the potential adjustments involve resource transfers between the farm and the nonfarm sectors of the economy.

Existing education and action agencies can effectively assist individual farmers in bringing about needed resource adjustments. The remainder of this paper will consist of a consideration of the manner in which existing agricultural education and action agencies may be of maximum assistance to individual farmers in bringing about desired adjustments.

EDUCATIONAL AND COST-SHARING PAYMENT AIDS TO ADJUSTMENT

Assisting farm families with their problems of adjusting the kind and size of farm operations to a changing economic environment requires important changes on four major fronts. These include:

- (1) The kinds of information available to farm families.
- (2) The nature of the educational program for farm families.
- (3) The kind and type of Government's cost-sharing program for conservation.
- (4) The coordination of existing programs and professional personnel.

These four areas will be discussed in the above-listed order.

Kinds of information

Information available determines, to an important extent, the degree to which individual farmers are able to adjust to current and expected economic conditions. Basically, the types of information which are essential can be classed as (1) information which will help existing farmers and potential farmers to evaluate their future in the farming industry, (2) information which will assist persons remaining in the agricultural industry to organize and manage their resources in an optimum fashion in the face of changing conditions, and (3) information which will facilitate the transfer of farmers who are unable to remain in farm employment, and (4) information which will advise farm youth of the alternatives of nonfarm employment and the kind of training that is required.

It is unfortunate that those who are advising farm youth today generally fail to point out the possibilities that exist in industries

closely related to agriculture. These service, processing, and marketing firms require personnel with special training, but, at the same time, a farm background is usually considered a distinct asset.

If present and potential farmers are to make rational choices relative to the future, they must have a knowledge of the extent to which resources must be adjusted in order to provide a productive and profitable farm business. They need to know the probable effect of the changing competitive structure of agriculture by areas and by products, and the impact of expected adjustments on community and family life. In addition, they need information which will allow them to formulate expectations concerning alternative employment opportunities. The latter would involve information on job availability in different industries and areas and an idea of long-term income expectations and living conditions. Given this information, individual farm families can weigh the economic and noneconomic merits of farm versus nonfarm employment.

Those who remain in agriculture and those who potentially may remain in agriculture will continue to require highly specialized information if they are to cope with the rapid scientific advances expected to occur in the farm industry. They will need not only technical information dealing with crops and animals, but also economic information dealing with market structures and institutional organization in agriculture. Also, they will need training which will aid them in evaluating the complex interrelationships of agriculture and other segments of the economy.

It is important to recognize that the information program outlined calls for expanded research. At the present time, this type of information is not generally available. An expanded informational program would not have to wait on the final results, since research could provide some useful guides in a relatively short period.

Nature of educational programs

The type of information outlined above will mean little unless it is effectively brought to the attention of the farm family and combined with sound professional interpretation and guidance in relation to their particular situation. It is neither logical nor realistic to provide the farm family with assistance in utilizing improved farm-home practices and then expect them to go it alone on the much more difficult task of adjusting the basic nature of their farm and home operations to better fit a changing economic and market environment.

The task of integrating technical and economic information into individual plans obviously calls for professional workers of highest caliber who have special training and abilities. However, in spite of the fact that a beginning has been made in this type of educational work through farm and home planning programs, it is only a beginning. In our judgment, the great educational opportunity today lies in providing this type of educational service for farm families.

Advising farm families as to the best alternative use of their resources in line with the family's goals and objectives may be done by different methods. It may be long or short range in its viewpoint and involve all or only part of the farm business. For present purposes, the planning emphasis needs to be on looking ahead several years at the total-income possibility in line with probable market demands. The concern should be with the broad directions in which

the family needs to be moving on land use, kinds of livestock enterprises, and size of operations.

It is essential for the success of any farm plan that it not be developed hastily simply to comply with some Government program. Careful thought is particularly important in developing long-range plans. A fundamental educational process is involved which, to be meaningful, requires the true cooperation of professional workers and the farm family. Unless educational guidance along this line is provided, it is difficult to see how genuine progress can be made in facilitating sound farm adjustments even though other programs are available.

One major change in emphasis which needs to be made in our educational programs to facilitate adjustments concerns the preparation for nonfarm employment of those who find it desirable to leave agriculture. Such preparation is necessary because, by and large, skills acquired in agriculture are not transferable to nonagricultural industries. Thus, if farm people are to enter into productive employment in nonfarm segments of the economy, they must have an opportunity to acquire the skills which will fit them for productive employment in other industries. This need is urgent, and prompt steps should be taken to provide farm youth adequate training in nonfarming skills. This applies especially to young persons, but it is also important for farm operators who are on inadequate units which offer little promise of development. A small but important step could be taken in this direction if vocational training in off-farm employment were given the emphasis it deserves in the pilot counties in the rural-development program.

A digression is in order at this point to suggest that the kind of information and educational programs called for here do not necessarily mean that all farm families who do not have a full-time opportunity in agriculture must leave the farm and move to the city. Our vast roadbuilding program will both encourage industries to move to rural areas and make city employment more accessible to farm families. Such part-time farmers may not want a self-sufficing farm operation to produce their own food. Instead, they may be interested in an extensive, specialized type of farming which will fit in conveniently with their nonfarm employment. Many urban people look forward to retirement so that they can move to the country. Farm families who already enjoy such advantages may be reluctant to give them up and move to the city. If so, it would appear that continuing economic development will make such a choice feasible in many areas of the country.

Cost-sharing programs

A change in emphasis in informational and educational efforts is basic to wise farm adjustments, but this alone will not provide the solution to the problem of facilitating further farm adjustments. Two basic handicaps to change in any business are the lack of capital and the high risks involved. Both are particularly serious deterrents to needed adjustments in agriculture. Furthermore, many of the desired adjustments will result in a temporary lowering of farm income. The Government cost-sharing program may greatly reduce the impact of these factors and is thus a vital part of any comprehensive program to facilitate adjustment. However, we believe certain

changes should be made which would increase the effectiveness of the program substantially.

Generally, the program should be given increased financial support, and should be broadened in scope to include additional practices which are involved in making adjustments in both the type and the size of the farm business. In broadening this program, the overall principle should be that cost-sharing payments assist the farm family to make needed longer range adjustments in their farm business. In practice, this general principle would call for two major changes in the existing program. First, a sound long-range plan should be developed by the family in line with the family's goals, objectives, and resources, as well as with what is considered to be national agricultural goals and objectives. (This point will be considered further in the last section.) Second, cost-sharing payments should cover specialized capital improvements required to make the adjustments that are called for in the longer range plan. The specific details of such payments should be guided by the practical judgment of local agricultural workers and farm leaders. They are in the best position to know what kind of payments would accomplish the most in removing present deterrents to needed adjustments. At the same time they could limit payments on those practices which generally would be followed as a routine part of good management.

In general, these payments would include many of the longer range types of land improvements now made and might well include such additional items as building repairs and additions, and fences. Cash payments to compensate for the temporary loss of income involved in diverting land from certain cash crops to hay and pasture might also be included. This latter type of payment might be made a part of the conservation reserve program. We believe it would be wise, however, to label all payments not aimed directly at reducing soil erosion and water runoff as "adjustment" payments, rather than as "conservation" payments.²

It is obvious that any such expanded program must be protected by certain general safeguards to prevent the dissipation of resources. Among the most important of these would be:

- (1) The previously mentioned long-range plan which the family would develop to serve as a guide for the most effective resource use.
- (2) Some limitation of the total of such cost-sharing payments available for any single family. If the demands exceeded the funds available, it might also be necessary to establish a total that could be earned by each farm as a method of rationing the available funds.
- (3) Some limitation of the amount available for any one practice.
- (4) Nonpayment for practices which would be especially difficult to check for compliance or which could be converted easily into a salable asset.

Coordination of existing programs

Anyone familiar with the actual operation of the various agricultural programs at the county level is impressed with two facts: (1)

² Payments to help cover the cost of moving farm families with little opportunity on the farm into nonfarm employment are not considered here, but might well be an important part of the adjustment payments in low-income areas.

the total number of full-time personnel working on the various programs is substantial, and (2) there is very little coordination between the programs or personnel as they work with the individual family. It is suggested that if it were possible to combine and coordinate these professional resources and financial aids and bring them to bear on the adjustments of the individual family, a great deal more progress could be made. This should not be interpreted to mean that such county personnel are not at present working together harmoniously. Rather, the point is that each tends to work with some phase or piece of the farmer's problems without any overall plan as to how the pieces are going to fit together to make a more profitable and satisfying family farm unit.

The current situation does not mean that present personnel and programs are not performing a vital service to farm people. They are, as countless farm families will testify. At the same time, there is no doubt in the authors' minds that substantially more could be accomplished if a way could be found to coordinate and unify the programs and personnel of the various agencies working with farm people at the county level.

In our judgment, this is a problem of first importance if we are to look forward to a genuine program of facilitating needed farm adjustments. At the same time, it is a problem for which it is most difficult to find a satisfactory solution. Any effort at coordination must recognize the political complications arising from the fact that each group has built up independent farmer support over the years.

In view of these conditions, can anything be done to improve the present situation? Our suggestion is that an agricultural programs board be established in each county.³ It would be composed of one professional representative from each of the existing agencies working directly with farmers in the county, and of the farmer chairmen of the advisory committees which have been established to advise each of these agencies. It may be desirable to have certain other groups in the county represented, but the board should not be so large as to prevent frequent meetings to give overall guidance and direction to the programs in the county. The chairman should be an outstanding farmer who has the breadth of vision to see the proper place of all phases of the various programs. He would be selected by the farmer members of the agricultural programs board from among their own ranks or from other leading farmers in the county. The county boards would be supported by similar groups at the State and National levels. The principal functions of this board would be—

- (1) To develop a coordinated educational program dealing with problems facing agriculture and the kinds of practical adjustment best adapted to individual family situations.

- (2) To appraise the long-range farm plans developed by the farm family.

- (3) To approve the specific cost-sharing payments and other services that would help to put the plan into effect over a period of years.

³ This board is similar to the food and agriculture program board proposed by J. D. Black and Maxine Kiefer in their book, *Future Food and Agriculture Policy*, published in 1948.

Although we have sketched a possible solution to the problem of coordination as we see it, our major purpose was to call attention to the problem and its importance. A practical solution cannot be dreamed up, but must be developed from the trial and error of actual experience. Consequently, our basic suggestion on this point is that the necessary legislation and funds be provided to develop several trial programs in selected counties. After a year's experience of this type, the program would be on much sounder ground to move ahead in all counties. We believe too much is at stake not to make a serious beginning in coordinating the excellent personnel and the present financial aid into a unified program aimed at facilitating the adjustment problems faced by today's farm families.

THE CONTRIBUTION OF CREDIT POLICY TO FINANCING NEEDED FARM ADJUSTMENTS AND TO TRANSFERRING OWNERSHIP OF FARMS

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SUMMARY

1. Farm credit policy can play a marginal but very useful role in helping farmers to finance needed adjustments and to transfer ownership of farms.

2. The amounts and kinds of credit facilities available to agriculture appear to be quite adequate to meet all foreseeable needs of commercial farmers.

3. The quality of credit services can be improved, particularly in adapting terms more closely to the needs of borrowers.

4. Methods of enabling farmers to obtain the use of larger amounts of equity capital (as contrasted with debt capital) should be explored further.

5. Any large additional credit-financed demand for farm real estate probably would have an important effect on farmland values and probably would not be of benefit to farmers over the full term of the loans.

6. The goal of full ownership, free of debt, may need to be modified somewhat as the substitution of capital for labor proceeds further and farms become larger, especially as measured in terms of their total value.

The predominant source of agricultural capital is represented by owner equity which constitutes 89 percent of the total.¹ Thus, credit plays a distinctly marginal role. Nevertheless, credit is used by many farmers and it performs an essential service in helping farmers acquire the use of the resources they need in their business.

In mid-1956 almost one-half of the operating farmers in the United States had loans outstanding at insured commercial banks.² In addition, sizable numbers had loans outstanding from production credit associations, insurance companies, Federal land banks, Farmers' Home Administration, individuals, and other sources.

Furthermore, the number of farmers utilizing credit has increased during the postwar years (the decline in number of farms notwithstanding) and the total amount of agricultural credit, as well as the average amount outstanding per borrower, are larger than in other recent years.³ Total farm debt⁴ has risen from a relatively small

¹ See Balance Sheet of Agriculture, appendix table C-20, p. 864.

² Farm Loans at Commercial Banks, Board of Governors of the Federal Reserve System, Washington, D. C., p. 3.

³ *Ibid.*, for data re commercial banks. Data re number and amount of loans outstanding for Farm Credit Administration agencies and life-insurance companies present a similar picture.

⁴ Exclusive of loans held or guaranteed by Commodity Credit Corporation. CCC loans are made primarily for price-support purposes and are essentially conditional-sales contracts. The loans may be liquidated completely by delivery to the CCC of the commodity provided as collateral irrespective of the market value of the commodity at time of delivery.

figure of \$7.7 billion in 1946 to \$19.7 billion on January 1, 1957, and it probably will increase further. It is evident, therefore, that farmers have utilized larger amounts of credit as they have adjusted to the changing conditions in recent years.

How much of the credit utilized in agriculture can be attributed to the financing of farm adjustments and how much results simply from borrowing to finance current expenses, replacement of depreciated or obsolete capital resources, or transfers of ownership is uncertain. Garlock has estimated that from 1946 through 1955 the total amount of credit used in the farm sector was on the order of \$125 billion to \$130 billion and that this was equal to about one-third of the expenditures of farmers and other owners of farmland.⁵ It is possible that farmers rely more heavily on credit to finance adjustments in the size, type, or methods of operation of farms than to finance current consumption and operating expenses or replacement of capital. However, it appears that most farmers work gradually rather than abruptly into an adjusted system of farming and tend to utilize credit sparingly. In part this reflects the biological forces which govern time schedules in agriculture and in part it reflects a variety of other factors including the reluctance of many farmers to utilize credit on a substantial scale, especially for purposes other than to purchase their first holding of farm real estate.

CREDIT SOURCES

Agriculture's credit requirements are served by a number of sources. The data have been recorded largely on the basis of the security, i. e., real estate and other. This has led to a number of misconceptions relative to the characteristics and uses of agricultural credit. For example, it is quite generally assumed that real-estate loans are synonymous with loans made to finance purchases or permanent improvements of real estate and that these loans are almost all written for long terms. Conversely, non-real-estate loans are quite generally described as short-term loans to finance expenditures for current production and consumption. In practice, there is much overlapping of purpose and terms of the two kinds of loans.

Farm real-estate loans (often referred to as long-term or real-estate credit) are secured by mortgages on farm real estate and have maturities which, in the case of the Farmers' Home Administration, range up to a maximum of 40 years. The major commercial lenders in the farm-mortgage area are the life-insurance companies and the Federal land banks. Individuals provide a very substantial amount of such credit and commercial banks account for about one-seventh of the total outstanding.

⁵ Garlock, Fred L., *Financing Farm Adjustment*. *Journal of Farm Economics*, vol. 38, No. 5, p. 1529.

*Farm real estate mortgage loans outstanding, by source, United States,
Jan. 1, 1957*

	Million dollars	Percent of total
Total.....	9,908	100.0
Life-insurance companies.....	2,477	25.0
Federal land banks.....	1,722	17.4
All operating banks.....	1,386	14.0
Farmers' Home Administration.....	290	2.9
Other.....	4,033	40.7

In the area of non-real-estate credit (often referred to as other, short-term, or production credit) commercial banks provide the largest amount by a considerable margin. Production credit associations, merchants, individuals and miscellaneous lenders also provide this kind of credit. These sources are supplemented by the Farmers' Home Administration which provides subsidized Government credit and management assistance to a limited number of those farmers who do not qualify for credit from commercial sources.

Non-real-estate farm loans outstanding, by source, United States, Jan. 1, 1957

	Million dollars	Percent of total
Total.....	7,970	100.0
All operating banks.....	3,280	41.2
Production credit associations.....	699	8.8
Farmers' Home Administration.....	431	5.4
Federal intermediate credit banks.....	60	0.7
Other.....	3,500	43.9

Between the short-term and the long-term areas, and overlapping both of them, is a fuzzy area which has been labeled "intermediate term." This label usually is applied to loans made to finance capital assets or improvements which have a useful life of more than 1 year but not so long as land or permanent buildings. When defined in terms of maturity, intermediate-term loans generally include loans of more than 1 year but usually not more than 5 to 7 years. There are no credit institutions which specialize in intermediate-term farm loans. This credit area is served by both the real-estate and the non-real-estate lenders and, reflecting the smaller aggregate amount of experience and the lack of specialization in this credit area, the credit policies and practices are not so fully developed.

Nearly all communities have agricultural credit services available from several sources. The Nation's approximately 14,000 commercial banks provide a convenient and effective facility for the assembly of deposits and granting of loans in every community. Also, rural banks may obtain credit from their city correspondent banks or Federal Reserve bank and in that way obtain "outside" funds for use in their community.

The 497 production credit associations and 1,081 national farm loan associations (supervised by the Farm Credit Administration) have loan facilities in all agricultural areas. These agencies, in addition to their own capital, obtain funds from the Nation's money markets through the medium of pooling notes and using these as collateral against which bonds and debentures are issued and sold to investors. In this way they provide a channel for the flow of funds from the Nation's capital markets to all agricultural communities.

Life-insurance companies vary as to the areas they serve, but as a group they provide long-term farm real-estate loans to most agricultural communities, utilizing realtors, banks, their own field staffs and others as local representatives.

Loans provided from funds appropriated by the Congress are handled through the Farmers' Home Administration, providing access to a national credit source for FHA clients.

In addition to these institutional sources of credit, every community has a number of individuals who provide credit to a limited number of farmers. And finally, there is the credit which is provided by merchants as an adjunct to sales of merchandise and services to farmers. Depending upon the particular kind of merchandise, and the financial resources of the individual merchant, such credit may originate at the local bank or be drawn from a credit market outside of the community. A local purveyor of farm machinery, for example, may obtain financing from the manufacturer and the manufacturer in turn may have access to credit from a variety of sources.

It is apparent, therefore, that agriculture has available a great variety of credit sources and that farmers have access to the Nation's capital markets on a basis which enables them to compete effectively with other industries for the available supply of credit. Only if individual investors or financial institutions considered agriculture not to be a creditworthy industry, or if the agricultural credit institutions which tap the national capital markets were considered to be poorly managed would agriculture be unable to supplement the funds available from local sources by effectively tapping outside sources. Fortunately, that is not the situation. Similar conclusions have been reached by others.⁶

INTERMEDIATE-TERM CREDIT

As the substitution of capital for labor proceeds in agriculture, and there is every indication that it will go much further, the importance of intermediate-term credit required in the industry probably will increase substantially. For example, the physical amount of machinery and motor vehicles on farms increased 143 percent between 1940 and 1947⁷ and the estimated value increased from \$3.1 billion to \$17 billion, or 457 percent. Many of the agricultural adjustments which appear to be desirable for individual farms require

⁶ "There seems to be no problem with respect to the adequacy of the total credit supply. Loanable funds flow freely to agriculture from the capital market. The problem area lies rather with the quality of credit service * * *." Engberg, R. C., *Reorientation of Policies in Agricultural Financing*, Journal of Farm Economics, vol. 37, No. 5, p. 339.

⁷ "In my opinion, most farmers, except those with very low incomes, can obtain all the credit they are willing to use for making farm adjustments." Garlock, Fred L., *Financing Farm Adjustments*, Journal of Farm Economics, vol. 38, No. 5, p. 1531.

⁸ The Balance Sheet of Agriculture, 1957, Federal Reserve Bulletin, August 1957, p. 904.

additional capital investments which typically increase output of the farm and output per hour of labor over a period of at least several years. Provision for irrigation, addition of livestock enterprises, installation of drainage systems, construction of terraces, basic applications of lime and phosphate, provide examples. These kinds of investments often are associated with changes in systems or types of farming and occasionally with substantial changes in the size of farm business. It is not unusual in many agricultural areas for such investments to approximate the original investment in farm real estate itself.

The distribution of intermediate-type loans by purpose shows machinery and livestock purchases to be most important although significant amounts of credit are extended also for improvement of land and buildings.⁸

Many of the loans made for these above-mentioned types of investments are financed currently from short-term loans. For example, in the Federal Reserve study of farm loans outstanding at commercial banks in 1956,⁹ of the \$1.7 billion of loans to finance intermediate type investment, nearly 40 percent had maturities of 6 months or less. These loans accounted for about one-third of the dollar amount of all farm loans outstanding at commercial banks and nearly half of all farm borrowers were found to have loans to finance intermediate-term investments. However, this does not adequately describe the terms for which such loans were actually outstanding.

Many loans are renewed before being liquidated. Of the total dollar amount of agricultural credit outstanding at commercial banks for intermediate-term purposes at mid-1956, 40 percent had been renewed one or more times. This was somewhat higher than for other agricultural loans.

Information from production credit associations shows a somewhat similar picture.¹⁰ Of the total amount of loans made by PCA's in the year ended June 30, 1956, 25 percent was renewed.

Furthermore, many bank loans, although written for periods of a year or less, are planned to be renewed in whole or in part upon maturity. Such "planned renewals" accounted for 30 percent of the outstanding credit for intermediate-term purposes. Among loans for other purposes, planned renewals accounted for 24 percent of the outstanding credit at banks.

Again, PCA's show a somewhat similar experience. More than half of the renewals had been planned at the time the loans were made. According to the PCA study, "The most common arrangement for providing credit for intermediate-term needs is to renew a part of the loan."¹¹

⁸ Beginning in 1955, production credit associations started making loans with terms up to 3 years and later the Farm Credit Act of 1956 extended the permissible term to 5 years. Fourteen million dollars of intermediate-term loans were made by PCA's in the year ended June 30, 1956. About two-thirds of the total amount was to finance purchases of machinery, autos, trucks, and equipment and about one-sixth for improvement of farm land and buildings. Smaller amounts were for the purpose of buying livestock, financing irrigation equipment, paying debts, and purchase of farm real estate.

The loans at commercial banks to finance intermediate-term investments, outstanding June 30, 1956, showed the following distribution and purpose: Purchase of machinery and equipment, 46 percent; purchase of livestock other than feeders, 26 percent; improvement of land and buildings, 19 percent; and purchase of autos and other consumer durables, 8 percent.

⁹ *Ibid.*, p. 22.

¹⁰ PCA Members and Their Loans, Research and Information Division, Farm Credit Administration, Bull. Cr-8, May 1957, p. 4.

¹¹ *Ibid.*, p. 3.

Another indication that the amount of intermediate-term financing provided by commercial banks is larger than that indicated by loan maturities alone is the proportion of borrowers who remain in debt to banks continuously over a period of several years even though their individual notes are written with relatively short maturities. Of the borrowers who at mid-1956 owed on notes made to finance intermediate-term investments (excluding those who also had notes to finance purchase of real estate or current expenses), about one-third had been in debt to the bank since 1953 or before; one-tenth had been in debt continuously since 1954.

To what extent should loans to finance agricultural adjustments be made for relatively short terms and renewed as needed? Should the term of such loans be tailored more closely to the actual repayment capacity as estimated at the time the initial credit advance is made? These questions have received considerable attention in farm finance circles. Numerous studies have indicated that individual farm adjustment plans can be worked out and a companion financing program developed which provides a detailed schedule of credit advances and planned repayments, the latter often being based on anticipated increases in farm income resulting from the adjustment program. It has been suggested that farmers need written commitments from their credit source to assure that the full program will be financed according to plan before undertaking adjustment. Such loan programs usually are secured by chattel mortgages on available assets and the expected increase in farm income. Others have suggested that the practice which has been widely used thus far, namely, of writing notes maturing annually and renewing these notes as needed is adequate, and even preferable, since greater flexibility is provided and plans seldom materialize as conceived at the outset.

Probably there is no one answer or recommendation which is superior to all others. It is quite apparent, for example, that a borrower with limited equity and a "full" debt on his real estate usually will not provide an attractive risk to commercial lenders for an additional substantial amount of largely unsecured credit. If commercial credit is provided in this situation the lender may appropriately use note maturities which assure at least an annual review and reappraisal of the progress being made as well as the future requirements and prospects. Furthermore, participation of the holder of the real estate mortgage may be required. However, a borrower who has a moderate real estate debt and a substantial equity in his farm business may reasonably expect that lenders be prepared to make definite commitments as to planned advances and repayments for programs which may extend over several years.

Amidst the discussion of the annual versus the intermediate-term notes, there appears to have been inadequate attention devoted to the possibilities of expanding the use of loans secured by farm real estate mortgages for the purpose of financing agricultural adjustments requiring intermediate-term credit.

A substantial amount of intermediate-term loans are secured by mortgages on farm real estate. This is indicated in the average maturities of farm mortgages recorded by selected lenders.¹² The average

¹² Case, Betty A., *Farm Mortgage Loans Held by Life Insurance Companies*, Agricultural Research Service, U. S. Department of Agriculture, October 1957, p. 23.

term of farm mortgages recorded (March 1953) by all lenders was 9.2 years. For the Federal land banks and Federal Farm Mortgage Corporation, the term averaged 25 years, and for insurance companies, 18 years. But the average term of farm mortgage recorded by commercial and savings banks was 4 years and by individuals, 5 years. Corroborative evidence is available from information on the purposes of farm mortgage loans made by life insurance companies and Federal land banks.¹³ While these loans are used primarily to finance the purchases of real estate or to refinance farm real estate mortgages, a sizable proportion are for "intermediate-term purposes." Loans made to refinance non-real-estate indebtedness and for improvements to land and buildings in the first half of 1956 amounted to 22 percent of the farm-mortgage loans made for both life insurance companies and Federal land banks.

With total farm mortgage debt equal to only about 9 percent of the current value of farm real estate, about two-thirds of the Nation's farms free of any real estate debt in 1956¹⁴ and only about 1 out of 10 farms having mortgage debt in excess of 40 percent of its value (1949), the opportunities for adapting farm real estate loans to the provision of intermediate-term credit would seem to be very substantial. Especially does this financing process appear to be attractive for those types of capital investments which become a part of the real estate once the improvement is made. But the possibilities are not limited to these purposes. Loans secured by farm real estate mortgages may be used to help finance foundation herds of cattle and basic lines of machinery. This method of financing may be adapted also to the provision of recurring needs for short-term loans. In other words, the credit needs of many farmers could be provided by establishing a "line of credit" on a more or less continuous basis, utilizing a mortgage on farm real estate as security, and permitting the borrowers to draw up to specified predetermined amounts at such times as funds are needed. This procedure should prove convenient and economical to both borrowers and lenders. Such arrangements would require some type of overriding credit instrument, possibly an open-end real estate mortgage, but should prove less expensive than the making of a series of individual notes, each secured by a chattel mortgage.

The growing requirements for intermediate-term credit in agriculture is helping to focus attention on the total capital requirements of farms and therefore on agriculture's overall credit needs. The central problem of agricultural finance, namely, to provide arrangements whereby capable farm managers can obtain access to enough capital so as to employ their managerial and labor resources effectively is thus highlighted. The conventional description of credit in terms of short term, intermediate term, and long term, while helpful in some respects, is becoming less and less useful. The entire farm business must be financed and all the farm resources can well be considered available to back up the credit line. Analyses which have attempted to identify the income from individual farm enterprises with individual segments of farm debt, and especially analyses which attempt to attribute additional increments of income to additional

¹³ *Ibid.*, p. 17.

¹⁴ Case, *ibid.*, p. 4.

specialized capital investments and to schedule debt repayment proportional to the expected income increments probably hinder rather than aid in the development and execution of financing programs to establish optimum management plans on individual farms. Attention should be centered on the overall financial requirements of the farm business, not on its individual segments. In fact, the segmentation of credit to individual farms gives evidence of becoming a serious problem.

As capital increases in importance relative to labor and the amounts of purchased materials and services per worker continue to increase, it may become increasingly difficult for any one source of agricultural credit to adequately appraise the credit needs and debt-paying capacity of individual borrowers. For example, an individual farmer may have a long-term farm real-estate loan from a life-insurance company or Federal land bank, short- and intermediate-term credit from a commercial bank or PCA and, in addition, he may obtain credit from the distributors of petroleum products, farm machinery, feed, fertilizer, and the purveyors of automobiles and other consumer durables.

Furthermore, individual farm assets or sources of income may be pledged as security or a source of funds for payment of individual obligations. One unfortunate aspect of this situation is that it makes it impossible for any lender to plan a rational credit program adapted to the farmer's specific needs. Also, when evidence of financial stringency develops, each creditor is forced to take action to protect his claim.

If credit is to play a larger and more effective role in agriculture, especially for those commercial farmers who must rely heavily on credit to obtain the use of an optimum amount of resources, it will be necessary for more and more farmers and agricultural lenders to work in close cooperation. This can be facilitated greatly if lenders arrange to provide a full line of credit to individual farmers and farmers obtain all of their credit from 1, or at most, 2 sources. This would enable the borrower and lender to analyze the farm business, including the adjustments that should be made, and to develop a credit program which would make the maximum contribution to obtaining the desired objective. Lenders would need to be prepared to extend all the kinds of agricultural credit needed. At the outset, this suggests (1) the merging of the production credit and real-estate credit agencies supervised by the Farm Credit Administration; (2) that commercial banks develop arrangements with insurance companies or other investors which would enable them to accommodate farmers' needs for long-term real-estate credit; (3) that insurance companies be permitted greater flexibility in the kinds of agricultural loans they are authorized to make; (4) that all agricultural lenders develop staffs which are capable of appraising (and developing) farmers' developmental plans and the related credit requirements; and (5) that the various educational and service agencies serving farmers improve greatly their ability to help farmers develop sound adjustment plans.

FINANCING FARM TRANSFERS

Impressive progress has been made in providing credit facilities, instruments, and practices adapted to the financing of transfers of

ownership of farms, especially farm real estate. Long-term amortized loans are generally available at reasonable interest rates. However, the generally accepted goal of achieving full debt-free ownership of a family-size farm largely through investment of savings realized from the business during the productive lifetime of an individual may need to be revised. As labor is combined with increasing amounts of capital, the amount of land required to provide full-time productive employment for a farmer (and members of his family) has increased substantially and apparently will increase further. The total investment per farm varies greatly by areas as well as within individual communities, but in many areas it approximates \$100,000 or more, and this probably represents an excessive savings goal for many competent farmers.

Two possibilities are suggested. One proposes greater use of financial arrangements which enable farm operators to obtain the use of farm real estate which is financed, at least in part, by equity capital other than their own. The conventional lease falls into this category. But many nonoperator owners of farm real estate also find that the amount of investment represented by the real estate for an adequate family farm is beyond their means. Thus, to obtain the use of adequate real estate tenants may need to lease land from more than one owner. This often presents insurmountable problems. Therefore, interest has developed in arrangements which would enable several individuals or firms to hold a partial ownership interest in the same farm. If such arrangements should become widely used, the credit requirements for transferring ownership of farms probably would be materially smaller than if debt financing continues in its current role.

The second alternative is to accept the goal of owner-operated family farms and proceed to establish credit facilities which will enable individuals to borrow larger proportions of the value of farmland than the conventional 50 to 65 percent. However, it should be recognized that the injection of any substantial amount of additional credit on easier terms into the farm real-estate market would probably result in a substantial rise in land values. Insofar as the easier credit terms resulted in an upward capitalization of land values, the major beneficiaries would be existing owners rather than new owners of farm real estate. Hence, such a program might be of very limited benefit to farmers over a long period of years.

Even in the absence of higher loan-to-value ratios in farm-mortgage loans made to finance transfers of farms it may be desirable to modify the current practice of amortizing the full amount of the loan over a period of, say, 20 to 40 years. At least, in the areas of high land values it may be practical, and desirable, to provide "permanent" real-estate credit—loans which would provide amortization of the principal until it was reduced to an amount equal to, say, one-third to one-half of the value of the real estate and for ensuing years would require payments of only the annual interest charge on the unpaid principal of the loan. (This, of course, would require some arrangement for periodic adjustment of the interest rate on such unpaid balances.)

Another feature of agricultural credit which has been used to a limited extent thus far in long-term loans to finance purchases of farm real estate is that of providing for variations in annual principal payments depending upon the level of farm commodity prices or farm income. In view of the very sizable annual variations in

income for individual farms (much larger, of course, than the annual variations in United States farm income), this feature should be subjected to intensive study and experimentation to determine whether it can be utilized effectively in other types of agricultural loans. Provision for prepayments would, of course, be an integral part of such loans.

The financing of beginning farmers has attracted much attention. However, there is no persuasive evidence that an inadequate number of people succeed in becoming established as farmers. The preponderance of evidence is to the contrary, namely, that too large a number of people are engaged in this occupation. Any proposal that large-scale special-credit programs be provided so as to enable a larger number of prospective farmers to bid effectively for the limited supply of agricultural land should be viewed with skepticism.

Insurance can possibly be applied to agricultural credit in such a manner as to more effectively spread risks both by time and geographic area and thereby enable local (as compared with nationwide) lenders to provide somewhat more liberal loans. Some experience has been gained on real-estate loans by the Farmers' Home Administration with what appear to be promising results. There may be benefits also in the development of insurance programs for non-real-estate loans. This is an area which appears to merit exploration.

As efforts are made to achieve from agricultural credit the full measure of service which it can render to the betterment of the economic position of farmers and especially to facilitating adjustments in the size and types and methods of operating farms, great care should be exercised not to confuse social ends with economic means. The availability and cost of credit affect capital values. They may also affect rates of adjustment in capacity and output of agriculture overall as well as for individual farms. Agricultural credit will probably render the greatest service to agriculture if interest is focused primarily on improving the quality of credit service and allowing the amount of credit used in agriculture to be determined primarily by the allocation which results from the competition of agriculture with other industries for the savings which the economy generates.

GREAT PLAINS FARMERS AND THE WEATHER

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The vulnerability of agricultural production to climatic hazards is too well recognized to require detailed documentation in this paper. It is sufficient to remind ourselves that the biological nature of agricultural production places the farmer and rancher in quite a different management situation than that faced by other producing firms in our society. Farmers and ranchers everywhere in the United States face the problem of fluctuations in yields and production resulting from variations in rainfall as well as the other uncertainties of the weather. Frequent and extreme variations in income present a constant threat of insolvency to many farm operators. Obviously, the possibilities of insolvency are vastly greater in regions where rainfall variations from year to year are a major characteristic of the climate. The Great Plains is such a region.

Consideration of the broad problem of the impact of the weather on agricultural producers requires study of the extent to which (1) individual farmers and ranchers, and (2) governmental units can contribute to solving the problem. It is natural that people in regions and areas where climatic hazards are not so great should place major emphasis on individual action. It is equally understandable that people in the Great Plains with its extreme climatic uncertainties over the entire region should be concerned largely with public action. It is significant, however, that the people of the Eastern and Southern States became quite insistent in their requests for Federal action when drought conditions became severe and widespread during the summer of 1957.

RISK AND UNCERTAINTY IN AGRICULTURE

The problem with which we are concerned here is commonly studied and discussed in the framework of risk and uncertainty considerations. As individuals, we never have complete certainty of expectations and each individual must make an evaluation of the risk involved in various courses of action in view of the uncertainties facing him. We carry on this evaluation process in connection with decision making on a variety of problems every day. Most people in management positions in our economy are faced with something less than complete knowledge and, thus, uncertainty. The extent of the uncertainty is greater in agriculture than in other segments of our economy. And, within agriculture, uncertainty is greater in a region such as the Great Plains. It is this fact that has caused the Great Plains to be characterized as a high risk area.

Limited and uncertain rainfall is a major problem in the Great Plains. Obviously, the risk faced by farmers and ranchers could be reduced if it could be established that variations in precipitation followed some rather definite pattern. Such knowledge would con-

tribute greatly to the decisionmaking process. By studying tree rings for the years preceding available weather records, it was possible to project the precipitation pattern for some time into the past. This attempt to reduce the uncertainty faced by farmers and ranchers, through the plotting of definite weather cycles, was a failure. It was shown that the rainfall pattern in the Great Plains is quite unpredictable. So far as the rainfall pattern is concerned, the region remains a high-risk area.

Other developments have reduced the risk situation somewhat by reducing uncertainty in other aspects of Great Plains agriculture. Drought resistant crop varieties, moisture conserving tillage practices, more timely field operations and chemical weed control have all given farmers and ranchers in the Great Plains greater certainty of expectations. The fact remains, however, that rainfall is highly uncertain in the region and that the farm and ranch operators in the Great Plains face more uncertainty and more risk than do agricultural producers in other regions of the United States.

FLEXIBLE MANAGEMENT AND INCREASED STABILITY

There are some things that the individual farm or ranch operator can do to improve his position. The agricultural operator in the Great Plains will find his greatest individual opportunity in flexible management to meet the climatic uncertainties of the region. On first thought, it may appear inconsistent to suggest that increased stability may be achieved through greater flexibility in individual farm and ranch operations. It is true, however, that many Great Plains farms and ranches will be more stable in the long run if they are organized and managed in such a way as to "roll with the punch" from the unpredictable climatic situation.

Flexible management to achieve increased stability of Great Plains farms and ranches requires an unusually high level of information by individuals regarding the technical and economic alternatives available to them in offsetting the uncertainties of the weather. Adequate knowledge regarding a host of physical, biological, and economic relationships is necessary if the farmer or rancher is to be able to evaluate the uncertainties facing him and to choose a line of action which will reduce the risk in his operations. This serves to emphasize the importance of agricultural extension and the necessity for continued agricultural research. Later sections of this paper will point out the problem areas needing expansion of research and/or extension effort.

All of agriculture is heavily affected by public programs, primarily those of the Federal Government. To achieve stability through flexible management, farm and ranch operators need permanent programs designed to offset the peculiar climatic hazards of the Great Plains. Individual operators will not be functioning in a framework designed for maximum effort to solve the high risk problems of the Great Plains so long as the emphasis is on emergency programs to provide temporary relief from whatever critical situation may arise. The most certain thing about the Great Plains is the uncertainty of the weather. Permanent programs aimed at the most obvious dislocations associated with the weather would serve to reduce the uncertainty faced by farm and ranch operators. As uncertainty is reduced, the management function can work toward a more stable agricultural economy.

CROP AND INCOME INSURANCE

Agricultural producers have been interested for many years in insuring themselves against weather or other adverse conditions over which they have no control. The system of hail insurance through private insurance companies is well established and widely used. In addition, producers are interested in insuring their crop against other adverse conditions over which they have no control such as drought, crop disease, insect damage, and other causes of low yields or crop failure. Farm operators who are the most vulnerable because they are in areas of greatest risk are most interested in all-risk crop insurance as protection against low crop yields due primarily to the weather. The basis for the interest in crop insurance is as an income stabilizer.

For many of the highest risk areas of the Great Plains, crop insurance can be of great importance in preventing financial difficulties or insolvency during years of low yields or crop failure. The farmer's position is improved greatly if he can cover his costs on a crop which fails through no fault of his own.

The experience of the Federal Government with crop insurance has not been entirely satisfactory. Part of the problem is related to the lack of adequate actuarial data for many situations. Other unsettled aspects of crop insurance concern individual coverage versus area insurance and the extent of the weather risks to be insured against.

Additional research is needed to provide the basic data necessary to the development of a sound crop insurance program. Further testing of various insurance alternatives is necessary. The insurance principle should receive much more attention as a tool to reduce the climatic risks faced by Great Plains farmers and ranchers.

INCOME TAX REVISION

The impact of variable income resulting from climatic uncertainty is intensified by the tax obligations faced by farm and ranch operators. Property taxes are usually rather stable and uniform and the amount paid over a period of years is not affected by variation in income except when penalties are paid on taxes which have become delinquent in years of little or no income. On the other hand, income taxes affect farm and ranch operators with highly variable incomes in such a way as to intensify their financial problems. Operators having highly variable incomes will pay more in income taxes over a period of years than if their income had totaled the same amount for the period but had been relatively uniform each year. This is true because years of large income will put the taxpayers in a higher tax bracket which, under a progressive income tax, is not offset by a lower tax bracket in years of little or no income.

Dr. D. Gale Johnson of the University of Chicago, in an appearance before the Joint Committee on the Economic Report in November 1955, noted that "those areas of agriculture that have large variations in income from year to year are taxed more heavily than other farm areas with less variability but the same average level of income over time." Dr. Johnson concluded then, as I do now, that farmers or ranchers should be permitted to average their income over a period of years to reduce the extent to which they are "overtaxed" as a result of extreme variations in income.

Considerable study would be required, however, if farmers and ranchers are to be permitted to average their incomes over a period of years. Over how many years should incomes be averaged? It seems likely that the period should not be longer than 5 years. Federal income tax laws and regulations are complex enough as they now exist and the averaging procedure would complicate them further. Revision of tax laws to permit income averaging could open the door to new abuses by some taxpayers. The longer the period used for averaging purposes, the greater the opportunity would appear to be for violations and the more difficult the task of enforcement.

Despite the above shortcomings of a system of averaging income, it would be only equitable to provide a means whereby farmers and ranchers in high risk areas would pay the same tax in relation to total income over a period of years as individuals in other occupations.

DEVELOPING AND MANAGING FEED RESERVES

The problem of maintaining stable livestock enterprises in a region of erratic feed production is well known. In recent years, as in the 1930's, we have observed emergency programs for feed shipments and for moving cattle. To what extent should emphasis be placed on the development of feed reserves in high risk areas such as the Great Plains? Can feed reserves be developed as a permanent part of farm and ranch management in the Great Plains and make emergency feed programs largely unnecessary?

Many farm and ranch operators carry feed reserves as a regular part of their operations. Others do not. Can the development of feed reserves on farms and ranches in high risk areas be encouraged by financing feed reserves through a public loan program? Would a publicly sponsored loan and storage program for livestock feeds be cheaper and more in the public interest than periodic emergency programs? Here is a problem area needing research. Properly designed, such a program could be a major factor in reducing risk and uncertainty in livestock operations in the Great Plains.

CROP LOANS AND STORAGE

Public programs involving loans on farm commodities placed in storage are well established. They have been developed as a major part of the programs to handle surplus farm commodities. If loan and storage programs should no longer be needed in connection with surpluses at some time in the future, it should be recognized that these programs have aided in reducing risk and uncertainty in other ways. Most important is the contribution loan and storage programs have made in reducing market gluts at harvest time. This feature is particularly valuable in the Great Plains with its highly variable wheat production. If total supply of and total demand for wheat were in balance (no surplus), a loan and storage program would still contribute greatly to stability of farm income. Without these programs, many farmers would find themselves selling their larger crops in good years at low prices at harvest time and, thus, eliminating much of the possibility of offsetting the low income of poor crop years.

ADAPTED CREDIT

Agriculture has been the subject of much debtor relief in legislation and many emergency loan programs. Credit problems in times of agricultural depression are a characteristic of farms and ranches everywhere. Credit problems are intensified in a high-risk region because of the uncertain rainfall-variable yield-fluctuating income situation. Because years of little or no income may occur in sequence, credit may be needed for longer periods and may require somewhat different repayment schedules in the Great Plains than in other regions. Agricultural credit is needed which is adapted to the region.

It is doubtful if commercial credit institutions will ever completely fill the credit needs of agriculture in the Great Plains. In the past, commercial credit institutions have faded from the picture just when farmers and ranchers were most in need of help. There may be some basis for the argument that commercial credit institutions will stick with their clients through thick and thin in the future. In at least one recent emergency, however, the commercial banks were anxious to be relieved of the burden by the emergency livestock loans of the Federal Government. It seems certain that public credit agencies will continue to be needed and that they are most likely to supply adapted credit. In many cases, this will mean loaning on the basis of future production and not on equity. This is part of the risk inherent in high-risk agriculture.

The fact that climatic hazards hit large areas of the Great Plains at one time suggests the fallacy of the idea that such areas can and should take care of most of the problem from the private and public resources of the area. Ordinarily the burden is too great to be handled without aid from outside the area.

WEATHER-CROP RELATIONSHIPS

The problem of highly variable farm and ranch income in the Great Plains has its roots in uncertain yields and climatic hazards. The farmer and rancher needs to have much more information than is now available to him regarding the physical weather-crop relationships. With more adequate information in this field, farm and ranch operators will be in a better position to meet the uncertainties which face them with decisions designed to reduce their risk. A vastly expanded program of research on weather-crop relationships is needed to supply the physical data which can provide the basis for better decision making by Great Plains farmers and ranchers in their unending contest with the weather.

HEALTH, HOUSING, AND EDUCATION OF COMMERCIAL FARMERS IN THE UNITED STATES

By Howard W. Beers, Thomas R. Ford, and James E. Montgomery¹

INTRODUCTION

Differences among farmers in our developing economy have become as prominent as differences between farmers and nonfarmers. To understand the resulting variety of problems, it has become the practice to classify farmers in several ways, such as by commodity produced, by size of business, or by full- or part-time employment in farming. The businessman-farmer, whether large or small in scale of operation, differs in several economic characteristics from the subsistence or part-time farmer, and his concern with agricultural policy no doubt has some relation to this fact.

In his social surroundings, however, the commercial farmer is not separate or alone. He lives neighbor to neighbor with men in other agricultural statuses and in other occupations. In general, therefore, the commercial farmer and his noncommercial or nonfarmer neighbor, living in the same community share the institutional services of church, school, health agencies, and local government. In suggesting public agricultural policy, the commercial farmer will express special needs and interests. But in relation to public services in education, health, and housing, the commercial farmer's interest will coincide more or less with that of his neighbor's. In matters of general public policy in these areas it is appropriate that the farmer join his efforts with those of his neighbors in the study of their common situation.

It is the purpose of this review to set forth in very brief summary the general situation with respect to health, housing, and education in the communities where commercial farmers dwell and hence in the lives of farm families who are engaged in commercial agriculture. Interpretation of the materials presented no doubt will suggest considerations of general public policy involving both farmers and their neighbors more so than considerations of agricultural policy, involving farmers separately.

We have not taken the trouble, in preparing these comments, to define the term commercial farmer in any special or new way. Rather, we have relied on customary meanings of the term, and particularly on the six-fold classification of commercial farms introduced by the United States census of agriculture in 1950. In this classification the types are classes numbered from I through VI, the smallest nu-

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Howard W. Beers prepared the section on education. Thomas R. Ford prepared the section on health. James E. Montgomery prepared the section on housing.

meral identifying the largest farms in terms of product value, and the largest numeral identifying the smallest farms.²

In the following discussion of health, housing, and education some of the evidence cited is available separately for commercial farmers, but most of it pertains more generally to the rural population or to rural communities, so that inferences have had to be made concerning the situation of the commercial farmer.

HEALTH NEEDS OF FAMILIES IN COMMERCIAL AGRICULTURE

All attempts to summarize complex situations entail the risk of sacrificing exactness for brevity, and this risk is especially high when conclusions must be drawn from fragmentary data. Unfortunately this is the case when we seek to analyze the health needs of some 31½ million farm families engaged in commercial agriculture in the United States. The difficulty of summarizing their health situation is inherent in the diversity of the population, for, although linked by common occupation, they differ widely in many important respects that affect their health—region of residence, income, education, attitudes, proximity to cities, and a host of others. Furthermore, we have little direct information about their health status as a specific group; most of what we think we know has been deduced from information on broader groups of which they form a part, and even this information is far from abundant. As a consequence, our conclusions about their health must be restricted by qualifications, exceptions, and uncertainties. For sake of conciseness, these restrictions have not been explicitly stated in this report, but they should be tacitly assumed in almost every instance. With this note of caution, a brief summary of the health situation of commercial farm families may be offered as follows:

1. The health status of farm families in commercial agriculture is little different from that of urban and rural-nonfarm families of comparable income. Nearly all measures of health indicate that the health status of the Nation's population, including the rural-farm segment, has been steadily improving over a period of years. Compared with their counterparts of only a few years ago, our farm families today must be considered in relatively good health. Measured against an absolute standard of optimum physical and mental well-being, their health leaves much to be desired.

2. Although the health of commercial farm families compares favorably with that of urban families, certain diseases and disorders—particularly those of a chronic nature—appear to have a relatively high prevalence in rural areas. Various preventable diseases also occur with undue frequency among rural families, and farm accidents pose a health problem warranting considerable concern.

3. Despite the recent tremendous improvements in the provisions of medical facilities for rural areas made possible through

² The 6 economic classes, their limits in terms of value of farm products sold, and the distribution of all commercial farms among the classes:

I. \$25,000 or more (4 percent).
 II. \$10,000 to \$24,999 (14 percent).
 III. \$5,000 to \$9,999 (21 percent).
 IV. \$2,500 to \$4,999 (24 percent).
 V. \$1,200 to \$2,499 (23 percent).
 VI. \$250 to \$1,199 (14 percent).

the Hospital and Medical Facilities Survey and Construction Act, farm families are still at a considerable disadvantage with respect to the availability of medical facilities, personnel, and services.

4. Of even greater consequence than the relative shortage of medical care services must be considered the general inadequacy, and in many cases complete lack, of sanitation programs, public health services, and other preventive care measures in rural areas.

5. Finally, it should be recognized that the rapidly rising costs of health and medical services pose an increasingly serious threat to the health of the Nation's farm families. The current inflationary trend, the normally higher costs of extending health services and medical care to rural areas, and the failure of farm income to keep pace with the rising national income operate to place the health of these families in compound jeopardy.

Each of these five summary statements is expanded somewhat on the following pages.

The health status of commercial farm families

Because of the small amount of available health information pertaining specifically to families in commercial agriculture or even to rural families in general—a gap which it is hoped will soon be filled with data collected in the new national health survey—our current knowledge of the health status of this group must be inferred from indirect evidence and from direct but limited data drawn from some few local and State health surveys. The conclusion that the health of commercial farm families is probably as good as that of urban families and better than that of low-income farm families rests upon two well-supported premises: (1) rural mortality rates are still as low as or lower than urban mortality rates, although the considerable advantage once held by rural residents in this respect has steadily dwindled; (2) within large population groups, illness and death rates tend to vary inversely with income level.

Because of technical difficulties and the relatively high cost of maintaining residence classifications in the computation of death rates, recent data on the comparable mortality experience of rural and urban residents are quite limited. What information we do have, however, indicates that rural residents still have a slight advantage. A recent study of mortality rates by occupational groups conducted in the National Office of Vital Statistics produced evidence that male agricultural workers (including both farm operators and laborers) experienced lower death rates in 1950 than clerical, sales, and skilled workers, semiskilled workers, and laborers but higher rates than men engaged in professional occupations and in technical, administrative, and managerial work. Beyond age 45, agricultural workers had the lowest mortality rates of any of the broad occupational groups analyzed. In short, the mortality experience of men employed in agriculture was considerably better than average though not the best among the occupational groups studied.

Data on infant death rates, considered one of the most sensitive indexes of health status, also support the contention that the health of the rural population is generally on a par with that of the urban population. The steady decline of infant death rates over the past 40 years, during which time the infant mortality rate in the United

States has been lowered by more than 75 percent, is an impressive record of the progress of modern medical science. Infant mortality data for 1955 show a death rate for infants of rural parents that is slightly lower than the rate for infants of urban parents. In 1950 the relative positions were reversed, but in the case of both residential groups, infant death rates have continued to show a gratifying drop.

If the evidence on mortality experience indicates that the health status of the rural population is as good as or better than that of the urban population, at least so far as escaping fatal afflictions, then it is reasonable to suppose that the health of commercial farmers—at least the more prosperous ones—is well above average. The relationship between income and health status is sufficiently well known that it need not be documented here. Suffice it to say that most recent studies of rural health which consider the economic factor continue to show that families with higher incomes have fewer illnesses and disabilities and are more likely to make use of available health resources than are low income families. The persistence of this relationship holds important implications. Among them is the warning that good health is to a large extent dependent upon economic well-being, and continuation of the relatively unfavorable economic position of agriculture is likely to be reflected in relatively poorer health for larger proportions of our farm population.

While mortality statistics are not to be discredited as indicators of health status, they fail to register many important illnesses and disabilities which rarely, in themselves, cause fatalities. One of the anomalies of the rural health situation is that despite the generally lower death rates of rural residents, which some experts are inclined to attribute to underregistration of deaths rather than to more favorable health conditions, the findings of a number of health surveys undertaken in various sections of the country over a period of several decades indicate that our rural population has considerably more than its pro rata share of illnesses and disabilities, both physical and mental. Many will recall the national shock produced by the published results of physical examinations of selective service registrants during the early stages of World War II. Among the discouraging revelations was the fact that rejection rates of farmers and farm managers were exceeded only by those of domestic service workers, emergency workers, and the unemployed. And, to complete the shattering of many illusions about the salubrity of farm life, farmers and farm managers among the registrants were also found to have higher rates of mental disease (other than mental and educational deficiency) than any other regularly employed group.

At the time of the release of the selective service physical examination data it was argued that the farmers and farm managers examined were not representative of the total group because of the policy of deferring workers in agriculture. More recent studies, however, suggest that the group was probably more representative than we would like to believe. To cite two examples, a sample survey of the health needs of Michigan families in 1948 revealed that significantly more rural than urban residents reported one or more untreated symptoms of illness, a differential which persisted even within comparable income levels. In February of 1949 the current population survey collected data on the prevalence of chronic disability in the United States which

revealed that 2.6 percent of the rural farm population was reported disabled for 7 months or longer compared to 2.2 percent of the rural nonfarm population and 2 percent of the urban population. Investigators in Missouri have also reported the high prevalence of chronic illness among the rural farm population. Data from a survey of farm families in 20 counties of the State in 1949 indicated that at least 1 adult in 20 was unable to work on a given day because of a disabling illness, and about half the disabled suffered from a chronic illness.

In addition to the heavy burden of chronic illness, our rural farm population also bears the brunt of periodic outbursts of preventable communicable diseases which have all but disappeared from the urban scene. Every year about 2,000 cases of diphtheria are reported, chiefly in rural areas, while outbreaks of typhoid in rural communities occur with discouraging frequency. Brucellosis is gradually being brought under control, the number of reported cases decreasing from about 5,000 in 1945 to less than 1,500 in 1955, but even these relatively few cases must be considered far too many when complete eradication lies within the realm of possibility.

Finally, some mention must be made of the disquietingly high rates of farm accidents. According to National Safety Council data, the accidental death rate is higher for farming than for any other major industry, except extractive industries and constructive work, while the injury rate in agricultural work is highest of all. In 1956, nearly 13,000 farm residents lost their lives through accidents, and more than a million others suffered injuries. Nearly half of the deaths and a fifth of the injuries resulted from motor-vehicle accidents. Tractor accidents alone account for more than 1,000 deaths annually. The cost of accidents measured in dollars spent for medical treatment and time lost from work is, in itself, staggering. But these are not the only costs, for added to them are the tremendous psychological burdens of worry imposed by unanticipated bills and unexecuted tasks. There can be little doubt that accidents constitute one of the more serious health problems of our commercial-farm population.

Health facilities

In 1951, Dr. Milton I. Roemer, one of the outstanding authorities on rural health in the United States, noted in an article contributed to the *Annals of the American Academy of Political and Social Sciences*:

Regardless of the health status of rural people, it is generally recognized that they have access to and receive less medical care of virtually every type than do city dwellers. The rural areas are supplied with proportionately smaller numbers of physicians, dentists, nurses, technicians, and every other class of medical personnel, except untrained midwives and possibly chiropractors. They are served by fewer general and special hospital beds.

During the relatively short period that has elapsed since Dr. Roemer wrote those words, considerable advancement has been made in the provision of health facilities for rural people through the Hospital and Medical Facilities Survey and Construction Program. Even so, much of our rural population is still at a tremendous disadvantage in securing the facilities and personnel needed for adequate health and medical care. The reasons for their disadvantageous position are well known. Foremost is the fact that it costs more to provide sani-

tation facilities and health services for the dispersed rural population than for a concentrated urban population. Second, the financing costs for projects are generally higher in rural areas. Third, rural communities generally have less income available to invest in such projects, and are less likely to have agencies and organizations experienced in sponsoring the type of action needed to secure them. As a consequence, rural families are faced with the dilemma of paying relatively higher costs for health-care facilities or going without. Usually they do both. They pay more than urban families for what they get, and they go without what they feel they cannot pay for.

Health care, like charity, begins at home, and, in view of the lack of many basic home sanitation facilities in rural farm dwellings, it is not difficult to understand the ill health reported for a large proportion of the rural population. For the most part, commercial-farm families are generally better housed than farm families of extremely low income. Yet, in many instances, they share the same social and physical environment and must suffer the consequences of unsanitary conditions even when they do not contribute directly to them. It is, therefore, a matter of considerable concern that only 28 percent of the Nation's rural farm dwellings were equipped with flush toilets in 1950, less than a third contained tubs or showers, half had no running water, a fifth were in dilapidated condition, and, as a group, rural farm dwellings averaged more persons per room than either rural non-farm or urban dwellings. While many of these dwellings were occupied by low-income farm families, it should not be assumed that the housing of all commercial-farm families was adequate from the standpoint of health. Data from the 1954 census of agriculture reveal that 39 percent of all commercial-farm families occupied dwellings without piped running water, ranging from 6 percent of the class I, or largest, farms to nearly two-thirds of the class VI, or smallest commercial, farms. In all, more than 1,300,000 dwellings occupied by commercial-farm families—including more than 240,000 on class I, II, and III farms—were without running water and, presumably, the toilet and bath facilities dependent upon it.

Even where considerable attention has been paid to providing adequate housing facilities, the resulting benefits are often offset by completely inadequate community sanitation measures. In most urban areas, the responsibility for preventive health and sanitation programs is delegated to local or county public-health units. Those familiar with the varied and invaluable services performed by our public-health personnel cannot be other than appalled by the fact that in 1956 more than a fourth of the counties in the United States, and those predominantly rural, lacked any type of local public-health service whatsoever. Yet even these figures misrepresent the situation as being better than it actually is, since 30 percent of the 1,446 organized local health units reported by the Department of Health, Education, and Welfare either lacked health officers or were temporarily served by neighboring health officers. And, if we accept the standards for an adequate local public-health department set forth by Dr. Haven Emerson of a staff of 16 trained persons supported by a budget of not less than \$75,000, only a small minority of our rural local health units could be considered capable of rendering essential public-health service.

It would be misleading to present the darker aspects of the rural health picture without calling attention to the significant progress that has been registered under the Hospital and Medical Facilities Survey and Construction Program. By the completion of the 10th year of the program, in 1956, more than 1,000 new general hospitals had been built with Federal aid, 80 percent of which served largely rural communities and over half of which were located in communities which had never previously had a suitable hospital. In addition, over 500 health centers had been constructed, and 1,000 other construction projects had been approved, including nursing homes, chronic-disease hospitals, diagnostic and treatment centers, and rehabilitation facilities. It is no exaggeration to say that this is the most significant program that has been undertaken in behalf of the health of our rural families in our history.

Yet, even when all the currently approved projects are completed, many rural areas will still lack adequate facilities. How much remains to be done is indicated to some extent in a Public Health Service monograph on the distribution of general hospitals and nursing homes, published in 1956. The authors of this report pointed out that residents of rural areas, as defined for purposes of their study, constituted 22 percent of the total population, yet had available in their areas only 16 percent of the general-hospital beds, or 3 beds per 1,000 population. Only 15 percent of the skilled nursing home beds were located in these rural areas, although a relatively higher proportion of the residents were 65 years of age or over, compared to nearly 15 beds per 1,000 aged persons for the Nation as a whole. Sixty percent of the rural areas had no skilled nursing homes at all.

Medical personnel tend to locate, of course, where adequate hospitals and related facilities are available, and it is, therefore, hoped that provision of these facilities for rural areas under the hospital and medical facilities survey and construction program will lead to a more equitable distribution of physicians, nurses, and other members of the health and medical care team. Recent studies of the distribution of medical personnel in such widely separated areas as Kentucky, Louisiana, Michigan, Missouri, Minnesota, Oklahoma, Rhode Island, and Virginia continue to show the trend toward increased concentration of physicians and other medical personnel in urban centers—a trend which has been observed throughout the past half century. In Missouri, for example, nearly three-fourths of the active physicians in the State in 1950 were concentrated in the four counties containing the largest cities in the State. In Kentucky, which has 120 counties, well over half of the State's active physicians were located in the 5 most urban counties, which contained less than 28 percent of the State's population in 1950. All of the States in which recent studies have been conducted report increasingly heavy ratios of persons per physician in the more rural counties.

The departure of physicians from rural areas has not necessarily meant that the residents of these areas have been left without medical service. Most of them are able to secure needed services in towns or cities within easy driving range, and this is particularly true of commercial farmers, who are more likely to possess a car or truck and to be located on an all-weather road. And there can be little doubt that the farm resident is more likely to receive effective treatment from today's well-trained physician equipped with elaborate diag-

nostic and treatment facilities, provided with wonder drugs, and assisted by numerous allied medical personnel than he could have received from the country doctor of yesteryear. But there can be even less doubt that the costs of the services which he receives are much higher for him, not only when measured in constant dollars against what he used to spend, but also when measured against what the urban resident pays for the same services. There is a growing body of evidence that the high costs of medical care for the rural resident present a major deterrent to the utilization of available facilities and services, and thus constitute a serious threat to the health of our rural population.

Costs of medical care

It is a well-publicized fact that the cost of living in the Nation, as measured by the Consumer Price Index, has risen more than 20 percent over the 1947-49 base-period cost, and that medical-care costs have been in the forefront of the inflationary trend, with a rise of nearly 39 percent over the base-period costs. No major industrial group has been more seriously affected by these rising costs than the Nation's farmers. So far as medical costs are concerned, the evidence is clear: Farm families spend a higher proportion of their net income for medical care and they pay more for equivalent service received than do other families.

A national survey of medical costs in 1952-53 revealed that families in the United States incurred annual gross charges for medical services, including amounts paid for health insurance, averaging \$207 for all families and \$178 for rural farm families. In 1955, data collected in a special cooperative survey of farm-operator family expenditures conducted by the Bureau of the Census and the Agricultural Marketing Service showed that farm operator family expenditures for medical care, including health insurance, averaged more than \$240 per family. There are always errors involved in comparing data from different surveys, and we know that medical costs rose some 6 or 7 percent from 1952 to 1955. Taking these factors into account, however, it appears highly probable that expenditures of commercial farm families for medical care are equal to or greater than the national average. Yet, the money income of 80 percent of our rural farm families in 1955 was less than the national median family income. As a consequence, medical care costs accounted for more than 7 percent of the personal consumption expenditures of farm operator families in 1955, compared to less than 5 percent of the personal consumption expenditures of all families. In general, the percentage expended for medical care increased as the scale of farm operation decreased, but for all farm categories, proportionate expenditures for medical care were above the national average. More than 6 percent of the total personal expenditures of families on large (classes I and II) farms and 7.5 percent of the personal expenditures of families on medium-sized (classes III to V) farms went for medical care.

It should be noted, furthermore, that farm families are far less likely than other families to be protected by any form of health insurance. In 1953 it was found that only 45 percent of the Nation's rural farm families had some type of health insurance, compared to 70 percent of our urban families. Nearly two-thirds of the residents of urban areas but less than two-fifths of the residents of rural-farm

areas were covered by hospitalization insurance. The 1955 survey of farm-operator family expenditures confirmed the earlier findings. Slightly more than half of the families surveyed possessed some form of health insurance, a proportion far less than the estimated 75 percent of nonfarm families enrolled in some form of health insurance program. Again, the percentage of families insured was greatest for those on class I and II farms, 59 percent of whom were covered by some form of insurance, and decreased with size of operation to 47 percent of the farm operator families on class VI commercial farms and noncommercial farms. But, as these figures show, even the more prosperous farm families are less likely to be protected by some form of health insurance than the average urban family.

The differences in urban and rural enrollment in health insurance programs are largely explained by two factors—differences in income, and the lesser opportunity of farm people to enroll in group programs. In most cases, farmers, like other self-employed persons, are obliged to subscribe to individual policies. As a result, they pay higher premiums and receive more limited benefits. The suggestion that farmers organize health cooperatives as a solution to this problem is frequently heard, and is certainly not without merit. Yet the experiences of the relatively few health cooperatives that have been organized should be clear warning that they offer no panacea. Health cooperatives have a discouragingly high mortality rate—probably in excess of 50 percent. There is a consistent tendency to underestimate the costs of organization and initial capitalization. Some cooperatives organized with the object of bringing health personnel and facilities to a rural area have found it impossible to attract or retain the services of doctors, nurses, and trained technicians. Some indication of the difficulty of organizing and operating rural health cooperatives is given by the fact that only 17 farmer-controlled rural health cooperatives are listed among the nearly 10,000 farmer cooperatives in the United States, including more than 1,000 service cooperatives.

Conclusions with respect to health

It has been intended that this paper serve as a progress report on the health needs of our commercial farm families rather than a fact-finding study in support of specific recommendations. Nevertheless, the evidence presented undoubtedly holds implications for needed programs of remedial action. It would be misleading to proclaim our present rural health situation critical, but it would be unrealistic not to recognize the numerous danger spots. The health of our farm people has been steadily improving and in most respects is as good as that of the nonfarm population, whether rural or urban. Yet one of the most tragic aspects of the rural health situation is that so many human lives are still lost and so much disabling illness is experienced simply because of the failure to apply existent knowledge and available measures of environmental health and preventive and remedial medicine.

The reasons why we have not used our full capabilities in the furtherance of the health of our rural population are complex, but there can be little doubt that economic factors are among the most important. That farm families appreciate the value of good health is evidenced by the fact that they expend a considerably larger proportion of their income for medical care than do other families of the

Nation. But the inescapable facts remain that the provision of health and medical services in rural areas is relatively costly, and the ability of our farm families to bear the necessary costs is far below average.

The provision of Federal aid to communities seeking to improve their health facilities through the medical facilities and Hospital Survey and Construction Program must be considered one of the most significant contributions to the health of our rural people in the Nation's history. Similarly, the Health Amendments Act of 1956 is a promising start toward the provision of desperately needed professional public health personnel. These and other programs of Federal assistance must be continued and expanded if our rural population is to be provided with equitable opportunities for adequate health and medical care.

But it should be recognized that little is gained by providing hospitals, health centers, and health and medical personnel in our rural areas if our farm people are unable to bear the costs of the services made available. While the basic problem is one of raising farm income, some considerable headway could be made toward financing needed rural health services through effective farmers' organizations. It is only through the coordination of many programs and activities, however—those that will effect a rise in farm income, Federal-State assistance programs for the provision of medical facilities and the training of health and medical personnel, and voluntary cooperation of local groups—that the goal of optimum physical and mental well-being for our rural farm population will be approached.

AN APPRAISAL OF THE HOUSING OF COMMERCIAL FARMERS

Farm income, credit resources, mechanization, tenure, a dispersed system of farm settlement, and numerous pressures from the non-agricultural sectors of the Nation's economy are among the major factors that historically influenced and that currently affect the dwellings of commercial farmers. Although there is a tendency to think of the housing needs of the American farmer in stereotyped terms, the situation actually is one of diversity and variation. It is obvious that most farmers in classes V and VI (comprising more than 1.6 million farm families in 1950, or 43.6 percent of all commercial farmers) had incomes too small to provide adequate housing, regardless of how the term "adequate" is defined. Moreover, undoubtedly the income of many farm families in class IV would have to be managed wisely if it were to be sufficient to enable families to have reasonably satisfactory shelter. If income were not supplemented by money from other sources, of course, the economic status of many commercial farm families would be much lower. For example, in 1949 the percentage of total family income derived from nonfarm sources was 26 for those in class I, 48 in class V, and 44 in class VI.

Regional variations are important, too. Farmers in each of the six economic categories are found throughout the United States, but they are unevenly distributed among the major regions. By comparison with national averages, there is an overrepresentation of farmers in classes I and II in the East, Northwest, and West, and an overrepresentation of those in classes V and VI in the South.

Classes of commercial farmers differ also in tenure status, which is certainly a factor affecting housing. In 1950, 69 percent of all

commercial farmers were full owners or part owners; 31 percent were tenants (including sharecroppers); and one-half of 1 percent were farm managers. However, 75 percent of the farmers in class I were full or part owners; this is considerably more than the 66 percent having comparable status in class VI. Nearly all commercial farm operators (97 percent in 1950) live on the farms they work, and this proportion varies little among classes of farms and among regions.

The age of a farmer also has some bearing on the problem of his housing. In 1950 the median age of a commercial farmer in classes I and II was 43.7 years; the median farmer in each succeeding class was older; the class VI farmer was actually 10 years older than the class I farmer. In fact one-eighth of the class I-II farmers and over one-fifth of the class VI farmers were over 55 years old. One inference from these data is that many farmers in classes I, II, and III (the "bigger" farms) are young enough to secure credit for housing improvements which can be amortized over a long period of productive years. Many families in these groups have children under 18 years of age and living at home. The need for housing changes is more apparent for the families on larger and more prosperous farms; the presence of children is known to be an incentive to change in housing.

Condition of houses

Generally, the housing conditions of commercial farm operators and their families must be regarded as inferior when comparisons are made with achievements in urban housing. The dwellings of small-farm operators and factory workers 50 years ago were more or less comparable, but today many farm houses except for electricity, are similar to farmhouses at the turn of the century, while there has been steady improvement in the housing of factory workers. In fact, there is some evidence that the housing of one-third to one-half of all commercial farmers is probably worse now than 25 years ago in that few houses have been built and many old houses have not been properly maintained, much less upgraded.

Many farmhouses were virtually substandard when they were built. Of present housing (1950), 60 percent was built before 1920 when such features as insulation, electricity, storage, central heat, and water under pressure were relatively unknown. In addition to these deficiencies the houses of many farm families are very small. In 1950, 29 percent or more than 1 million houses on commercial farms had 4 rooms or fewer and 14 percent or more than one-half a million, of these dwellings were dilapidated.

Regional variations in the conditions of houses are great. For example, in 1950 the percentage (44) of small houses (4 rooms or less) on commercial farms in the South was more than 2½ times the corresponding percentage (17) in the North and West. The percentage of dwellings dilapidated was four times as great in the South as in the North and West (6 percent).

Differences among the economic classes were wider than differences between the North and West and the South. The ratio of the proportion of small farms (class VI) having dilapidated houses to that of large farms (classes I and II) with dilapidated houses was 10 to 1 in 1950. The ratio of the proportion of small farms (VI) with under-sized houses (under 5 rooms) to that of large farms (I, II) with

undersized houses was more than 4 to 1. Conversely, big farms surpassed small farms 7 to 1 in the proportion having hot and cold running water and about 6 to 1 in the proportion having private indoor flush toilets. Similarly, the superiority of housing on the biggest farms is seen in biggest-farm to smallest-farm ratios of 5 to 1 on private bathroom or shower and telephone, 3 to 2 on electricity, and 3 to 2 on presence of mechanical refrigerator. Comparable data on central heating are not available by class of farm, but it is known from census figures that 18 percent of all rural farmhouses (versus 63 percent for urban dwellings) had central heat in 1950.

Housing needs and wants

Not only the actual housing situation, but also the hopes, plans and expectations which people have for improving their housing are strongly influenced by such factors as income, condition of house, family life cycle, geographical region and tenure. For example, some studies show that many farm families living in large 2-story houses would prefer a 1 or 1½-story house with fewer rooms than they now have. Families occupying small houses often wish to add one or more rooms or to build a new dwelling. There is a shortage of storage in the majority of farm houses, and kitchens are often poorly arranged and equipped. The desire to install central heating is great among families in the North and West. It can be assumed that virtually all farm families not having running water and modern bathroom fixtures would like to have these amenities. A large number of families would like to be able to paint and reroof their dwellings and improve porches, chimneys and steps.

In a discussion of housing wants and needs of farm operators, it should be remembered that they are as varied as the needs of urban families or more so. Several housing studies suggest the following appraisal of wants and needs in regard to farm housing: The main concern of farmers in the upper income group is one of remodeling, installing utilities and equipment and otherwise modernizing the old, structurally sound houses they now occupy. This statement is especially relevant in the North and the West. Farmers who fall within the middle-income brackets often live in houses regarded as unsatisfactory by the occupants; but many of these houses are sufficiently sound structurally to be remodeled and improved to provide a reasonable degree of adequacy. Some rooms will need to be added, storage provided, and running water and plumbing fixtures installed. Except in the South, many middle-bracket farmers would install central heating if income would permit. In the lower-income bracket, especially among tenants (many of whom are found in the South) in the limited basic size and structure of the dwellings combine with low incomes to create an acute housing condition that most occupants have not the means to improve even modestly.

A recent study of farm housing in New York State found that income and condition of housing, two related factors, materially affected what a sample of farm families had done to improve their dwellings.

A high percentage of housing units in poor condition appear to have had such essential work as roof repair undertaken by the present occupant. Unless the work is necessary for adequate shelter, however, it is more generally confined (among houses in poor condition) to less costly jobs such as

painting and wallpapering the inside walls or painting the exterior walls. The most costly work, and probably some of the work not necessarily required for purposes of "adequate" shelter, such as adding a new room, is generally limited to housing units in good condition.³

A study in 1951 of preferences which a sample of farm families held toward their housing reached the conclusion that—

farm housing in the Northeast is in a state of transition. Few new houses will be built for farm families in this region. But families have a sufficiently firm opinion, of how their houses built several decades ago might better secure their present needs, to insure that much major house replanning will continue in the future.⁴

The same study noted that storage areas, living rooms and cellars, would be improved, that extra bedrooms, parlors, and dining rooms would probably be eliminated and that bathrooms, places for men to wash up, utility rooms, workrooms, and play space for children would probably be added.

During the last few years a number of studies have been made to determine the housing preferences of farm families. However, little has been done to determine what housing improvements farm families contemplate making, and even less has been done to reveal current efforts they are making toward the end of building new houses. In 1953 a study was made of the house-building activity of 266 farm families in North Carolina. Of all the people building farmhouses, 46 percent lived on land holdings having less than 3 acres. Most of the people who built new houses were either young couples or families with children. Even so, almost a third of the total were older families. Among builders, the median age of the whites was 35.9 years and of the nonwhite 45.3 years. The median cash outlay for the new farmhouses was \$3,333, with an estimated replacement value of \$4,926. The mean size of these farmhouses was approximately 1,000 square feet and usually they had 5 or 6 rooms. When queried as to why they had decided to build, 66 percent of the respondents mentioned poor condition of their old house, and 25 percent listed a change in the size of the family.

This study not only shows that most of the farmers built relatively small houses, which to them represented a large cash outlay, but it also clearly reveals some of the problems farmers faced in the processes of building. For example, it was found that in many cases farmers had to delay their plans for building for several years, the median number of years of delay being 4.2. Reasons for these delays included financial problems (54 percent) and competing farm needs (18 percent). A second problem encountered was that of securing adequate information on building. Sixty percent of the farmers got their information from existing houses; 24 percent consulted their neighbors; 38 percent consulted builders; 26 percent studied standard plans; 16 percent studied magazines; and, significantly, 3 percent consulted

³ Glen H. Beyer, *Rural Housing in New York State*, Cornell University Agricultural Experiment Station, Ithaca, N. Y., bull. 893, October 1952, p. 6.

⁴ James E. Montgomery, *Housing Preferences of Farm Families in the Northeast*, Cornell University Agricultural Experiment Station, Ithaca, N. Y., bull. 872, July 1951, p. 32.

agricultural extension agents. Some 50 percent of these farmers in North Carolina financed their new houses with savings accruing from farm operations, 25 percent financed them by loans, and 25 percent used earnings from other sources. Although no effort was made to learn to what extent the farmers were satisfied with these new dwellings, it is interesting to observe that two-thirds of the farmers had to exclude one or more features from their original plan.⁵

Conclusions with respect to housing

Perhaps half of all commercial farmers having inadequate housing would be able to make satisfactory adjustments if they had aids in the nature of research findings, improved means of communication, and more effective credit. On the other hand, between a fourth and a third of all commercial farmhouses—those occupied primarily by the lower-income groups—by virtue of age, size, and physical condition, are probably not worth being improved to a level of decency even if incomes would warrant such improvements. Included in this latter category are the houses of many older farmers, some owners and many tenants. The opportunities of these persons for entering the nonagricultural labor market are extremely limited, and they are likely to remain in the rural population.

In view of the relatively poor condition of a large percentage of the housing of commercial farmers, and in view of the limited number of houses that farmers now are able to build, the question may be asked, "What, if anything, can be done to improve the housing conditions of commercial farm operators?" Toward this end the following suggestions may be considered:

1. The Federal Government, in cooperation with the State governments, could foster the merging of small, uneconomical farms to form larger units that are more justified economically. Such a program, designed to decrease current underemployment and to increase income, would involve the withdrawal of marginal land from agriculture and should be accompanied by vigorous efforts to provide nonfarm employment opportunities for the persons affected, both within and outside of such areas. Many low-income farmers would voluntarily turn to nonfarm employment if opportunities were available. This would level up farm income, reduce the number of low-income farmers, and allow many dilapidated houses to be torn down.

2. Although a number of Federal programs have attempted to improve farmhouses, the total impact of such programs, with the exception of that of the Rural Electrification Administration, has been very limited. Therefore, especially in view of the large number of older low-income people for whom it will be difficult to find off-farm work, subsidy is probably the only alternative to substandard housing for close to 1 million commercial farmers. For various reasons, the possible importance of subsidizing farm housing as over against farm production has failed to get discussion. Subsidy, however, may be the only means whereby a large segment of the commercial farm population can ever secure adequate housing. Today the economy is perhaps the most prosperous it has been in a century, but many farm-housing units are actually deteriorating. Attention to farm-housing deficiencies may be more feasible now than at some later time when the general economic situation is less permissive.

⁵ James W. Green, *House Building by Farm Owners*, agricultural experiment station, North Carolina State College, Raleigh, N. C., bull. 391, September 1954, pp. 1-54.

3. A study should be made of the adequacy of all sources of credit—private and public—for improving farm housing to determine to what extent bad housing reflects an inability of farmers to borrow money at a rate of interest and on a repayment time schedule which their incomes would permit. Should such a study show need for liberalization of housing credit, then steps should be taken accordingly.

4. Over a period of more than two decades various Federal programs have been attempted which have had some influence on farm housing. A systematic analysis of these experiments and experiences should be made to see which, if any, should be undertaken on a larger scale and with more vigor.

5. Federal funds for research on various ways of improving farm housing have been very limited. It is doubtful that the Federal Government has spent \$1 on farm-housing research for every \$1,000 spent on agricultural production research. Research is needed to (a) find ways of getting lower costs for such basic features as central heating, water supplies, storage units, and adequate lighting for the farm home; (b) determine how people in various situations think and feel about their housing needs—the ways they use their houses, their plans, and hopes for the future; (c) determine how much farm families know about and make use of present sources of loans, credits, etc.; (d) find means of strengthening the effectiveness of the cooperative Agricultural Extension Service and other informational channels so that the flow of information from laboratories to farm families can be increased.

EDUCATIONAL NEEDS OF FAMILIES IN COMMERCIAL AGRICULTURE

Situation and trends

Despite the nostalgia for the little red country school that many feel, it is generally agreed that rural schools have been and are inferior in many ways to urban schools, and that rural people usually have spent less time than urban people attending schools. Census statistics on years completed confirm the latter assertion. For adults, however, these are historical data; they refer to school attendance in former years, from 1 to 5 or 6 decades ago, and thus are of limited helpfulness in the effort to understand the present situation in rural education.

Almost the only systematic educational data available specifically for commercial farmers are those assembled from the 1949 census of agriculture, which recorded years of schooling completed by each farm operator.

Certain differences among the economic classes of farms are conspicuous. For example, only 17 percent of the operators of the biggest farms (classes I and II), but 64 percent of those on the smallest commercial farms (class VI), had left school before finishing the first 8 grades. It must be remembered, of course, that the latter are 10 years older than the former (in medians, as mentioned above in the discussion of housing), so the difference partly reflects a trend toward longer school attendance in more recent years, and it may show also a relation between schooling and success. The proportion of class I and class II operators finishing high school or going beyond is 8 times the proportion for class VI (40 percent to 5 percent). Fourteen times as large a proportion of class I and II operators as of class VI operators

had attended college one or more years. A final clincher on this point is that the median operator on a class I and II farm had completed 10.2 years of school, while the median operator on a class VI farm had completed only 6.9 years. Which, if either, is cause and which is effect cannot be proved easily, but it is clear that operators of the larger commercial farms average higher in schooling, and this is another case of the association so often found in American society between education and income.

Although there are no readily available statistical data that show the present status and needs of the children of commercial farmers as a separate educational group, this need not be disturbing. Children from the commercial farm home ride the same school buses and enter the same classrooms as do children from the homes of commuters, low-income farmers, storekeepers, and all the other kinds of homes in the same communities. Furthermore, it is known that half or more of farm-reared youth, in the normal continuation of past trends, will leave agriculture and move to urban places for nonagricultural employment.

A recent study in Missouri of 1,500 men who were in smalltown high schools 10 years earlier found only 25 percent of them to be farmers, although 60 percent of their fathers were farmers (Pihlblad and Gregory). A recent study of a national sample yields the estimate for 1952 that twice as many farm-reared adults were then living off the farm as on the farm in the United States (Freedman and Freedman). Youth from farm families, then, will labor shoulder to shoulder with their city cousins in distant factories, offices, and shops. However, the farm-reared adults who live in nonfarm places have more than their proportional share of low-status occupations and jobs, and they include more than twice their proportional share of persons with no more than grade-school education (Freedman and Freedman). The unfulfilled educational need for the prospective migrant from rural areas thus is more acute than that of the youth who is native to the city. His schooling should—but so far, does not—equal, in quantity and quality, the schooling of any other youth in any community.

It seems safe then—and the only feasible course—to discuss the educational needs of rural people, for therein lie also the needs of families in commercial agriculture. Rural education in the United States now involves 12 million boys and girls, 5 million of them living in the open country (most of the children from commercial farm homes being in this group) the other 7 million in villages or small towns. Their teachers number over 460,000, or more than 47 percent of all public-school teachers in the United States. They are responsible to about 13,000 superintendents and supervisors. Every school day 150,000 school buses travel 7 million miles to bring 9.5 million pupils (mostly, but not all, rural) to 20,000 schools.

Although technological improvements have relieved the isolation of the farmer in many ways, and although there is a trend toward the gradual concentration of farm homes and other rural residences along the highways, it is still true that it costs more and is otherwise more difficult to provide schooling and other services and facilities for rural than for urban people. This, coupled with the American tradition of local responsibility for the local school, has set the stage for the rural problem in education.

The basic problem: Inequality

The chief elements of the rural school problem are that many youth still are not in school, many buildings are deficient and much equipment is unsatisfactory, dropout rates are high, qualified teachers are in short supply, school programs are "thin," provision is lacking for special services. All costs have shot up (in the 1940's school expenditures rose 140 percent) but many districts have low bonding power and tax burdens are unequal.

The most critical element however is the great unevenness among localities in the United States with respect to the quality of schooling available to children and youth. The greatest nationwide inequity has been that between urban and rural. In Kentucky, for example, the percentage of persons 14-17 years old attending school was 82.3 in the urban population but only 63.9 in the rural-farm population (1950). (In some all-rural counties it was below 50 percent.) The States have developed programs of State aid to local schools according to various formulas of equalization applying within their borders. Now there is increasing recognition of dangerous inequities among the States even like those among the localities within a State. For 1954, the average public expenditure per pupil in full-time day schools was reported to be \$264.76 for the continental United States. But the range was from \$361.99 in the State spending the most to \$122.60 in the State spending the least. To the extent that dollars of expenditure reflect education, the average pupil in the former State had about three times as good a chance as the average pupil in the latter State. It is in the general human interest as well as the national interest that a youth anywhere in the country may have access to quality education, even though he is being reared in a poor community. To insure this, the States and the Nation cannot allow any local school system to wither through dependence only on dried-up or otherwise inadequate local resources.

Against the tradition of local community control in the United States there is the fact that the constitutions of the several States assert that public education is a State, not a local, function and that the controls are with the State legislatures. Localities have only those powers the States may grant, although there was a time when nearly every school had its own board or its own trustees. The simple institution which then dispensed the know-how of the three R's was intimately close to the homes and the minds of its patrons in a small and generally autonomous neighborhood or community.

The unification of State systems has come rapidly throughout the Nation, and local school districts now are both helped with State money and State supervision, and held up to State standards of curriculum, building construction, teacher qualifications, and compulsory attendance. The lone community long ago gave up its monopoly over the details of school operation accepting the authority and the aid of the State, and retaining only limited powers for its own school board and school district. Small and simple schools were adequate in the days when necessary knowledge was simple and of small scope. Getting enough knowledge to live in the complicated life of modern society is more than the "little red schoolhouse" could possibly assure in the rural community of today. For at least 40 years now, the idea that all youth should have a high-school education has been fairly

general in the United States (88 percent of children 14-17 years old were enrolled in high school in 1956).

Not all—but much—of the unevenness of educational opportunity from community to community is due to differences in ability to pay. If these differences are due to poverty and abundance in resources, they can be minimized by equalization efforts of States and the Nation. To the extent that they are due to failure to utilize adequately the local resources which are available, the equalizing action of States and the Nation must be graduated to force full utilization of local resources. Here is a problem in which balance between local and outside resources, and poise in discussion are needed.

One reason that the local community cannot be left alone to wrestle with its school problem with inadequate resources or with inadequately taxed abundant resources is that the sins or good works of any locality are not confined in their effect to its own borders. The consequences of learning in any human life endure and are carried about the world through channels of migration. The State or Nation which allows poor schools to exist anywhere within it will suffer the effects in a diluted cultural bloodstream in its whole body. The doctrine of local responsibility cannot be interpreted also as a right to maintain a poor school.

School reorganization

The most widely accepted approach to school improvement has been discussed in recent years as school reorganization. The spread of this idea is reflected in the fact that during the 1940's—the decade of World War II—nearly half the States of the Union enacted legislation that furthered school reorganization. More recently the spread is shown in a decline between 1948 and 1955 of 41 percent in the number of school districts in the United States. In the same period, the number of 1-teacher schools dropped 48 percent.

It is true that the level of schooling among rural people has improved. Trend figures are not available for commercial farmers alone, but in 1940 only 31 percent of the rural people 25 years old or older had gone beyond the eighth grade; in 1950 almost 40 percent had done so. In 1940 only 10.3 percent of rural adults had had 4 years of high-school education; in 1950 there were 15.3 percent with that amount of schooling. The percentage of rural adults who were college graduates increased by one-third between 1940 and 1950.

But the progress in schooling has not been fast enough nor even enough, and there are numerous lags, gaps, and deficiencies. Schools are supported by alumni, and alumni are inclined to perpetuate the rosiness of the past which they remember somewhat romantically. It is often hard to change a school district boundary by enlargement or merger because boundaries are set into the sentiments of the patrons who put up strong resistance.

School units can be too small—and they can be too large, whether in area or in number of pupils. Too small schools can't offer good curriculums. In one of the great Southwestern agricultural States, it is reported that 39 percent of the high schools with fewer than 300 pupils do not offer agriculture; 90 percent do not offer chemistry; 95 percent do not offer physics; 96 percent do not offer Spanish; 99 percent do not offer Latin. This is just an illustration, but its counterparts are found in rural areas of most States. It has been reported within the

last year that more than 5,000 high schools serving rural youth have no offerings in vocational agriculture, and more than 1,000 other schools needed one or more additional teachers of vocational agriculture. Similarly, it has been reported that 7,000 high schools have no offerings in home economics. Discounting these estimates slightly as coming from overenthusiastic believers, the need must still be acknowledged.

With a big enough school system, provision can be made for the varied needs of children. They can be divided by grades of age and interest; they can begin with nursery school or kindergarten and stay on for adult evening classes; they can have school nurse and dental attention; they can express themselves in art, in music, in laboratories and shops, in the gymnasium and on the playing field; they can have vocational training and vocational guidance. They can be taught by several specialized teachers; they can have diversified libraries, and these are all advantages not present in the too small school.

In a study of 552 reorganized districts observed by the United States Office of Education and reported in 1953 from data in a sample in 8 States, numerous instances of the development of these services and expansions were noted. Instances appeared in which the duplication of dual elementary—high-school districts were eliminated, nonoperating districts were closed, and local tax burdens were equalized often in a manner that shifted unbalanced tax loads from the properties of farmers, leveling the responsibility over the total taxable resource of the area involved.

The problem in school planning is to determine the particular pattern of reorganization that is best suited to a given situation. Collecting children by school bus is a helpful feature of a reorganized school program. But there can be such a thing as a bus ride that is too long. Reorganization per se is not a magic word. The best chance of solving many school problems for commercial farmers and their neighbors lies in reorganization, but unwise or misguided attempts might alter and multiply, not solve, the problems. Establishment of large enough but not too large districts is a very important preliminary to school improvement, but it is not the whole task. It makes possible—but does not guarantee—the quality upgrading of rural education.

Other aspects of the problems of education

Several aspects of education other than those which concern elementary and secondary schools are important to farmers, and brief additional comments on one or two of these matters are presented here in conclusion. Education and economic development have worked together in the furtherance of commercial agriculture in the United States. Education, which involves discovery as well as teaching, has been both a guide for and a servant of agricultural progress. There is a somewhat perverted evaluation, heard only in a few quarters, that the American farmer already knows too much and hence produces too much. But the challenge of surpluses is not to reverse gears, seeking a former Eden of ignorance and scarcity. Rather, the challenge is to study ways of balancing the uses of present information, and to keep pushing back the horizons of knowledge until better applications in technology and human organization are found. Better knowledge and more effective counsel would help some farmers to leave agriculture for other occupations. Better knowledge would help many

farmers who remain in agriculture to enlarge their farm units. Better knowledge would show us new frontiers of distribution.

The commercial farmer's need for education, therefore, is not confined to elementary and secondary levels. He has continuing need for the expanded and extended services of trade schools, intermediate school districts, high schools, and colleges and also for the continuation and intensification of research and college and university instruction.

Farmers are now a minority group in numbers among the total population, and occasionally one hears of nonfarm criticism about special programs and services to farmers, such as vocational agriculture training, experiment station research, agricultural college instruction, and cooperative extension.

Misguided retrogression in these fields would have unfortunate consequences. The solution of today's problem does not lie in curtailment of educational institutions and programs already developed, but probably in their expansion, further support to some extent in their redirection and particularly in the enlargement of their coverage to include the farmers' neighbors as well as the farmers. The farm was once the scene of the complete act of agricultural production. But now this act may have one of several simultaneous beginnings in a remote limestone quarry or fertilizer plant, may continue in the farmers' field, and be finished in a cannery in the nearby town. Everybody and the farmer are in the act together. The definition of agriculture has been changed by the technology of agriculture; even certain members of the teamsters' unions are now involved in agricultural production as they haul the materials and the products to and from the farm.

The key to future educational development to meet the commercial farmer's needs, then, will be the same key that opens to better organization, and more support for education generally. Elementary and secondary schools, trade schools, vocational programs, experiment stations, colleges of agriculture, and home economics, and various forms of extension services for the communities in which farmers and their neighbors dwell are all part of the necessary institutional pattern.

Conclusions with respect to education

1. The basic need, taken for granted and not separately discussed in this paper, is the continuing requirement of farmers for greater net income, which is both effect and cause of higher levels of education among farmers. This is a repetition of the general point made earlier with respect to both health and housing.

2. Educationally, the family in commercial agriculture has the same needs that other families have in the same communities. Meeting these needs in general, although involved to some extent in the formulation of national agricultural policy, is more likely to be of concern in discussions of public educational policy in general.

3. Inequalities among communities, with differential burdens, and making differential efforts, put the children of many farmers at considerable educational disadvantage. Rural-urban differentials exist in enrollments, costs, and personnel, and all other important elements of education. There seems no likelihood of eliminating these disadvantages without Federal-State cooperation in financial equalization.

4. School reorganization, which offers greatest likelihood of educational progress, is a matter for local and State determination, but the

stage cannot be set for complete success in reorganization without a national program to assist the States in equalization, within each State and among the States.

5. Federal cooperation with States in their support of research, agricultural, and home economics instruction in high schools and colleges, and in extended educational services must be maintained, increased, and modified where appropriate to serve the broadened definition of agriculture.

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THE POTENTIAL CONTRIBUTION OF THE RURAL DEVELOPMENT AND SOCIAL SECURITY PROGRAMS TO COMMERCIAL AGRICULTURE¹

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Implementation of the rural development program and the extension of old-age and survivors insurance to hired farm workers and farm operators represent important steps in the development of agricultural policy. These programs stem from a recognition that what we normally refer to as the farm problem covers a Pandora's box containing a swarm of difficult problems.

The rural development program was designed to deal specifically with the problem of areas characterized by chronic low farm incomes. Extension of old-age and survivors insurance to farmers was designed to deal specifically with the problem of economic security for older farmers and for their survivors. These programs stand in sharp contrast to the farm-price programs of the last two and a half decades which have been primarily designed to deal with the problem of farm price and income instability which has plagued commercial agriculture.

My assignment is to discuss the potential contribution of the rural development program and the extension of old-age and survivors insurance to farmers on commercial agriculture. I assume that this assignment stems from the thought that, although neither program was specifically designed to deal with the problems of commercial agriculture, both might have important implications for the price and income problems currently being faced by commercial agriculture. In carrying out this assignment, it will frequently be helpful to consider the differential impact of the two programs on commercial and on noncommercial or low-income farmers.

By commercial agriculture, I have reference to the approximately 1.3 million farm families operating farms with sales of more than \$5,000 per farm. In 1954, these high-production farms accounted for almost 80 percent of the total sales of farm products (table 1).

¹The author has benefited from a critical review of an earlier draft of this paper by J. C. Bottum, J. B. Kohlmeier, and P. L. Farris.

TABLE 1.—*Number of farms and value of products sold by economic class, United States, 1954*

Economic class	Farms		All products sold	
	Number (in thousands)	Percent of total	Total of value (in millions)	Percent of total
High production:				
I. Sales of \$25,000 or more.....	134	2.8	\$7,768	31.3
II. Sales of \$10,000 to \$24,999.....	449	9.4	6,684	26.9
III. Sales of \$5,000 to \$9,999.....	707	14.8	5,085	20.5
Total.....	1,290	27.0	19,537	78.7
Low production:				
IV. Sales of \$2,500 to \$4,999.....	812	17.0	3,009	12.1
V. Sales of \$1,200 to \$2,499.....	763	16.0	1,414	5.7
Total.....	1,575	33.0	4,423	17.8
Noncommercial:				
VI. Sales of \$250 to \$1,199 ¹	462	9.6	350	1.4
Part-time, sales of \$250 to \$1,999 ²	575	12.0	357	1.5
Residential, sales of less than \$250.....	878	18.3	64	.3
Abnormal ³	3	.1	85	.3
Total.....	1,918	40.0	856	3.5
Grand total.....	4,783	100.0	24,816	100.0

¹ Criteria for class VI also specified less than 100 days off-farm work by operator, and income of operator and members of his family from nonfarm sources less than the value of all farm products sold.

² Criteria for part time also specifies 100 days or more off-farm work by operator or income of farm operator and members of his family from nonfarm sources greater than value of all farm products sold.

³ Institutional farms, experimental farms, etc.

Source: U. S. Bureau of the Census, U. S. Census of Agriculture: 1954, vol. III, Special Reports, pt. II, Farmers Expenditures, U. S. Government Printing Office, Washington, D. C., 1956, p. 2.

In 1954 there were also approximately 3.5 million farms in the United States with sales of farm products of less than \$5,000. This includes almost more than 1.6 million low-production farms with sales between \$1,200 and \$4,999, and slightly more than 1.9 million noncommercial farms with sales of less than \$1,200 (table 1). Almost 1.3 million, or over 80 percent of the farms identified as low production in tables 1 and 2 depend primarily on agriculture as a source of income. Almost 0.9 million, or almost 50 percent of the farms identified as noncommercial in tables 1 and 2 depend primarily on agriculture as a source of income. Thus, we have a total of nearly 2.1 million low-production and noncommercial farms in the United States on which the farm operator and his family depend mainly on agriculture as a source of income. It is this group of approximately 2.1 million low-production and noncommercial farms where the operator and his family depend primarily on agriculture for a source of income to which I will have reference when I speak of low-income farms or low-income agriculture.

TABLE 2.—*Off-farm income and employment of farm operators classified according to economic class of farm, United States, 1954*

	All farms	Farms with off-farm income exceeding value of farm sales	Farms with operator working off the farm 100 days or more
1. Number of farm operators:			
High production ¹	1, 289, 877	71, 571	116, 194
Low production ²	1, 575, 313	287, 785	317, 822
Noncommercial ³	1, 917, 831	1, 064, 877	899, 979
Total.....	4, 783, 021	1, 424, 233	1, 333, 725
2. Farm operators in each economic class as a percent of total:			
High production ¹	27.0	5.0	8.7
Low production ²	33.0	20.2	23.8
Noncommercial ³	40.0	74.8	67.5
Total.....	100.0	100.0	100.0
3. Farm operators with high nonfarm income as a percent of all farms in each economic class:			
High production ¹	100.0	5.5	9.0
Low production ²	100.0	18.3	20.2
Noncommercial ³	100.0	55.5	46.9
Average.....	100.0	29.8	27.9

¹ High production refers to census economic classes I-III. These are farms with a value of farm products sold of \$5,000 or more.

² Low production refers to census economic classes IV and V. These are farms with a value of farm products sold between \$1,200 to \$4,999.

³ Noncommercial refers to economic class VI, part-time, residential, and abnormal farms. Class VI and part-time farms are farms with sales of farm products between \$250 and \$1,199. Residential farms are farms with sales below \$250. Abnormal farms are institutional farms, experimental farms, etc.

Source: U. S. Bureau of the Census, United States census of agriculture: 1954, vol. II, General Report, Statistics by Subjects, ch. XI, table 2, U. S. Government Printing Office, Washington, D. C., 1956.

A. THE RURAL DEVELOPMENT PROGRAM

The rural development program has been initiated in or proposed in nearly 100 percent counties in 30 States. These pilot counties are almost all located in the areas identified by the Department of Agriculture as the "generalized problem areas."² Of the 2.1 million low-income farms in the United States approximately 1.2 million, or nearly 55 percent, are located in the "generalized problem areas." Only about 16 percent of all farms in the generalized problem areas are classified as commercial farms. This is in contrast to the rest of the United States, where almost 42 percent of all farms are classified as commercial farms (table 3).

² See Rural Development Program, 2d Annual Report of the Secretary of Agriculture, Washington, September 1957.

TABLE 3.—*Number of farms in commercial farming areas and in the generalized problem areas by economic class and importance of off-farm income*

	United States total		Farmers in the commercial farming areas ¹		Farmers in the generalized problem areas		Percent of all farms located in generalized problem areas ¹
	Number	Percent	Number	Percent	Number	Percent	
1. Total number of farms:							
High-production farms ²	1, 289, 877	27.0	1, 081, 814	41.6	208, 063	9.5	16.1
Low-production farms ²	1, 575, 313	33.0	859, 569	33.0	715, 744	32.8	45.4
Noncommercial ²	1, 917, 831	40.0	659, 951	25.4	1, 257, 830	57.7	65.6
Total	4, 783, 021	100.0	2, 601, 381	100.0	2, 181, 637	100.0	45.6
2. Farms with off-farm income in excess of value of farm sales:							
High-production farms ²	71, 571	5.0	50, 573	8.3	20, 998	2.6	29.3
Low-production farms ²	287, 785	20.2	169, 057	27.9	118, 728	14.5	41.3
Noncommercial farms ²	1, 064, 871	74.8	386, 803	63.8	678, 068	82.9	63.7
Total	1, 424, 233	100.0	606, 439	100.0	817, 794	100.0	57.4

¹ The generalized problem areas are those areas identified in "Development of Agriculture's Human Resources, H. Doc. No. 149, 84th Cong., 1st sess., Washington, Government Printing Office, 1955."

² See tables 1 and 2 for economic class definition.

Source: Tabulated from U. S. Bureau of the Census, United States census of agriculture, 1954, vol. 1, Counties and State Economic Areas, pt. 4, U. S. Government Printing Office, Washington, D. C., 1956.

Since work was not initiated in the first pilot county until about 2 years ago, this discussion will be in terms of the potential contributions of the program rather than the results achieved by the program.

Two basic references to any discussion of the rural development program are: (1) Development of Agriculture's Human Resources,³ and (2) Rural Development Program Guide.⁴

As I interpret these publications and other material dealing with the rural development program the program has two main economic objectives: First, to promote the general level of local urban-industrial development in the low-income counties and areas so that local non-farm employment can be provided for that segment of the farm population which does not have the managerial ability or cannot achieve the control over resources (land and capital) to make a shift from low-income to commercial agriculture. Second, to provide technical and managerial assistance to those low-income farmers who do have the managerial ability and who can obtain the required control over land and capital resources to make a shift from low-income to commercial agriculture.

1. Expansion of local nonfarm employment is essential to the solution of agriculture's low-income problem throughout most of the generalized low-income areas

It seems clear that the emphasis on the rural development program on expansion of local urban-industrial employment to the solution of agriculture's low-income problem is well placed. In most of the areas now classified as "generalized low-income areas," substantial declines in farm employment are still required if average income per farm family or per farmworker is to be brought into line with the

³ Development of Agriculture's Human Resources, a message from the President of the United States relative to the development of agriculture's human resources—a report on the problem of low-income farmers, H. Doc. No. 149, 84th Cong., 1st sess., Washington, U. S. Government Printing Office, 1955.

⁴ Rural Development Program Guide, U. S. Department of Agriculture, November 1956.

income of farm families and farmworkers in other areas of the Nation.

The importance of local urban-industrial employment to the solution of agriculture's low-income problem rests on two historical observations:

First, in the past, low farm incomes have, by themselves, not been sufficient to bring about the required adjustments between farm employment, resources, and technology. There must also be a "pull" exerted by the availability of jobs outside of agriculture. In general, the availability of jobs and the ease of transportation and communication with employment centers are more important than low farm incomes in determining who shall leave the farm.⁵

The contrast between the relatively isolated, low-income counties of the Cumberland Plateau and the traditionally prosperous counties of the Nashville Basin in Tennessee provides an excellent illustration of this principle. On the plateau the older inhabitants have seen utopian land-settlement schemes ranging from Thomas Hughes' Rugby Colony to Rex Tugwell's Homestead Settlement squeezed out of existence between the twin prongs of infertile soil and isolation from markets. Yet at the same time extremely rapid declines ranging to 30 and 40 percent in the 1940-50 decade alone were occurring in the relatively high income but accessible counties of the Nashville Basin. Similar examples can be drawn from almost every State.

Second, those areas of the Southeast in which farm people have made the greatest economic gains have generally been located in close proximity to developing urban-industrial centers. On the basis of the Department of Agriculture's level of living index—which reflects such important components of rural living as possession of automobile, telephone, and electricity in addition to the income from sale of farm products—there were only 20 counties in the entire Southeast in 1930 which had received a level of rural well-being equal to the national average. By 1950 there were well over 100 such counties. In 1930, these counties were located entirely within the borders of three States, Florida, Kentucky, and Virginia. By 1950 only 2 of the 11 Southeastern States, Arkansas and South Carolina, did not include such areas. The striking fact about this development is that most of the counties of the Southeast which caught up with the national average between 1930 and 1950 either include or are located in close proximity to developing urban centers.

It also seems clear that where rapid declines in farm employment have occurred in the Southeast they have not only resulted in increased output and income per farmworker and per farm family, but little or no adverse affect on total farm output has resulted.^{6 7}

2. Intensive technical and managerial assistance is required to upgrade low-income farmers to successful commercial farmers, even in those areas where farm population and resources are being brought into better balance

The second objective of the rural development program—provision of technical and managerial assistance to those low-income farmers

⁵ E. Bishop and J. G. Sutherland, *Resource Use and Incomes on Small Farms in the Southern Piedmont Area*, North Carolina Agricultural Experiment Station, A. E. Information Series 30, Raleigh, February 1953.

⁶ A. M. Tang, *Industrial Urban Development and Agricultural Adjustments in the Southern Piedmont, 1940-45*, *Journal of Farm Economics*, XXXIV, August 1957, p. 662.

⁷ Vernon W. Ruttan, *Differentials in Farm Income and Employment in the Tennessee Valley Counties*, Tennessee Valley Authority, Knoxville, July 1953.

who do have the managerial ability and who can obtain the required control over land and capital resources to make a shift from low income to commercial agriculture—falls more clearly within the framework of traditional agricultural program objectives.

Achievement of the first objective of the rural development program, however, is very importantly related to the achievement of this second program objective. In order for an individual farmer to make the shift from low income to modern commercial agriculture, he must have managerial ability. He must also be able to obtain control over additional capital assets and additional acres of land. In most areas, it is impossible to enlarge the size of existing farms without at the same time reducing the number of farms in the particular area. The upgrading of any substantial number of low-income farmers to successful commercial farmers is dependent upon decisions by other low-income farmers (or, in some cases, other commercial farmers) to obtain nonfarm employment and thus make the land which they have been farming available for reorganization into larger commercial units.

It cannot be emphasized too strongly that this type of reorganization does not occur automatically, even in the presence of rapid declines in the number of farm families. In many areas, substantial shifts in production patterns are required in order to effectively utilize the land in larger sized units—shifts from row crop to livestock production, for example.

Such changes have usually been easiest to effect in areas where no change in ownership is required. In areas characterized by the cropper system, the Mississippi Delta, for example, mechanized cotton production could be adopted as croppers shifted to other employment with little or no change in landownership. Rapid shifts from low-income to commercial agriculture have been the slowest in areas characterized by small, owner-operated units.

In both situations, the required adjustment will be speeded up if competent technical and managerial assistance of the type contemplated under the rural development program can be provided.

Before leaving this section, I should like to add two qualifications.

First, it should be recognized that, in many low-income areas, there is no potential reorganization of farm units which can provide reasonable levels of living to more than a handful of farm families. This is true in my home county in northern Michigan. It is true in several townships in our pilot county in Indiana. When this situation exists, primary emphasis must be placed on expansion of nonfarm employment if the program is to result in higher incomes rather than wasted effort.

Second, it should be recognized that development of local nonfarm employment cannot be an effective solution to the need for off-farm employment in all rural areas. Not every county includes towns or cities which possess locational advantages sufficiently attractive to serve as a basis for substantial urban industrial development. Where nonfarm development opportunities are limited, the urban industrial development aspects of the program can be handled more effectively on an area rather than a county basis.⁸ And, when locational advan-

⁸ For more detailed discussion of this topic, see Vernon W. Ruttan, *The Potential in Rural Industrialization and Local Economic Development, in Adjusting Commercial Agriculture to Economic Growth*. Iowa State College Press, forthcoming, 1958.

tages for nonfarm employment are severely limited, the only alternative to continued low farm income is long-distance migration.

3. *The rural development program will, on balance, contribute very little to the solution of the problems facing commercial farmers. The program must be justified, by and large, on the basis of its contribution to the solution of the problem of the lower-income farmers and not on the basis of its secondary benefits to commercial farmers*

While there is little doubt that local nonfarm development is an essential ingredient to the solution of agriculture's low-income problem it also seems clear that the extent of local urban-industrial development has little bearing on the major problem facing commercial agriculture—the problem of price and income instability.

The level of farm employment is, along with the rate and stability of (a) population growth, (b) per capita income growth, (c) capital accumulation, and (d) technological change, one of the major factors which determine the level of income per farm worker and per farm family. In spite of the current surplus of farm labor, particularly in the low-income areas, it is entirely unrealistic to expect farm employment to decline at a sufficiently rapid rate to significantly affect either the level or the stability of incomes in commercial agriculture during the next decade.

Even in areas of rapid urban-industrial development the impact on agriculture seems to be channeled mainly through the labor market—the direct increase in incomes resulting from nonfarm employment of farm family members—rather than through an expanding local market for farm products. For the existing commercial farmers the limited benefits from increased local demand for farm products tends to be offset by increases in the wage rate for hired farm workers as a result of greater competition from nonfarm employment. Commercial agriculture, it appears, is more directly affected by the general level of national or regional development than by the level of local urban-industrial development.⁹

This conclusion, that commercial agriculture has little to gain or to lose as a result of even substantial declines in the number of low-income farms and farm families is often taken as an indication that the problem of low-income farm families are of little or no interest to those concerned with agricultural policy.

I definitely want to disassociate myself from this view. There are approximately 2.2 million low-production and noncommercial farms in the United States where the farm operator and his family depend mainly on agriculture as a source of income, as compared to only 1.3 million commercial farms.

If the rural development program can play an important role in promoting the general level of economic development in the low-income areas the results will be fully justified (a) in terms of the increased output which those workers who shift from agricultural

⁹ See, for example, W. E. Christian, *Impact of Industrialization on the Marketing Outlets for Locally Produced Farm Products*. Paper presented at the annual meeting of the Southern Economics Association, Biloxi, Miss., November 20, 1954; Dorothy Dickens, C. D. Welch, Virginia Ferguson, and W. E. Christian, *Industrialization and Its Market for Food Products in the Laurel Trade Area*, Mississippi Agricultural Experiment Station Bull. 540, March 1956; Vernon W. Ruttan, *The Impact of Urban-Industrial Development on Agriculture in the Tennessee Valley and the Southeast*, *Journal of Farm Economics*, XXXVIII (February 1955), pp. 38–58.

to nonagricultural employment make to the growth in the Nation's total output of goods and services; (b) in terms of the adjustment opportunities created for other farmers in those low-income areas where the farm population and resources are brought into better adjustment; and (c) in terms of the higher income and consumption levels which both groups will be able to enjoy. A year's labor spent unproductively on a Tennessee tobacco farm or a Mississippi cotton farm is as surely lost to the Nation as a ton of Tennessee or Mississippi topsoil which is deposited in the Gulf of Mexico.

B. SOCIAL SECURITY FOR FARMERS

The original Social Security Act of 1935 provided for old-age insurance for the industrial workers. In 1939, this program was broadened to provide benefits for dependents and survivors. In 1950, some farm workers and domestics were made eligible for this insurance. Beginning January 1, 1955, self-employed farmers and additional hired farm workers were included under OASI. The act was amended again in 1956 to (a) provide a higher reporting base for farm operators whose annual gross earnings are \$1,800 or less; (b) permit landowners to count rent as income if they participate materially in production or management; (c) and to permit permanently disabled persons over 50 years of age to receive benefit payments.^{10 11}

As in the case of the rural development program, extension of social security to farm operators has been so recent that very little information is available on which to assess the results of the program. Work is currently underway in at least three States, Texas, Maine, and Kentucky, dealing with farmers' knowledge, attitudes, and participation in the OASI program. Only the Kentucky study has been published.¹²

The impact of the OASI program on commercial agriculture is expected to manifest itself directly through higher retirement incomes to farmers who qualify for OASI benefits and through program cost to participants. Secondary effects are expected to manifest themselves mainly through an increase in the number of farm operators who are able to retire.

1. Retirement benefits are expected to be greatest and participation highest in commercial farming areas

The direct income effects of the program on farmers in high and low-income counties are illustrated in the study of Kentucky farmers and social security. This study was conducted in a relatively high-income, commercial-farming county, in the outer Bluegrass area (Harrison) and in two relatively low-income counties on the Cumberland Plateau margin (Menifee and Wolfe). Striking differences in the level of OASI protection is exhibited in the two areas (table 4). The proportion of farmers without OASI protection is substantially lower at each age level in the low-income counties than in the Bluegrass county.

¹⁰ E. E. Peterson and E. B. Hill, *Farm Families and Social Security*, North Central Farm Management Extension Committee Publication No. 3, University of Nebraska, November 1955.

¹¹ Committee on Finance, U. S. Senate, *Old-Age, Survivors, and Disability Insurance and Public Assistance, Showing Changes Made by the Social Security Amendments 1956*, Washington, U. S. Government Printing Office (1956).

¹² C. M. Coughenour and John R. Christiansen, *Kentucky Farmers and Social Security*, University of Kentucky Agricultural Experiment Station Progress Report No. 44, Lexington, December 1956.

Of the farmers who will reach retirement age within the next decade and a half—those in the 50–64-year-age bracket—only 35 percent are covered by OASI, in the mountain counties. This stands in sharp contrast to the 68.3 percent of this age bracket covered by OASI in the Bluegrass county. In both areas we can expect the percentage of farm operators covered by OASI to increase as more of the farmers who have adequate earnings are brought under the program. In the low-income mountain counties, however, fully 25 percent of the farm operators in the 50–64 age group had inadequate earnings to obtain protection.

TABLE 4.—Percentage distribution of farmers according to OASI protection after 1956, by study area and age

	All farmers		With social security protection	Without social security protection		Undefined
	Number	Percent		Adequate earnings to obtain protection	Inadequate earnings to obtain protection	
Harrison County.....	216	100.0	70.9	24.5	4.6	
Age: Under 35 years.....	39	100.0	76.9	23.1		
35 to 49 years.....	71	100.0	80.3	19.7		
50 to 64 years.....	63	100.0	68.3	25.4	6.3	
65 years and over.....	43	100.0	53.5	32.6	13.9	
Menifee and Wolfe Counties.....	334	100.0	38.6	39.2	21.3	0.9
Age: Under 35 years.....	31	100.0	29.0	51.6	16.2	3.2
35 to 49 years.....	109	100.0	41.3	45.0	12.8	.9
50 to 64 years.....	120	100.0	35.0	39.2	25.0	.9
65 years and over.....	74	100.0	44.6	25.7	29.7	

Source: C. M. Coughenour and J. R. Christiansen, Kentucky Farmers and Social Security, University of Kentucky Agricultural Experiment Station Progress Report 44, Lexington, December 1956.

In spite of the danger involved in generalizing from the results of a single study the results of the Kentucky study do seem sufficiently in line with general expectation to support the conclusion that, initially at least, the greatest income benefits of OASI will be felt by farmers whose incomes place them in groups we have identified as commercial farmers. Substantial numbers of low-income farmers, particularly those located in the low-income counties, will continue to remain untouched by OASI.

2. *Commercial farmers are expected to bear more than a proportionate share of OASI costs. This will tend to be offset by a reduction in old-age-assistance program costs*

The direct income benefits which farmers receive from OASI must, of course, be weighted against the costs of the program. It is generally recognized that payments and benefits schedules result in income transfers among the different groups who participate in OASI. These income transfers are from the higher income to the lower income members and from the members who enter the system when fairly young to those who enter only a few years before beginning to draw benefits.

It is generally conceded, for example, that the higher income commercial farmers' contributions are greater, relative to the benefits they will receive, than are the contributions of the lower income farmers. This excess burden is, in part at least, being offset by reduced taxes

resulting from a decline in the number of recipients of old-age assistance.

Prior to extension of OASI to farm operators and hired farm-workers, a substantial share of the farm population was not able to accumulate the resources to provide adequate economic security in old age. This was true of the lower income farm families in the commercial farming areas and of a high proportion of all farm families in the low-income areas. At the time extension of OASI benefits to farm people was being discussed it was frequently pointed out that by making OASI available to farm people the number of farm people receiving old-age assistance would be reduced with a consequent reduction in tax burdens at the county, State, and Federal level. The data in table 5 would appear to support this expectation. Extension of OASI to farm families has been accompanied by continued reduction in the number of old-age assistance recipients.

TABLE 5.—*Old-age assistance and old-age and survivors insurance comparisons*

	Indiana	Perry County ¹	Benton County ¹
1. Old-age assistance, number of recipients:			
June 1953.....	39, 752	272	115
June 1956.....	34, 325	253	79
June 1957.....	32, 611		
2. Old-age and survivors insurance, number of beneficiaries:			
December 1952.....	145, 049	625	262
December 1956.....	227, 212	996	508

¹ Perry County is a pilot county in the rural development program. Benton County is one of the higher income commercial farming counties in Indiana. In 1950, median income for all families and unrelated individuals was \$2,662 in Benton County, and \$2,069 in Perry County. The median income of farm families and unrelated individuals was \$2,911 in Benton County and \$1,054 in Perry County.

Source: Indiana Department of Public Welfare and Social Security Administration.

It is true, of course, that most of the burden of the old-age-assistance program is borne at the State and Federal level. Local contributions are small even when compared to receipts from general property taxes (table 6). Where a major share of the total cost of old-age assistance is borne by the State and Federal Government, local property owners, including owners of farmland, stand to gain but not out of proportion to other groups in the same income range.

TABLE F.—*Importance of old-age assistance in relation to total gross county disbursements, 1954*

[Dollars in thousands]

	Indiana	Perry County ¹	Benton County ¹
1. Disbursements:			
Total gross.....	\$116, 089	\$462. 8	\$437. 7
Old-age assistance.....	\$22, 696	\$103. 5	\$74. 2
Disbursements for old-age assistance as a percent of total.....	19. 6	22. 4	17. 0
2. Receipts from general property taxes.....	\$40, 097	\$127. 3	\$127. 7
Old-age assistance disbursements from local funds.....	\$3, 157	\$9. 8	\$10. 6
Disbursements for old-age assistance from local funds as a percent of property tax.....	7. 9	7. 7	8. 3

¹ Perry County is a pilot county in the rural development program. Benton County is one of the higher income commercial farming counties in Indiana. In 1950, median income for all families and unrelated individuals was \$2,662 in Benton County, and \$2,069 in Perry County. The median income of farm families and unrelated individuals was \$2,911 in Benton County and \$1,054 in Perry County.

Source: Statistical Report, State of Indiana, Period Ending June 30, 1954, Statistical Department, State Board of Accounts.

3. *Secondary effects of extension of OASI to farm people are expected to manifest themselves through an increase in the number of farm operators who retire. Initial effects in the form of a more rapid rate of increase in farm size and higher farm output, will be felt most strongly in commercial farming areas. Some increase in farm output is also expected as farmers attempt to build up their earnings as a base for higher benefits*

There has been a good deal of informal speculation among those interested in the OASI as to the effects of the program on the number of farmers who retire. The point has been made that in the commercial farming areas, OASI benefits would provide a level of income which would permit a substantial increase in the number of farmers who retire. Instead of the traditional decline in the level of production which usually occurs as a farmer reduces his activity level with advancing age, the operation of the farm would be transferred to younger hands. In areas with commercial farming potential the effect of this increase in retirement would be to speed up increases in farm size and raise the level of farm output. In areas with limited potential for commercial agriculture, the increase in retirement would speed up the rate at which the land was shifted completely out of agriculture to forest or recreational use.

The Kentucky study is entirely consistent with our expectations with respect to the effect of the OASI program in commercial farming areas. In the low-income areas, however, the implication of the Kentucky study is that the expected impact of OASI payments—resulting in a shift from low-income to commercial agriculture or a shift from low-income agriculture to nonagricultural land use—will be somewhat less than was at first anticipated.¹³

The permission to earn up to \$1,200 per year without reducing their social-security payments will probably cause many low-income farmers to remain active and it may even cause some part-time farmers and rural residents to increase their level of farm activity.

The opinion has also been expressed that the program would stimulate older farmers to build up their net farm earnings in the years immediately prior to retirement in order to be able to draw larger retirement benefits.¹⁴ There is little doubt that the program has had, and will continue to have, this effect. Although no measure of its magnitude is available, to the extent that OASI does encourage this increased output, the effect on farm prices will be negative.

C. SUMMARY

In summary, I would like to reemphasize the following points:

First, with respect to the rural development program:

1. Expansion of local nonfarm employment is essential to the solution of agriculture's low-income problem throughout most of the "generalized low-income areas."

2. Intensive technical and managerial assistance is required to upgrade low-income farmers to successful commercial farmers even

¹³ See J. H. Sitterley, *The Labor Market and the Employment Service: Comment, in Adjusting Commercial Agriculture to Economic Growth*, Iowa State College Press, forthcoming, 1958.

¹⁴ Sitterley, *op. cit.*

in those areas where farm population and resources are being brought into better balance.

3. The rural development program will, on balance, contribute very little to the solution of the problems facing commercial agriculture. The program must be justified, by and large, on the basis of its contribution to the problems of the lower income farmers and not on the basis of its secondary benefits to commercial agriculture.

Second, with respect to the extension of old-age and survivors insurance to farm people:

1. Retirement benefits are expected to be the greatest and participation highest in commercial farming areas.

2. Commercial farmers are expected to bear more than a proportionate share of OASI costs. This will tend to be offset by a reduction in old-age assistance program costs.

3. Secondary effects of extension of OASI to farm people are expected to manifest themselves through an increase in the number of farm operators who retire. Initial effects, in the form of a more rapid rate of increase in farm size and higher farm output, will be felt most strongly in the commercial farming areas. Some increase in farm output is also expected as farmers attempt to build up their earnings as a base for higher benefits.

OPPORTUNITIES FOR OFF-FARM EMPLOYMENT

Harold G. Halcrow, University of Illinois

One of the most important changes suggested in the economic and social structure of American agriculture is the steady increase in non-farm income of farm people and the continued increase in off-farm employment of commercial farm operators.

Throughout all major regions or geographic divisions of the United States the number of commercial farm operators working off farm 100 days or more during a calendar year has shown a steady upward trend. This trend is more remarkable in view of the continued decline in the total number of commercial farms. Also the aggregate receipts of commercial farm families from nonfarm sources has increased. This increase has been in total dollars per farm family as well as in percentage of total farm family income.

These trends indicate that a closer economic and social relationship is developing between farm people and the nonfarm economy. Adjustments are taking place in employment of farm families that will help to alleviate some of the low-income conditions in agriculture. Given the opportunity, farm people will take advantage of off-farm employment. Similarly, programs to create greater opportunities for off-farm employment of farm people are important for the welfare of farm families.

To determine some of the possibilities for expanding off-farm employment, and to help judge how such employment relates to the welfare of farm people, we shall discuss the following: (1) Comparisons of off-farm income with net income from farming, (2) the distribution of off-farm income by class of farm, (3) trends in off-farm employment and income of commercial farmers, (4) off-farm income and employment by region or by geographic division, (5) economic conditions favoring a high level of off-farm income and employment, (6) effects of off-farm employment on farm-operator efficiency and family income, and (7) programs to increase off-farm income and employment.

COMPARISONS OF OFF-FARM INCOME WITH INCOME FROM FARMING ¹

In recent years off-farm income of farm people has been at least two-thirds as large as the realized net income from agriculture and, for this reason, the opportunities farm people have or can develop for off-farm employment are quantitatively important in improving

¹ Data in this paper are drawn largely from Harold G. Halcrow, *Farmers and Farm Production in the United States, 1954 census of agriculture (a cooperative report)*, Part-Time Farming, vol. III, pt. 9, ch. VIII. Bureau of the Census, U. S. Department of Commerce and Agricultural Research Service, U. S. Department of Agriculture, Washington, 1956. Unless otherwise noted this report is the source for data given in this paper.

their income position.² In 1955, according to a special survey of the Agriculture Division, Bureau of the Census, the total off-farm income of farm-operator families in the United States was \$8 billion, of which \$6.9 billion came from nonfarm sources and \$1.1 billion was from employment, rent, etc., on a farm other than that of the operator. In comparison, in 1955 according to estimates of the Agricultural Marketing Service, USDA, gross farm income of \$32.9 billion included \$21.6 billion production expenses and \$11.3 billion realized net income from agriculture.

About \$6.3 billion of the \$8 billion off-farm income is estimated to be from off-farm employment. The largest single source of off-farm income, \$3.4 billion in 1955, is income from working for others for wages or salary received by the farm operator. In addition, about \$1.6 billion was income received by the farm wife and by other members of the farm family, which is presumed to be largely receipts from off-farm employment. Also, another \$1.3 billion is income received by the farm operator from off-farm business or self-employment.

DISTRIBUTION OF OFF-FARM INCOME BY CLASS OF FARM

The Census of Agriculture divides farms into eight economic classes. Classes I to V includes all farm operators with value of farm sales annually of \$1,200 or more. Class VI includes farm operators selling between \$250 and \$1,199 worth of produce, provided the operator does not work off farm 100 days, and the income of the family does not exceed the value of farm sales. The farm operators in these first six classes are called commercial farmers in this paper, as is usual in census publications. In addition, class VII farm operators, or part-time farmers, sell \$250 to \$1,199 of farm produce and work 100 days or more off farm or the income of the family from off-farm sources exceeds the value of farm produce sold. Class VIII farms, or residential farmers, sell less than \$250 worth of farm produce. Table 1 shows the distribution of farms in the United States by economic class according to the censuses of 1950 and 1954.

Tables 2, 3, and 4 present the distribution of off-farm income according to economic class. As is shown in table 3, off-farm income averaged \$1,682 per farm in 1955 for all farms in the United States, with the average for farms in class I, class VII, and class VIII being about double the average for each of the other classes. Farm families on class I farms derive the major part of their off-farm income from custom work or from investments in land, real estate, business, etc., while the off-farm income of the part-time and residential farmers is largely from wages or salary. From classes II through V total off-farm income of the farm family does not vary widely by economic class, although income from nonfarm sources is in inverse ratio to size of farm with an average of \$862 per farm for class II farms compared with \$1,479 for those in class V.

² Off-farm income refers to income earned or received by the farm family from sources other than the farm of the operator. Off-farm income consists (1) of nonfarm income from sources outside of farming and (2) of income from working on a farm other than that of the farm operator, rent from farm real estate, etc.

TABLE 1.—*Distribution of farms by economic class and percent change, for the United States—Censuses of 1950 and 1954*

Economic class	Value of farm sales	Number of farms (thousands)		Percent distribution		Percent change, 1950-54
		1950	1954	1950	1954	
United States.....		5,379	4,783	100.0	100.0	-10.2
Class I.....	\$25,000 and over...	103	134	1.9	2.8	+30.1
Class II.....	\$10,000 to \$24,999...	351	449	7.1	9.4	+17.8
Class III.....	\$5,000 to \$9,999.....	721	707	13.4	14.8	-2.0
Class IV.....	\$2,500 to \$4,999.....	852	812	16.4	17.0	-8.0
Class V.....	\$1,200 to \$2,499.....	901	763	16.8	16.0	-15.4
Class VI.....	\$250 to \$1,199.....	717	462	13.3	9.7	-35.6
Part-time (Class VII).....	\$250 to \$1,199.....	639	575	11.9	12.0	-10.0
Residential (Class VIII).....	Under 250.....	1,029	878	19.1	18.4	-14.8
Abnormal.....		4	3	.1	.1	-25.0

TABLE 2.—Off-farm income of farm-operator families by source of income, by class of farm, aggregate for the United States, 1955

[In thousands of dollars]

Source of Income	United States	Group I			Group II				Group III			
		Total	Class I	Class II	Total	Class III	Class IV	Class V	Total	Class VI	Part-time	Residential
Total off-farm income of farm-operator families:												
Total from all sources.....	8,006,472	1,009,530	392,575	616,956	2,876,423	835,290	1,008,824	1,032,308	4,120,518	390,731	1,683,006	2,046,781
Total farm income (except this farm).....	1,066,728	343,918	170,731	173,188	179,115	151,107	116,856	275,733	64,056	99,247	112,430	
Total nonfarm income.....	6,939,744	665,612	221,844	443,768	2,429,347	656,175	857,717	915,454	3,844,785	326,676	1,583,759	1,934,351
Income received by farm operator:												
Income from off-farm business or self-employment.....	1,267,414	243,524	121,617	121,907	462,309	122,460	175,042	164,807	561,581	43,675	261,682	256,224
Farm customwork.....	205,521	81,366	46,415	34,951	110,074	48,268	31,483	30,323	14,081	3,557	7,249	3,275
Farm trucking and hauling.....	65,485	7,819	-----	7,819	29,258	5,008	13,523	10,727	28,408	2,852	6,141	19,415
Nonfarm business.....	996,408	154,339	75,202	79,137	322,977	69,185	130,036	123,756	519,092	37,267	248,292	233,534
Income from working for others for wages or salary.....	3,423,210	236,129	95,006	141,122	1,043,567	202,809	360,036	480,722	2,143,514	82,325	922,179	1,139,009
Farm work.....	229,593	91,972	61,034	30,938	68,876	20,155	27,396	21,326	68,745	12,778	27,029	28,938
Nonfarm work.....	3,193,617	144,157	33,973	110,184	974,691	182,655	332,640	459,396	2,074,769	69,547	895,150	1,110,072
Income from rental of farm real estate.....	455,880	126,153	55,708	70,445	200,064	90,920	63,296	45,848	129,663	32,070	49,160	48,433
Income from rental of nonfarm real estate.....	173,014	24,460	9,572	14,889	73,279	32,420	22,395	18,465	75,274	5,120	44,323	25,831
Income from roomers and boarders.....	53,183	4,205	1,200	3,005	20,032	7,443	6,288	6,300	28,946	2,336	13,278	13,331
Income from interest, dividends, trust funds, or royalties.....	450,052	150,927	57,538	93,388	212,789	114,943	68,839	29,007	86,336	5,330	17,025	63,981
Income from veteran's pensions and compensation, veteran's school allotment, servicemen's family allotment.....	189,832	11,749	1,675	10,074	77,955	25,212	22,596	30,148	100,128	26,378	27,908	45,843
Income from retirement pay, unemployment compensation, old-age pension, annuities, alimony, regular contributions or welfare received.....	325,559	8,766	1,286	7,480	54,420	8,270	15,410	30,740	262,372	43,704	77,956	140,713
Any other personal income.....	45,480	6,967	2,408	4,559	25,499	5,948	12,437	7,114	13,015	3,118	3,795	6,102
Income received by wife.....	828,916	83,159	23,287	59,872	350,153	93,715	154,278	102,160	395,603	62,909	173,672	159,023
From farm sources.....	22,401	3,145	150	2,994	11,731	3,391	6,952	1,389	7,526	4,996	830	1,699
From nonfarm sources.....	806,514	80,015	23,137	56,877	338,422	90,325	147,326	100,771	388,078	57,912	172,842	157,324
Income received by other family members.....	793,932	113,490	23,277	90,213	356,355	131,150	108,207	116,998	324,087	83,766	92,028	148,293
From farm sources.....	87,848	33,463	7,424	26,039	27,073	11,375	8,457	7,241	27,311	7,802	8,837	10,671
From nonfarm sources.....	706,084	80,027	15,853	64,174	329,282	119,775	99,750	109,757	296,776	75,964	83,191	137,622

TABLE 3.—Average off-farm income of farm-operator families by source of income, by class of farm, for the United States, 1955

Source of income	United States	Group I			Group II				Group III			
		Total	Class I	Class II	Total	Class III	Class IV	Class V	Total	Class VI	Parti- tial	Residen- tial
Average off-farm income of farm-operator families:												
Total from all sources.....	\$1,682	\$1,538	\$2,779	\$1,198	\$1,332	\$1,161	\$1,228	\$1,668	\$2,119	\$834	\$2,730	\$2,382
Total farm income (except this farm).....	224	524	1,209	336	207	249	184	189	142	137	161	131
Total nonfarm income.....	1,458	1,014	1,571	862	1,125	912	1,044	1,479	1,977	698	2,569	2,251
Income received by farm operator:												
Income from off-farm business or self-employment.....	266	371	861	237	214	170	213	266	289	93	424	298
Farm customwork.....	43	124	329	68	51	67	38	49	7	8	12	4
Farm trucking and hauling.....	14	12	15	15	14	7	16	17	15	6	10	23
Nonfarm business.....	209	235	532	154	150	96	168	200	267	80	403	272
Income from working for others for wages or salary.....	719	360	673	274	483	282	438	777	1,102	176	1,496	1,325
Farmwork.....	48	140	432	60	32	28	33	34	35	27	44	34
Nonfarmwork.....	671	220	241	214	451	254	405	742	1,067	148	1,452	1,292
Income from rental of farm real estate.....	96	192	394	137	93	126	77	74	67	68	80	56
Income from rental of nonfarm real estate.....	36	37	68	29	34	45	27	30	39	11	72	30
Income from roomers and boarders.....	11	6	8	6	9	10	8	10	15	5	22	16
Income from interest, dividends, trust funds, or royalties.....	95	230	407	181	99	160	84	47	44	11	28	74
Income from veteran's pensions and compensation, veteran's school allotment, serviceman's family allotment.....	40	18	12	20	36	35	28	49	51	56	45	53
Income from retirement pay, unemployment compensation, old-age pension, annuities, alimony, regular contributions or welfare received.....	68	13	9	15	25	11	19	50	135	93	126	164
Any other personal income.....	10	11	17	9	12	8	15	11	7	7	6	7
Income received by wife.....	174	127	165	116	162	130	188	165	203	134	282	185
From farm sources.....	5	5	1	6	5	5	8	2	4	1	2	2
From nonfarm sources.....	169	122	164	110	157	126	179	163	200	134	280	183
Income received by other family members.....	167	173	165	175	165	182	132	189	167	179	149	173
From farm sources.....	18	51	53	51	13	16	10	12	14	17	14	12
From nonfarm sources.....	148	122	112	125	152	167	121	177	153	162	135	160

TABLE 4.—Average off-farm income of farm-operator families by farms reporting specified sources, by class of farm, for the United States, 1955

Source of income	United States total	Group I			Group II				Group III			
		Total	Class I	Class II	Total	Class III	Class IV	Class V	Total	Class VI	Part-time	Residential
Average off-farm income per farm-operator family:												
Income received by farm operator:												
Income from off-farm business or self-employment:												
Farm customwork.....	\$762	\$1,089	\$2,874	\$597	\$664	\$599	\$687	\$774	\$480	\$322	\$916	\$316
Farm trucking or hauling.....	860	981		981	765	369	1,016	942	950	510	516	1,566
Nonfarm business.....	2,249	3,390	4,666	2,691	2,054	2,010	2,229	1,919	2,161	838	2,609	2,323
Income from working for others for wages or salary:												
Farmwork.....	712	1,540	3,739	713	592	578	628	564	470	288	689	462
Nonfarmwork.....	2,220	1,445	2,186	1,309	1,770	1,275	1,521	2,433	2,632	845	2,878	2,811
Income from rental of farm real estate.....	821	1,659	1,937	1,490	953	1,408	847	649	482	492	483	474
Income from rental of nonfarm real estate.....	701	689	688	689	663	813	627	529	748	366	946	650
Income from roomers and boarders.....	421	674	508	775	364	412	316	370	445	371	462	445
Income from interest, dividends, a trust fund, or royalties.....	505	773	1,283	621	438	576	391	263	413	111	196	861
Income from veteran's pensions and compensation, veteran's school allotment, serviceman's family allotment.....	743	543	277	646	758	788	578	947	764	831	620	843
Income from retirement pay, unemployment compensation, old-age pension, annuities, alimony, regular contributions or welfare received.....	654	594	544	604	594	635	517	629	671	580	673	704
Any other personal income.....	527	420	718	344	708	516	722	983	386	1,594	207	456
Income received by wife:												
From farmwork.....	254	243	78	272	360	458	600	102	176	295	79	111
From nonfarmwork.....	1,204	1,136	1,306	1,079	1,254	1,189	1,263	1,304	1,178	1,015	1,435	1,036
Income received by other family members:												
From farmwork.....	356	825	870	813	291	423	211	277	241	295	274	195
From nonfarmwork.....	1,391	1,297	911	1,449	1,535	1,617	1,419	1,564	1,282	1,366	1,368	1,197

As is shown in table 4, the averages of off-farm income vary directly by class of farm for those operators reporting a specified source. This is especially true for the commercial operators in class I through class V. Returns from nonfarm business average \$2,691 per farm for class II operators, for example, compared with \$1,919 for class V. The income received by other family members from nonfarm work does not seem to bear any distinct relationship, however, to size of farm.

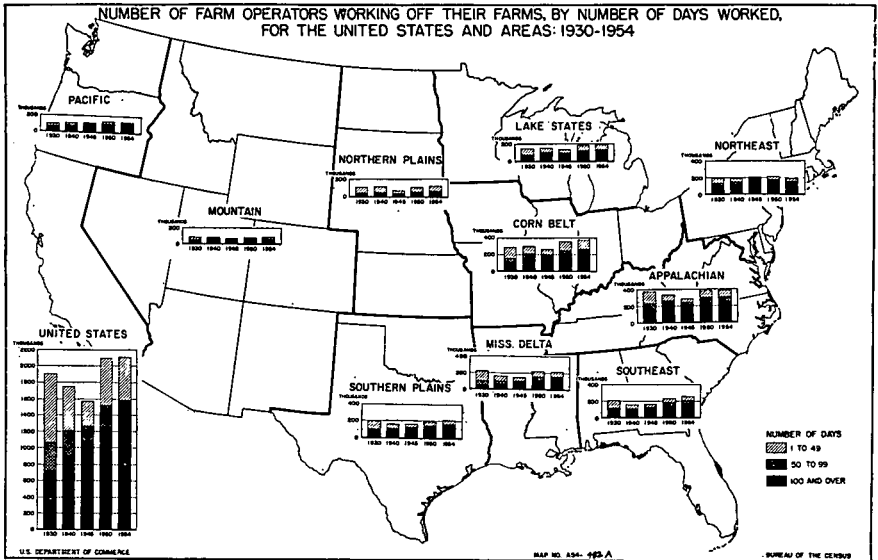
TRENDS IN OFF-FARM EMPLOYMENT AND INCOME OF COMMERCIAL FARMERS

As is shown in figure 1, the number of farm operators who work off farm 100 days or more has increased steadily over the past 25 years, from about 0.7 million in 1930, to about 1 million in 1945 and to 1.3 million in 1954. This represents almost a doubling in 25 years of the number working off farm 100 days or more, during which time the total number of workers on farms declined by almost 50 percent. Since 1949, the trend toward increased off-farm employment apparently has been stepped up. The changes from 1949 to 1954, shown in table 5, suggest a considerable increase in the percentage of farm operators in classes II through V working off farm 100 days or more. In class III, for example, while the total number of farms declined by 2 percent, the number of operators working off farm 100 days or more increased by 42.4 percent and the number with income from off-farm sources exceeding the value of farm products sold increased by 18.8 percent. Thus, the increase in off-farm employment and income was greatest among the farm-operator families selling between \$1,200 and \$10,000 of farm produce. At the same time, there has been a marked decline in the number of part-time and residential farmers, who sell less than \$1,200 of farm produce per year.

TABLE 5.—Percentage change in number of farm operators, number of farm operators working off farm 100 days or more, and farm operators with other income exceeding value of farm products sold, by economic class, 1949-54

Farm class	Percent change in number of farms	Percent change in number of operators working off farms 100 days or more	Percent change in number of farm operators with other income exceeding value of farm products sold
United States, all farms.....	-10.2	+6.3	-9.1
Commercial farms, class I to V.....	-4.1	+28.8	+7.1
Class I.....	+30.1	+25.3	+29.8
Class II.....	+17.8	+37.6	+24.9
Class III.....	-2.0	+42.4	+18.8
Class IV.....	-8.0	+35.1	+13.3
Class V.....	-15.4	+19.3	-.4
Class VI.....	-36.6		
Part-time (class VID).....	-14.8	+3.4	-13.9
Residential (class VIII).....	-25.0	-5.9	-13.0

FIGURE 1



NONFARM INCOME AND OFF-FARM EMPLOYMENT BY GEOGRAPHIC DIVISION

In various regions or geographic divisions of the United States the trends toward increasing off-farm employment are strong enough to suggest that the increase in off-farm employment could go considerably further without reducing the output of farm products. This seems to be particularly true in the Lake States, the Corn Belt, the Appalachian region, and in the Southeast. As is shown in figure 1, in the mountain region the trend toward off-farm employment of 100 days or more has been rather slight, and in the Northeast the number of farm operators working off farm 100 days or more actually declined between 1945 and 1954. In areas such as the Mountain and Great Plains region, the low off-farm employment, or lack of increase in off-farm employment, is likely associated with the considerable distances involved on the part of farm operators in getting to a place of employment. In areas such as the Northeast, where industrial development is considerably far advanced, the hypothesis might be advanced that the farm community had reached a plateau in total off-farm employment and no further increases were likely. Such a presumption or hypothesis does not seem very likely or valid, however, in view of the information in tables 6 and 7, where the number of farm operators working off farm 100 days or more are classified both by geographic division and by economic class. Although the total number of farm operators working off farm 100 days or more declined between 1949 and 1954, the number of operators so working in classes II to V increased substantially. Also, as in table 8, the number of commercial farm operators with other income exceeding the value of farm products increased in almost all geographic divisions or regions.

TABLE 6.—Number of farm operators working off farm 100 days or more, by geographic division, by economic class, 1954 and 1949

Geographic division and year	All farms	Com- mercial farms	Class I	Class II	Class III	Class IV	Class V	Part- time	Resi- dential	Ab- normal
United States:										
1954.....	1,333,725	433,746	10,478	33,183	72,263	131,250	186,572	408,690	490,979	310
1949.....	1,254,610	336,796	8,365	24,120	50,742	97,163	156,406	395,029	521,962	823
New England:										
1954.....	33,252	10,719	383	1,374	2,377	3,080	3,505	7,860	14,654	19
1949.....	38,811	9,672	272	1,011	1,817	2,940	3,632	10,301	18,822	16
Middle Atlantic:										
1954.....	93,134	35,461	737	3,197	6,655	11,488	13,384	26,534	31,115	24
1949.....	98,857	28,829	557	2,153	5,192	8,941	11,986	30,990	38,950	88
East North Central:										
1954.....	235,187	105,393	1,208	6,337	18,042	36,095	43,711	69,990	59,762	42
1949.....	220,394	74,160	800	3,473	10,531	23,620	35,736	75,151	134,447	92
West North Central:										
1954.....	139,958	64,011	1,276	5,118	11,951	20,771	24,895	40,975	34,910	53
1949.....	125,486	49,407	1,204	3,884	8,623	14,607	21,089	41,059	34,885	135
South Atlantic:										
1954.....	270,656	62,402	1,722	4,581	8,816	17,299	29,984	79,805	128,418	31
1949.....	252,276	45,988	1,121	3,134	5,428	12,645	23,660	57,130	134,447	128
East South Central:										
1954.....	204,175	44,181	554	1,818	4,319	11,224	26,266	73,898	86,065	31
1949.....	192,643	31,809	384	1,413	3,080	7,649	19,283	67,575	93,179	80
West South Central:										
1954.....	209,647	55,448	1,717	5,031	9,031	15,062	24,607	70,887	83,295	17
1949.....	184,233	47,689	1,647	4,360	7,446	12,474	21,762	57,130	79,343	71
Mountain:										
1954.....	50,472	20,351	826	1,670	3,868	6,404	8,083	13,738	15,843	40
1949.....	46,394	17,668	885	1,656	3,125	5,306	6,696	13,795	14,850	51
Pacific:										
1954.....	97,244	35,280	2,055	4,057	7,204	9,827	12,137	25,003	36,908	53
1949.....	95,516	31,574	1,495	3,036	5,500	8,981	12,562	27,315	36,495	132

TABLE 7.—Number of farm operators working off farm 100 days or more, by geographic division, by economic class, 1954 as percent of 1949

Geographic division	All farms	Com- mercial farms	Class I	Class II	Class III	Class IV	Class V	Part- time	Resi- dential	Ab- normal
United States.....	106.3	128.8	125.3	137.6	142.4	135.1	119.3	103.4	94.1	37.7
New England.....	85.7	110.8	140.8	135.9	130.8	104.8	96.5	76.3	77.8	118.8
Middle Atlantic.....	94.2	123.0	132.3	148.5	128.2	128.5	111.7	85.6	79.9	27.3
East North Central.....	106.7	142.1	151.0	182.5	171.3	152.8	122.3	93.1	84.2	45.6
West North Central.....	111.5	129.6	106.0	131.8	138.6	142.2	118.0	99.8	100.1	39.2
South Atlantic.....	107.3	135.7	153.6	146.2	162.4	136.8	126.7	111.3	95.5	24.2
East South Central.....	106.0	138.9	144.3	128.7	140.2	146.7	136.2	109.4	92.4	38.8
West South Central.....	113.8	116.3	104.2	115.4	121.3	120.7	113.1	124.1	105.0	23.9
Mountain.....	108.8	118.0	93.3	100.8	123.8	120.7	120.7	99.6	106.7	49.4
Pacific.....	101.8	111.7	137.4	133.6	131.0	109.4	96.6	91.5	101.1	40.2

TABLE 8.—Number of farm operators reporting other income of family exceeding value of farm products sold, by geographic division, by economic class, 1954 as percent of 1949

Geographic division	All farms	Com- mercial farms	Class I	Class II	Class III	Class IV	Class V	Part- time	Resi- dential	Ab- normal
United States.....	90.9	107.1	129.8	124.9	118.8	113.3	99.6	86.1	87.0	33.5
New England.....	74.0	96.0	153.8	116.8	87.3	94.0	95.1	67.9	68.9	61.5
Middle Atlantic.....	84.8	107.3	113.7	120.5	95.9	113.4	105.7	77.3	76.9	12.4
East North Central.....	94.3	123.1	129.5	153.5	143.1	132.2	112.8	84.4	80.8	16.3
West North Central.....	96.9	108.4	113.6	104.1	96.3	116.5	107.3	83.5	85.8	50.0
South Atlantic.....	91.7	109.4	179.9	154.3	145.4	110.8	97.7	88.0	88.1	34.3
East South Central.....	82.5	93.4	157.7	106.2	110.6	100.7	88.5	80.8	80.8	34.3
West South Central.....	96.9	99.6	121.6	127.4	122.7	102.4	90.7	96.1	96.3	21.6
Mountain.....	95.6	105.9	83.8	84.7	111.1	109.1	107.3	87.1	95.3	30.8
Pacific.....	92.7	101.4	128.1	121.6	116.9	105.8	89.3	83.2	94.3	50.8

ECONOMIC CONDITIONS FAVORING OFF-FARM INCOME AND EMPLOYMENT

Generally speaking, a high percentage of farm operators working off farm (fig. 2) and working off farm 100 days or more (fig. 3) is found in areas of 2 or 3 specific types. First, and most important, are the areas with considerable urban-industrial development. These have large numbers of employment opportunities near at hand. Typical of these regions or areas are the industrial Northeast, and the Pacific coast. Second are the areas having considerable mining, oil and timber resources. These are found in the Pacific Northwest in Idaho and western Montana, for example, in the Appalachian region, and in eastern Texas and central and eastern Oklahoma. Third, the areas with considerable tourist trade generally are high in off-farm employment. Certain counties in Florida, southern California, and Texas are examples in the South, and certain counties in Maine or in the upper peninsula of Michigan are examples in the North. The areas that have a high percentage of farm operators with other income exceeding the value of farm products sold are generally the same as those in which there is a high percentage of off-farm employment.

FIGURE 2

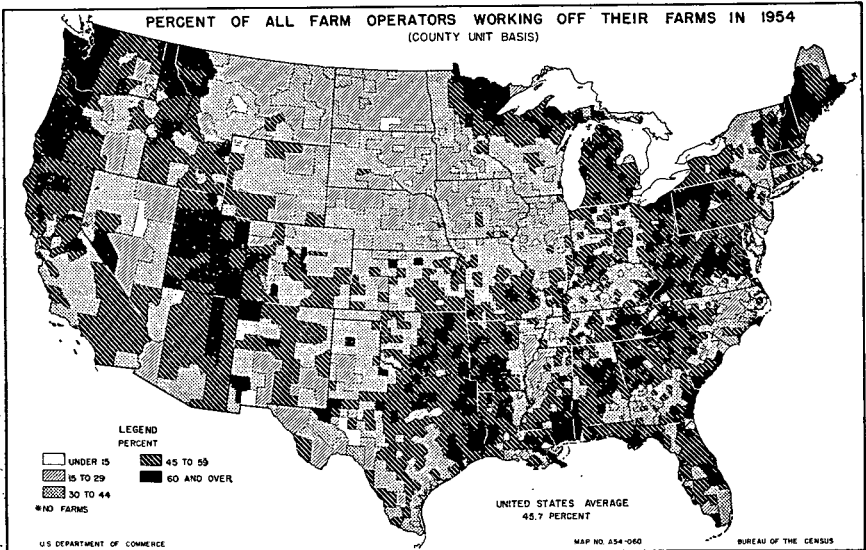
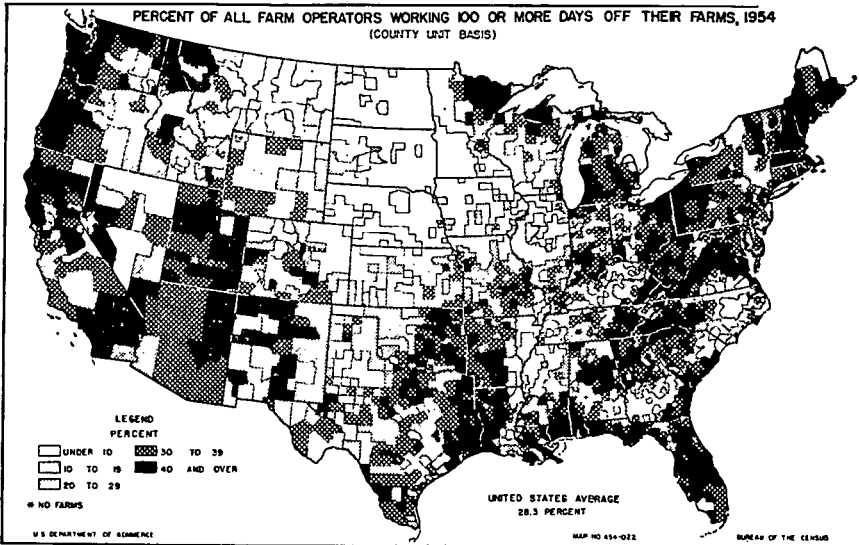


FIGURE 3



With improvements occurring in highways and automobiles and with the spread of urban industries into formerly rural areas, opportunities for off-farm employment undoubtedly are increasing. The rural-urban fringe is widening and broadening and is no longer restricted to a 10- or 20-mile zone around large cities. Throughout the United States commuting appears to be increasing, both in terms of number of people involved and in terms of distances traveled. The participation of farm people in off-farm employment is therefore reaching out to wider areas with more people involved.

Also, reduced labor requirements on family farms are a strong contributing factor in providing time for members of the farm family to participate in off-farm employment. In some areas cash-crop farming permits considerable mobility for farm operators and leaves them with considerable time to engage in off-farm work. In other areas livestock production, in which considerable reliance is placed on pasture, provides opportunities for off-farm work. The type of farm operated by part-time farmers does not differ systematically from that operated by other operators who do not regularly work off farm. Advances in technology and in transportation facilities do account for the increased supply of available off-farm labor.

Small-scale subsistence farming appears to be losing its appeal in areas where employment opportunities are available. The changes in land use brought about by off-farm employment opportunities would seem to be chiefly the result of combining small-scale units into somewhat larger family farms with emphasis in the commercial family farms on enterprises that do not require the farm operator to restrict his entire time to farm operations.

EFFECTS OF OFF-FARM EMPLOYMENT ON FARM-OPERATOR EFFICIENCY AND FAMILY INCOME

The major income effects of urban-industrial employment opportunities is transmitted to agriculture chiefly through the labor market. Urban-industrial opportunity does not result in increased income of the farm family from farming, but it does result in increasing the total income of the farm family, including farm and nonfarm sources.³ The relatively strong positive income effect exerted by industrial off-farm opportunities on agriculture is largely the result of the ability of such development to absorb the formerly underemployed farm labor.⁴

One cannot say definitely what the effect of increased off-farm opportunities will have on labor productivity in agriculture in areas where little underemployment exists, because the effects on labor productivity are related to the technological progress that is made and its effect on labor requirements on farms. Further technological progress in agriculture should make it possible for large numbers of people to move out of agriculture without creating a real labor shortage. The most logical presumption is that increasing off-farm opportunities will continue to drain off the underemployed labor in agriculture, thus resulting in both an increase in total family income in agriculture and an increase in the productivity per worker of those people still continuing farm operations.

Since the adoption of labor-saving and cost-reducing techniques is largely associated with the ability of farmers to acquire more capital, the further development of off-farm income and employment opportunities should contribute to a more rapid technological development on farms. This technological development further reduces the labor requirements on farms and thus encourages continued maintenance or increasing agricultural output with reduced farm labor requirements. For this reason the effect of off-farm employment on agricultural productivity is apt to result in an increase in the output per man-hour in agriculture and a general overall increase in the efficiency of agricultural labor.

PROGRAMS TO INCREASE OFF-FARM INCOME AND EMPLOYMENT

The way to increase off-farm opportunities for farm people is to increase the mobility of their labor through training and education, through the development of industry in formerly rural areas, and through the development of transportation facilities to make it possible to commute longer distances. Specifically, greater mobility can be created by developing and strengthening educational programs to prepare young people in rural areas for broader opportunities throughout the economy. Improved highway transportation facilities would make off-farm employment more readily available to members of commercial farm families. The development of vocational training and guidance programs would help farm people to find their most advantageous opportunities. The development of industries in former rural-urban areas would bring employment closer to farm people.

³ See the study by Vernon W. Ruttan, *The Impact of Urban-Industrial Development on Agriculture in the Tennessee Valley and the Southeast*, *Journal of Farm Economics*, February 1955, pp. 38-56, but especially pp. 47 and 56.

⁴ Anthony M. Tang, *Industrial-Urban Development and Agricultural Adjustments in the Southern Piedmont, 1940-50*, *Journal of Farm Economics*, August 1957, p. 673.

Various studies have shown that migration takes place most easily among people who are less than 30 years of age, and studies of the participation of farm people in off-farm work show that the people from 25 to 54 years of age generally work off farm more days a year than those who are younger or older. These facts suggest that the increases in mobility of the farm population will come chiefly through offering greater educational opportunities to young people and by offering more off-farm employment opportunities to those in middle age from 25 to 50 years of age.

Additional research is needed to determine the most effective way to develop off-farm opportunities for farm people. Such research should cover areas including the following: Commuting patterns and problems in off-farm employment including information on distances, travel, and commuting costs; types of employment utilized by farm people in off-farm employment; effect of off-farm employment on farm labor income and farm efficiency; shifts in farm production patterns due to off-farm employment; types of farm organization best adapted to off-farm employment opportunities; utilization of employment information by farm people; types of training desired for off-farm employment and possible incentives created by training schools, short courses, or institutes.

Additional research along these lines would be directed at two major objectives: (1) Determining how the maximum benefit can be obtained from off-farm employment by farm people, and (2) how the farm operating unit can best be adapted for efficient use of farm resources where off-farm opportunities exist.

An additional objective might be to determine the effect of off-farm employment opportunities on the migration of people from farming to industry.

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VI. ADJUSTING AGRICULTURE THROUGH THE PRICE
MECHANISM

(PAPERS FOR PANEL F)

ADJUSTING AGRICULTURE THROUGH THE PRICE MECHANISM

EFFECTS OF FARM PRODUCT PRICES ON PRODUCTION AND COMMERCIAL SALES

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I. INTRODUCTION

This paper presents some basic facts and considerations about the responsiveness of production and sales of farm products to changes in price. It is conceived as an economist's statement in nontechnical terms of "price elasticity" concepts and a report of what research shows and does not show about price elasticities of demand and supply. These facts and concepts are basic to the analysis of alternative farm programs and hence to the formulation of new programs consistent with given objectives.¹

The concept of price elasticity of demand is really quite simple. It may be defined as the percent change in consumption or commercial sales of a commodity that is associated with a 1 percent change in its price. Other things being equal, an increase in the price of a commodity results in a reduction in its consumption or commercial sales, so price elasticities of demand are invariably negative.

In speaking of "the" elasticity of demand for a commodity many important distinctions should be kept in mind. For example, the elasticity of consumer demand (measured at retail prices) is almost always greater than the elasticity of the corresponding derived demand measured at the farm price level.² The elasticity of demand for a commodity is different in different uses, as for domestic food use, industrial use, export, and storage. Elasticities of demand may vary with the length of time permitted for response—that is, if the price of a commodity increases and remains at the increased level for a year or more, the percentage change in consumption may be different than if the price is maintained at the higher level for only a week or a month. There are special relationships between elasticities of demand for individual commodities, for groups of competing commodities, and for aggregates of many commodities such as "all livestock products," "all food," and "total farm output."

The elasticity of supply of a commodity is defined as the percent change in its production (or in the quantity made available for sale) associated with a 1 percent change in its price. Other things being

¹ For an example of such analysis, see Fox, Karl A., *The Contribution of Farm Price Support Programs to General Economic Stability*, in *Policies To Combat Depression*, Princeton University Press, 1956, pp. 295-349.

² In speaking of demand elasticities, we shall use "greater" to mean a larger absolute value, i. e., -1.0 will be considered "greater" or more elastic than -0.5 .

equal, an increase in the price of a commodity leads, after an appropriate time interval, to an increase in its production. Hence, elasticities of supply are almost invariably positive.

Here again it is important to distinguish carefully between market levels, end uses, and time periods in speaking of "the" elasticity of supply. Elasticities of supply may vary among producing areas within the United States, between the United States and foreign countries and between domestic production and sales out of already existing stocks. While the supply elasticities of interest in the present context are primarily responses of farm production to changes in farm prices, one might also speak of the elasticity of supply for offerings from processors to wholesalers and retailers or from retailers to consumers.

The length of time allowed for response has a clearer and greater importance in defining elasticities of supply than of demand. It is clear that the United States production of wheat (in terms of wheat harvested) cannot be significantly increased between October 1957 and April 1958. Also, if a substantially higher price were guaranteed for 3 to 5 years the response of wheat acreage and production would be considerably greater (in the absence of marketing quotas) than if the same price were guaranteed for only 1 year.

Elasticities of supply for individual commodities are typically greater than those for groups of commodities which compete for the same limited land, capital, and labor resources. Acreages of minor crops may fluctuate from year to year by rather large percentages, while the total acreage of all crops remains nearly constant.

In summary, if we are to speak and think clearly about elasticities of demand or supply we must specify particular commodities, particular levels in the marketing process, particular end uses, and particular lengths of time allowed for the response of sales or production to changes in the relevant prices.

II. EFFECTS OF FARM-PRODUCT PRICES ON COMMERCIAL SALES

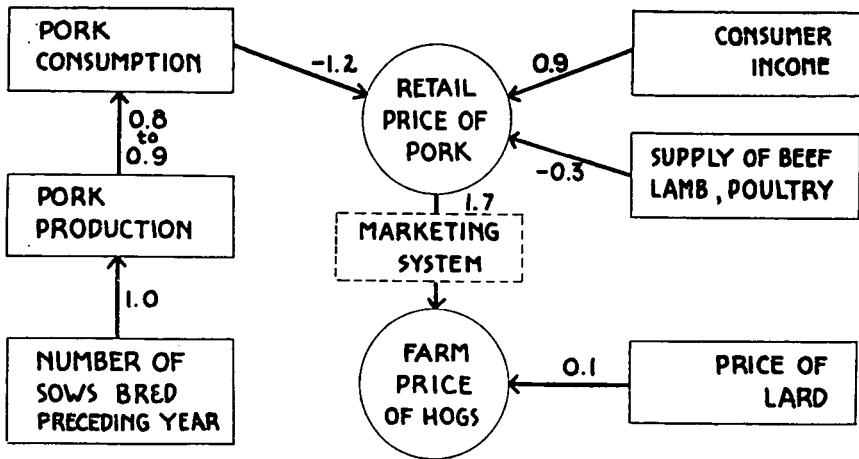
The volume of research on demand is greater than that on supply and there is a good deal of convergence among the quantitative estimates of demand elasticities obtained by different investigators. More is known about demand elasticities on a year-to-year basis than for periods either shorter or longer than a year. This is due partly to the nature of published statistics on prices, supplies, sales, and consumption of farm products. Estimation of demand elasticities for periods longer than a year encounters serious limitations both of data and of available analytical techniques.

The bulk of this section will deal with elasticities of demand as estimated from annual data. This will be followed by a brief statement of some considerations relating to long-run changes in demand.

A. Factors causing short-run changes in commercial sales

The great bulk of the production of perishable crop and livestock products in the United States is consumed in our own country. Imports and exports of such commodities are relatively small. Hence, the demand, supply, and price relationships for many perishable commodities correspond roughly to the pattern shown in figure 1.

SHORT-RUN DEMAND FOR PORK AND HOGS



Simplified: Figures represent percent change in variable at point of arrow associated with 1 percent change in variable from which arrow leads.

FIGURE 1.—Decisions affecting the current year's supply of a perishable commodity available for consumption are typically made several months to a year or more in advance. Practically all of the quantity produced in a given year moves through the marketing system into retail channels, and the retail price adjusts to a level that will move the available quantity into consumption. Marketing margins are fairly stable from year to year, so the farm price for a perishable commodity tends to be determined as retail price minus marketing costs.

The basic unit for studying consumer demand is the individual household or family. Changes in the quantity of any food purchased by a given family depend chiefly upon changes in these factors: (1) Price of the given food; (2) prices of a few closely competing foods; (3) prices of other consumer goods and services; (4) family income; (5) liquid assets held; (6) fixed commitments; and (7) family composition in terms of number of members, age and sex of each member, and occupations of the working members.

Theoretically, it would be possible to estimate the price elasticity of demand for a commodity on the part of each family and single individual in the United States and combine these estimates to obtain the average elasticity of demand for the commodity on the part of all consumers taken together. In practice, our estimates are usually based directly upon prices, per capita consumption, and per capita income on an annual average basis for the Nation as a whole. If the different series of data are properly defined and accurately measured we can arrive at reasonably accurate estimates of the elasticity of consumer demand for a commodity in past periods. Inevitably, some risk of error is involved in applying elasticities from past periods to future years. However, we have had enough experience to know

that price elasticities of consumer demand for major commodities do not change radically over periods of 1 to 5 years.

Consumer demand for a commodity must be analyzed in terms of retail prices. If we wish to know the implications for farm prices of a given demand situation at the consumer level, we must take explicit account of factors affecting the marketing margin between farmers and consumers.

There is a great deal of confusion about the way in which marketing margins vary and the reasons for their variations. Some economists have reported that farm and retail prices of most foods fluctuate as though they were related to each other by (1) certain fixed charges (costs of processing, transportation, and containers) and (2) certain percentage markups, particularly in wholesale and retail distribution.

An alternative diagnosis is that, on an annual average basis, most marketing margins change directly with changes in marketing costs. If farm prices rose sharply relative to costs of marketing, fixed percentage markups would result in large windfall profits to retailers. But as a result of competition among retailers for consumer trade, percentage markups would be reduced until the actual dollar margins were little if any larger than before.

For most farm products, I think this latter interpretation is reasonably close to the truth, despite local disturbances and exercises of bargaining power that suggest something less than perfect competition. If extensive gouging based on monopoly power were prevalent in the food-marketing system one might expect marketing margins to show sharp changes from year to year. The marketing-margin statistics I have examined do not show this; pronounced trends may appear over a series of years, but changes from 1 year to the next are usually small. (Some recent data for pork and hogs are shown in fig. 5, p. 416.)

The above diagnosis implies that consumer demand for many food products is transmitted through the marketing system in a very simple way. In the economist's language, demand at the farm level is derived from consumer demand by subtracting marketing charges. If a commodity has many different uses, the total farm demand is determined by the combination of derived demands from each of these end uses. Demand for a storable commodity at the farm level also involves speculative elements based on anticipations of future price changes. Under free-market conditions, the aggregate demand for a product at the farm-price level may be considerably more elastic than its derived demand from domestic consumption alone. For example, the demand for wheat for food use in the United States is almost completely inelastic, but the demands for wheat for export, livestock feed, and storage provide a relatively high total elasticity when the United States farm price of wheat is fairly close to world market and/or feed-grain price levels.

B. Research results

Figure 2 illustrates the use of a demand curve for beef, estimated from 1922-41 data, to explain the change in retail prices of beef from 1954 to 1956 as a consequence of changes in the per capita consumption of beef and pork and the per capita income of consumers.

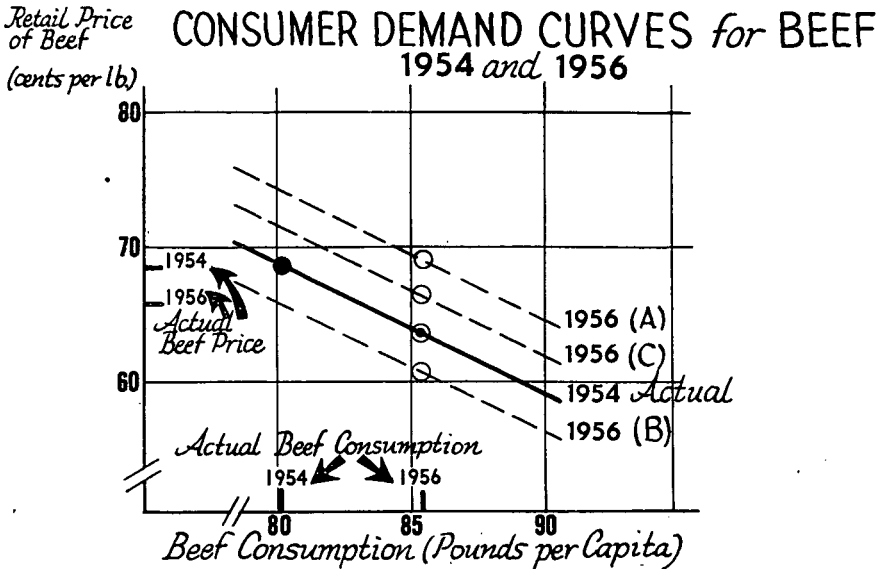


FIGURE 2.—The different demand curves for beef have the following significance:

1954 actual: Demand curve passing through the 1954 observed price and consumption point with same price elasticity as in 1922-41.

1956 (A): The 1954 demand curve adjusted to the 1956 level of consumer income.

1956 (B): The 1954 demand curve adjusted to the 1956 level of pork supplies.

1956 (C): The 1954 demand curve adjusted to 1956 levels of consumer income and pork supplies.

The actual retail prices of beef in 1954 was 68.5 cents. The estimated 1956 prices based on the different demand curve adjustments are:

1954 actual: 63.6 cents

1956 (A): 69.1 cents

1956 (B): 60.9 cents

1956 (C): 66.4 cents

Logically the 1956 (C) demand curve should give the best estimate, and it does. The actual retail price in 1956 was 65.7 cents, only 0.7 cents below estimate 1956 (C).

The price elasticity of consumer demand for beef is indicated by the relative movements of consumption and retail price along the 1954 actual demand curve. This elasticity is between -0.8 and -1 . To estimate such a price elasticity one must be careful to separate out the effects of factors such as changes in consumer income and in consumption and prices of competing foods. In figure 2, these factors are assumed to change the level of the demand curve from 1954 to 1956 but not its slope.³

³ Figure 2 is adapted from a 1922-41 demand curve in which elasticities remain constant despite shifts in the level of the curve or movements along the curve. This result is obtained by fitting a demand function to logarithms of the original data. With arithmetic straight lines, such as those shown in figure 2, elasticities of demand vary slightly from point to point along a given demand curve or for the same consumption point on demand curves at different levels.

The hollow dots in figure 2 illustrate the approximate effects of changes in these other factors. For example, the increase in consumer income from 1954 to 1956 apparently would have offset the effect of the increased supply of beef so that, if only these two factors had been involved, the retail price of beef in 1956 would have been as high or slightly higher than in 1954. However, the sharp increase in per capita supplies of pork affected beef prices adversely, so that, taking the 3 factors together, we would have expected a drop of about 2 cents a pound in retail beef prices from 1954 to 1956. The actual price drop was about 2.8 cents. This suggests (though it does not wholly prove) that the elasticity of consumer demand for beef with respect both to its own price and to other factors is not much different than in 1922-41.⁴

Figure 3 shows a similar attempt to apply a 1922-41 demand curve for pork to an explanation of the change in retail pork prices from 1954 to 1956. The price elasticity of consumer demand for pork measured along the 1954 actual demand curve is between -0.7 and -0.9 . The increase in consumer income from 1954 to 1956 tended to raise the demand curve for pork while the increase in beef supplies tended to lower it. The 1922-41 analysis also indicated that, other things being equal, the price of pork was tending to decline about 1.5 percent a year.

⁴A study of 1947-56 data now being conducted by Wilbur R. Maki lends further support to this conclusion.

CONSUMER DEMAND CURVES for PORK 1954 and 1956

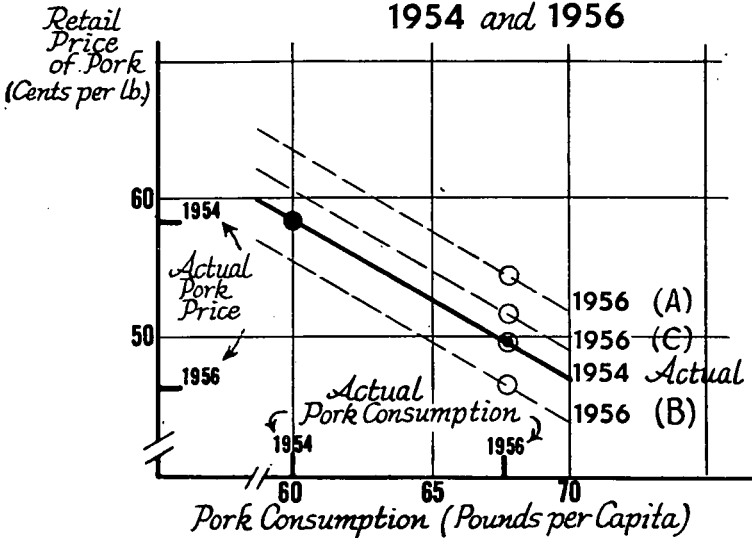


FIGURE 3.—The 1954 actual and 1956 (A) demand curves for pork have the same interpretations as the corresponding curves for beef. The other two curves have the following significance:

1956 (B): The 1954 demand curve adjusted for the 1956 level of beef supplies and the 1922-41 trend in demand.

1956 (C): The 1954 demand curve adjusted for 1956 levels of consumer income, beef supplies and 1922-41 trend in demand.

The actual retail price of pork in 1954 was 58.3 cents. The estimated 1956 prices based on the different demand curve adjustments are:

1954 actual: 49.8 cents

1956 (A): 54.8 cents

1956 (B): 46.9 cents

1956 (C): 51.9 cents

If the 1922-41 relationships still held the 1956 (C) demand curve should give the best estimate. The actual retail price in 1956 was only 46.5 cents, low enough to suggest moderate but significant changes in demand relationships for pork since 1922-41.

When all these factors are assumed to operate according to their 1922-41 relationships, the expected price drop from 1954 to 1956 is 6 or 7 cents a pound. However, the actual price drop was nearly 12 cents. This demand curve did not give a perfect explanation of changes in pork prices even during 1922-41, but an error as large as the present one (5.4 cents) should occur only rarely if the 1922-41 relationships were essentially unchanged. A study of 1947-56 data now being conducted by Wilbur R. Maki suggests that the price elasticity of demand for pork may have decreased moderately and the downtrend in demand relative to other meats may have become some-

what more rapid. Both of these changes, if corroborated by further study, would help to explain the sharpness of the actual price decline from 1954 to 1956.

Figures 2 and 3 provide concrete illustrations of demand curves and demand elasticities. They also provide one example of a highly stable demand curve and another of a demand curve that has changed significantly, though not drastically, during the past 15 or 20 years. I believe that price elasticities of demand for most food products are still reasonably close to their prewar values.

Table 1 presents price elasticities of demand, based on year-to-year changes during 1922-41, for a number of farm and food products. It will be noted that elasticities of consumer demand for individual meats and poultry meats average only slightly lower than -1. The elasticity of consumer demand for eggs is much lower than those for the individual meats. Consumer demand for potatoes is even less elastic. It will be noted that the demand for all meat as an aggregate is less elastic than the average of demand elasticities for individual meats. Analysis of a set of demand curves for individual meats, each including supplies of competing meats as a price-influencing factor, shows that on the average a 1-percent increase in the supply of an individual meat has reduced its price by 1 or 1.1 percent and a 1-percent increase in the supply of competing meats has reduced the price of a given meat by 0.3 to 0.4 percent. These results correspond very closely to the differences noted in table 1, with the elasticity of demand for all meat being about three-fourths as large as the weighted average elasticity of demand of the individual meats.

TABLE 1.—Elasticities of demand—Approximate values for different products and market levels, 1922-41¹

Commodity	Consumer demand at retail price ²	Demand for consumption, measured at farm price level ³	Elasticity of total demand at farm price level ⁴
	(1)	(2)	(3)
Apples.....			-\$1.21
Peaches ⁵			-1.18
Lamb.....			- .67
Pork.....	-\$0.91		- .65
Beef.....	- .81	-\$0.46	- .84
Chicken.....	- .79	- .45	
Turkey.....	-\$.72	-\$.53	
Eggs.....			- .92
Milk for fluid use.....	- .26	- .24	-\$.34
All meat.....	- .62	- .39	- .62
All food livestock products.....	- .52	- .35	- .41
Oranges.....			- .58
Grapefruit.....			- .40
Lemons.....			- .35
Potatoes.....	- .22		- .26
Onions (late summer).....			- .28
Wheat (domestic food use).....		- .07	
Cotton (domestic mill consumption).....		- .2- .3	
Corn.....			-\$.8
All feed concentrates.....		- .4	- .5

¹ Based on Fox, Karl A., *Factors Affecting Farm Income, Farm Prices, and Food Consumption*, Agricultural Economics Research, July 1951, pp. 65-82.

² All coefficients were statistically significant, but subject to standard errors ranging from as low as 0.03 to 0.05 (potatoes, onions, oranges, pork, all meat, and all food livestock products) to as high as 0.15 to 0.20 for peaches and chicken.

³ United States, excluding California, where a large proportion of the peach crop is canned or dried.

⁴ Probably understates true elasticity of demand.

⁵ May overstate true elasticity.

The elasticity of consumer demand for all food livestock products as an aggregate (including meat and poultry meat as well as eggs and dairy products) is lower than that for all meat. Part of the reduction is due to the fact that the elasticities of consumer demand for eggs and fluid milk appear to be lower than those for meat, but competition between meat, poultry meat, and other livestock products accounts for at least a part of it.

I have fewer results at hand for price elasticities of crop foods at retail. On the basis of their farm-price elasticities and scattered analyses, I would expect these elasticities of consumer demand to range from something greater than -1 for fresh apples and peaches through -0.5 for grapefruit down to -0.3 or less for lemons, potatoes, onions, wheat flour, cornmeal, sugar, and the aggregate of food fats and oils.

Analyses of the price elasticity of demand for all food, based on the index of per capita food consumption shown in table 2, suggest a change of -0.25 to -0.35 percent in consumption in response to a 1-percent increase in the corresponding index of retail food prices. If a 1-percent change in the food-price index were due solely to a drop in the price of beef, the effect on the index of food consumption could amount to -0.5 percent or more; if the same decline in the price index resulted from a decline in prices of sugar, fats, and oils, the change in the food-consumption index could be as small as -0.1 percent.

The fact that the typical price elasticity of demand for all food is smaller than the individual price elasticities for many individual foods is due in part to competition among, as well as within, major food groups. Many of these relationships cannot be measured by statistical means, but theoretical considerations suggest that significant price competition, direct and indirect, does exist among the major food groups.

This assumption is reinforced by the stability of total food consumption measured in terms of calories despite substantial shifts in consumption among the various commodity groups (table 2). Speaking very broadly, the present situation seems to be about as follows: The current year's production of red meats, poultry meats, eggs, fruits, and vegetables moves into consumption, and the retail and farm prices of these commodities adjust to the quantity offered by retailers to consumers; prices of other foods at retail are largely determined by support prices on the corresponding raw farm products, and per capita consumption of such products tends to adjust to their (relatively rigid) retail prices. If supplies of red meats and poultry meats increase sharply, as they did from 1954 to 1956, consumption of other products is cut back sufficiently to retain the total intake of food energy (calories per capita) at very nearly a constant level. The increase in the index of food consumption from 1935-39 to 1956 reflects a shift from less expensive to more expensive calories within a practically constant total number of calories.

TABLE 2.—*Food consumption in pounds per capita, selected commodities and periods, United States, 1935-39 to 1956*¹

Commodity	Average, 1935-39	1947-49	1954	1956 pre- liminary
Meats (carcass weight), total.....	127.0	148.5	154.7	166.8
Beef.....	55.6	65.6	80.1	85.4
Pork.....	56.5	68.4	60.0	67.5
Chicken (ready-to-cook).....	13.4	18.7	22.8	24.3
Turkey (ready-to-cook).....	2.2	3.3	5.3	5.1
Fats and oils, total, fat content.....	45.4	42.4	45.4	44.4
Sugar, refined.....	97.4	95.1	96.3	98.4
Potatoes (farm weight).....	130.0	114.0	106.0	100.0
Sweetpotatoes (farm weight).....	21.6	12.6	8.0	8.0
Wheat flour.....	160.0	137.0	126.0	121.0
Cornmeal.....	23.1	12.9	9.3	8.6
Fruit, frozen (including juices).....	.8	3.2	7.4	8.8
All food (index, 1947-49=100) ²	91.0	100.0	101.0	103.0
Food energy (retail weight basis) ³	3,270.0	3,230.0	3,190.0	3,230.0

¹ From *The National Food Situation*, Agricultural Marketing Service, July 1957, p. 4, unless otherwise indicated.

² Pounds of each food consumed in the given period weighted by its average retail price per pound during 1947-49. Thus, more weight is given to a pound of a higher priced item, such as beef, than to a pound of a lower priced item, such as sugar.

³ From *The National Food Situation*, 1957 outlook issue, November 1956, p. 6. A pound of fat has much more weight in this calculation than a pound of sugar, and a pound of sugar has much more weight (i. e., more calories) than a pound of beef.

Column (2) of table 1 shows some estimated demand elasticities for meats and other livestock products measured in terms of per capita consumption and farm prices. These are elasticities of derived demand, and are smaller in every case than the corresponding elasticities of consumer demand. With marketing margins remaining almost constant from one year to the next (though not over long periods), farm prices fluctuate by about the same absolute amount (cents per pound) as do retail prices. However, the farm price is lower than the retail price by the amount of marketing charges; hence, the percentage variation in farm prices associated with given changes in consumption is considerably greater at the farm than at the retail price level. This mechanism is illustrated in figure 4. The left-hand chart is roughly appropriate for individual meats and poultry meats under 1956 conditions. The right-hand chart implies somewhat greater price variability (or smaller demand elasticity) than may be appropriate for the aggregate of all food livestock products; however, the elasticities are somewhat greater than those for potatoes, eggs, and the aggregate of all foods.

DEMAND CURVES at RETAIL and at FARM PRICE LEVELS

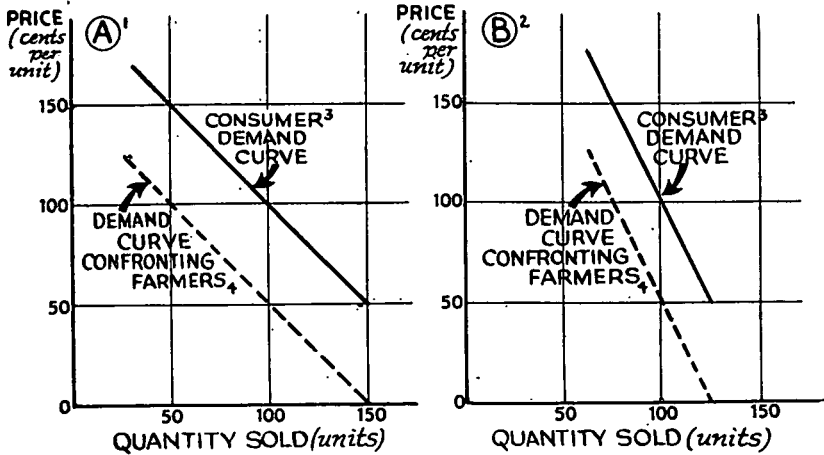


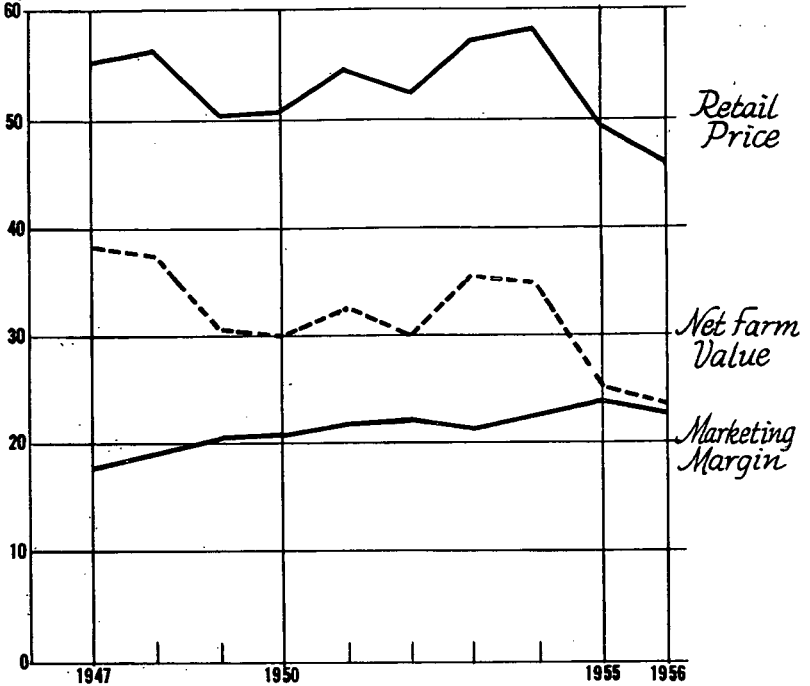
FIGURE 4.—The footnote references are as follows:

- ¹ Elasticity of demand when quantity and retail price both equal 100:
At retail price level: -1.0
At farm price level: -0.5
- ² Elasticity of demand when quantity and retail price both equal 100:
At retail price level: -0.50
At farm price level: -0.25
- ³ Relation between retail price and quantity purchased by consumers.
- ⁴ Relation between quantity sold by farmers and price received by farmers. Assumes marketing charges are constant at 50 cents per unit.

Figure 5 illustrates the point previously made in the text and in figure 4 about the relative constancy of marketing margins in the short-run and about the approximately equal dollar-and-cent changes in prices at retail and farm levels. Similar results would be obtained for a number of other important perishable foods.

PORK PRICES 1947 - 56

*Cents per
retail pound*



YEAR TO YEAR CHANGES

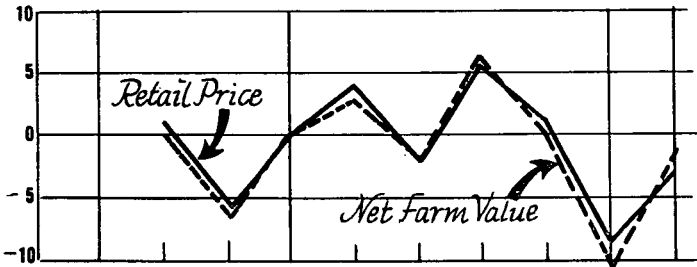
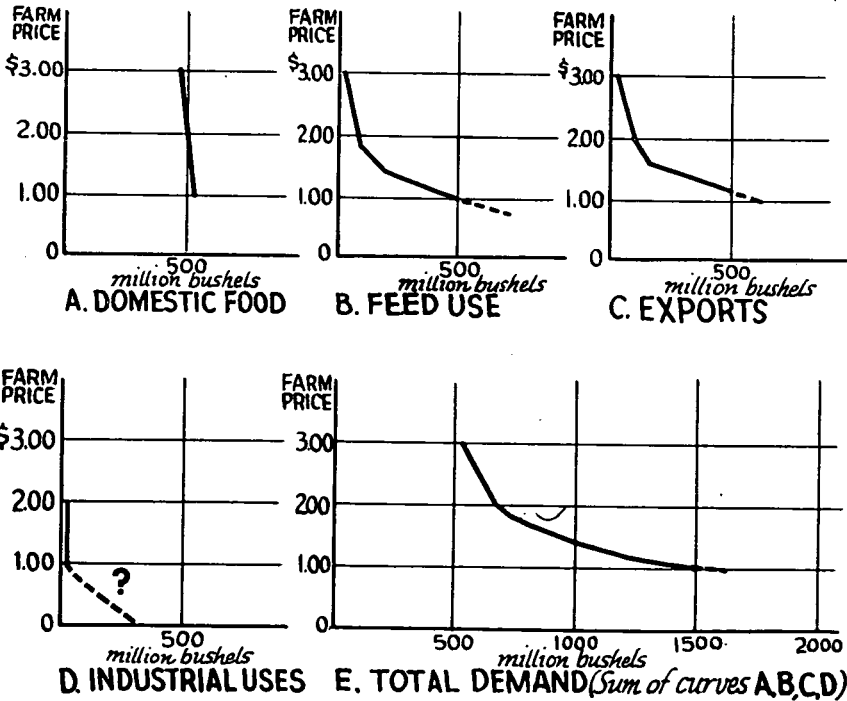


FIGURE 5.—Marketing margins for pork have trended upward rather consistently over the past decade. However, year-to-year changes in marketing margins have rarely exceed 1 cent per retail pound, and year-to-year changes in net farm value have been about the same in dollars and cents as the changes in retail price.

Figure 6 illustrates the fact that the elasticity of demand at the farm level with respect to the total production or supply (production plus carry-in) of a commodity may be greater than the elasticity of demand

derived from domestic consumption only. The demand for wheat for domestic food use has very little elasticity. The elasticities of demand for feed use and export are also quite small for prices above \$2 a bushel but become rather large as the United States average farm price of wheat approaches the price of feed grains or the price of wheat exported from other surplus-producing countries. The quantity of wheat going into industrial uses is almost negligible at present; the demand curve showing increased industrial uses for wheat at prices below \$1 a bushel is almost wholly intuitive, except as influenced by some recent published statements concerning possible industrial uses of grains. The lower right-hand section of figure 6 shows the total demand curve for United States wheat as the sum of the demand curves in different end uses. Under free market conditions (both at home and abroad) there would be an additional commercial demand for wheat in any given year, namely a demand for wheat to be stored for sale in subsequent years. The amount stored would depend upon such factors as the variability of wheat yields in the United States and other countries and the cost of storing wheat in comparison with possible price increases due to lower production in one or more future years.

TOTAL DEMAND for WHEAT and DEMANDS for PARTICULAR END USES*



* FIGURES ARE ROUGH ESTIMATES

FIGURE 6.—The total demand curve for United States wheat is a composite of widely different demand curves in the various end uses.

Although the absolute amounts of storage, imports, and exports of most livestock products are small, changes in these from year to year may significantly reduce the variability of farm prices. For example, the elasticity of total demand for meat animals during 1922-41 was around -0.6 as compared with a derived demand elasticity (for final domestic consumption within the given year) of only -0.4 .

So far this section has dealt almost exclusively with food products. The demand for corn and other feed crops is a step further removed from consumer demand. Thus, the level of the demand curve for feed crops in a given year is affected by the number of grain-consuming animals on hand and the expected farm prices at which they and their products are to be sold. In estimating the price elasticity of demand for corn or for feed concentrates as a group, we must take care to separate out the effects of changes in livestock numbers and prices of livestock products.

The price elasticity of demand for corn at the farm level, including private storage demand under free market conditions, appears to have been somewhere between -0.6 and -0.8 during 1922-41. However, the elasticity of total demand for feed concentrates as a group seems to have been about -0.5 (including demand for private storage) and the demand for current feed use only seems to have had an elasticity of about -0.4 .

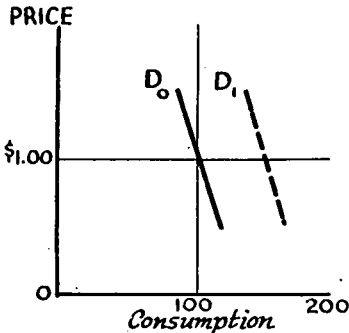
Elasticities of demand for domestic consumption of cotton and tobacco with respect to changes in farm prices appear to be very small. Lowenstein and others have estimated this elasticity of demand for cotton at -0.2 to -0.3 ; the corresponding derived demand for tobacco may be -0.1 or less. I obtained an elasticity estimate for wheat flour during 1922-41 of -0.07 ; Meinken has obtained a figure of -0.04 . The differences are not statistically significant. For practical purposes they indicate that the derived demand for wheat for food use in the United States is almost completely inelastic.

C. Factors causing long-run changes in commercial sales

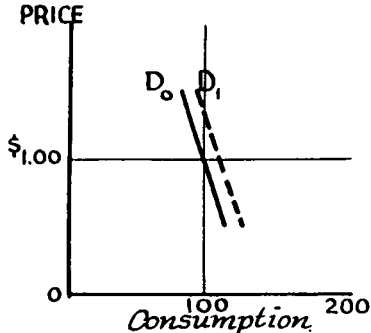
Relatively little has been published concerning the effects of price changes upon long-run changes in demand. With available data sources and statistical methods, such analyses are inherently more difficult and less conclusive than studies of short-run demand. To a considerable extent, objective research must be supplemented by qualitative or intuitive arguments.

Table 2 indicates that striking changes have occurred in per capita consumption of different foods during the past 20 years. However, most of these changes are attributable to factors other than price. Figure 7 indicates on a schematic basis the probable effects of some of these nonprice factors.

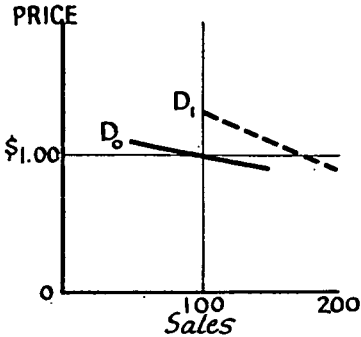
FACTORS CAUSING LONG-RUN CHANGES IN DEMAND



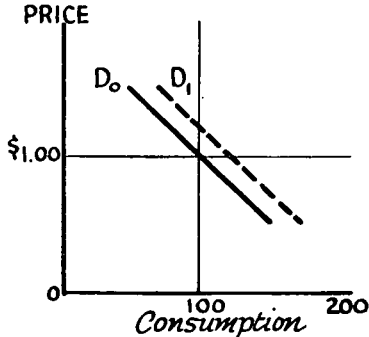
A. POPULATION
(50% increase)



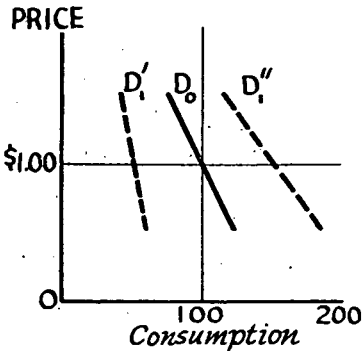
B. CONSUMER INCOME
PER PERSON (50% increase)



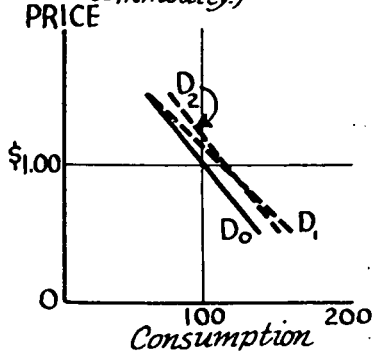
C. PROMOTION
(branded product)



D. QUALITY IMPROVEMENT
(entire national output of a
commodity)



E. "TIME"
(Changes in consumer wants)



F. LOWER RELATIVE
PRICE

FIGURE 7.—Nonprice factors are responsible for the bulk of the longer-run changes in domestic consumption of food products. Little of a quantitative nature is known concerning the longer-run effects of prices upon food consumption in high-level economies such as the United States.

It is obvious that, other things being equal, a 50-percent increase in population will be accompanied by a 50 percent increase in the demand for all food as an aggregate and for each individual food. However, a 50-percent increase in real income per consumer would produce an increase of only about 10 percent in the per capita consumption of all food. The percentage increase in consumption of a few preferred products, such as beef, might be fully twice as large as this; on the other hand, consumption of cereal products and of fats and oils other than butter might even show a decrease as a result of higher consumer income.

Promotion must have a considerable effect on the market positions of individual branded products within a group of competing branded products. Also, in the case of new products availability is obviously prerequisite to consumption. One would expect the national average per capita consumption of a new product to increase rapidly as it becomes available in more and more cities and in smaller and smaller towns and country stores. Consumption of broilers and turkeys must have increased in recent years partly as a result of increased availability at times other than the holiday season. The effectiveness of promotion in increasing the demand for the entire national output of a commodity such as pork or beef has not been conclusively demonstrated. Improvement in the quality of the entire national output of a commodity would also be expected to increase the demand for it relative to those for competing products.

Sometimes large changes occur in the national average per capita consumption of a commodity for technical reasons. For example, per capita consumption of sweetpotatoes and cornmeal is higher in the South than in the North and higher on southern farms than in southern cities. As the number of people living on farms in the South has declined and the urban population has increased, official statistics which divide the national consumption of these products by the national population have indicated a rapid decline in per capita consumption. The rate of decrease in consumption of sweetpotatoes and cornmeal per person living on southern farms must have been considerably slower, though probably substantial.

Despite recent studies by Elmer Working and others, I would argue that no conclusive estimates have been obtained concerning the effects of changes in commodity prices upon the responsiveness of demand over periods longer than a year. Working indicates that the longer run (5-year) demand response for meat is larger than that within a single year. For my part, in the case of perishable foods that are bought at least once a week I believe consumers make a substantially complete adjustment of their purchases to price changes within a few weeks—certainly within a year.

Long-run effects of price changes upon consumption are probably more extensive and clear cut in the case of fibers such as cotton and wool and of fats and oils in industrial uses. Research to develop new and improved synthetic fibers and detergents and investment in plants and equipment to produce them on a commercial scale must be stimulated by the expectation of high support prices for the natural products. However, part of the technological advances in synthetic fibers and detergents might have been made even if prices of the competing farm products had remained at a considerably lower level.

Although we sometimes speak of a demand curve for exports, our exports under free market conditions might better be regarded as the net result of demand and supply factors (1) in the United States; and (2) in all other countries. A higher support price for cotton in the United States (unless offset by subsidies or special export programs) would lead to increased production in foreign countries and to reduced consumption even if there were no long-run effects on the positions of the foreign supply and demand curves.

III. EFFECTS OF FARM PRODUCT PRICES ON DOMESTIC AND FOREIGN PRODUCTION

During most of the last three decades research on supply responses at the national level has lagged behind research in demand. Some significant beginnings were made during the 1920's, but supply analysis thereafter lay relatively dormant until recent years. A body of materials relating to individual farms and to typical farms in particular areas is accumulating but no major synthesis has yet been made.

We shall distinguish between short-run and long-run supply responses and between price effects upon domestic and upon foreign production.

A. Factors causing short-run changes in domestic production

Logically, the basic unit in analyzing the response of production to changes in price is the individual farm. Supply analysis could be approached on a partly intuitive basis by budgeting a number of possible production patterns for an individual farm and determining at least the direction of changes in the production of particular products that would increase profits. During the past 4 or 5 years quite a number of individual farm studies have been made by means of a new technique known as linear programming. So far, these studies have been widely scattered and have not been prepared with a view to arriving at national average supply curves.

The upper section of figure 8 shows a supply curve for cream (in terms of numbers of dairy cows to be kept) on a particular Iowa farm. Prices of other products produced on this farm are assumed to remain constant while the expected price of cream is permitted to vary. Prices of production items are held constant, and rigid upper limits upon the land, labor, and capital available to the farm operator are assumed.

SHORT-RUN RESPONSES *in* LIVESTOCK NUMBERS *and* CROP ACREAGE

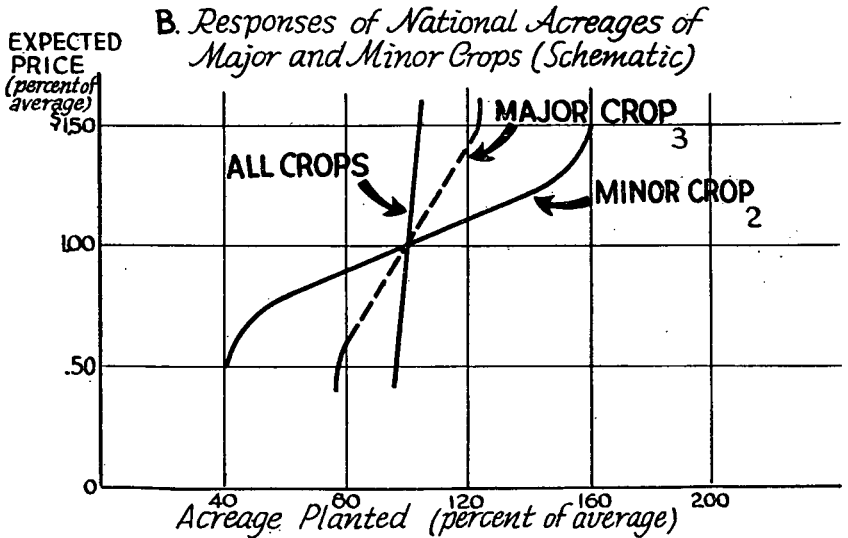
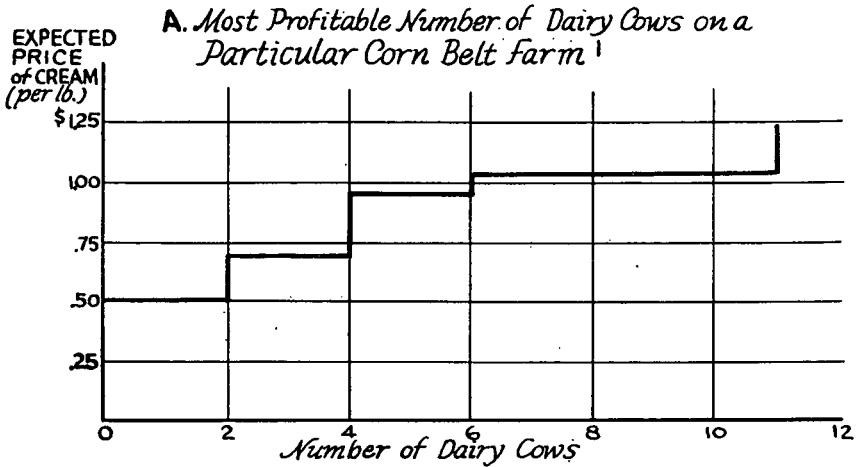


FIGURE 8

¹ Assumes strict limits on the total amounts of land, labor, and capital available. Prices of farm products (other than cream) and prices of all items used in production are assumed constant. (From an unpublished doctoral dissertation by Eddie V. Easley, An Application of Linear Programming to the Study of Supply Responses in Dairying, Iowa State College, 1957.)

² May apply to individual truck crops in highly commercialized areas.

³ Approximates pre-1933 level for flue-cured tobacco.

The supply elasticity for cream on this particular farm is around 0.4 under these conditions. It should be noted, however, that the increased number of dairy cows is obtained at the expense of a reduction in the poultry enterprise on the farm and some reduction in the number of beef cattle fed. This illustrates the counterpart of a point made in connection with demand for competing commodities—the supply of a group of commodities which compete for the same land, labor and/or capital resources is less elastic than the average for individual members of the group.

The lower section of figure 8 is schematic. An annual crop that uses only a small fraction of the total land suitable for its production may show large percentage shifts in acreage from year to year in response to only moderate changes in the expected price of the particular crop relative to those of its alternatives. Major crops which occupy a large proportion of the suitable land in the areas where they are grown show more sluggish acreage responses to price. Acreage shifts are inhibited by shortages of specialized equipment and by the need or desire to maintain appropriate rotations. In the absence of Government programs, farmers tend to use all their available land for one thing or another, so that acreage planted to all crops in the aggregate changes very little from year to year. Forced reductions in acreages of wheat and cotton are largely offset by the use of diverted acres for feed grains, soybeans, and forage.

In the case of feed and forage crops, farmers must decide how much to sell, how much to store on the farm, and how much to use for feed. They must also determine the allocation of the total quantity fed among the various classes of livestock on the farm. Production of the different classes of grain-consuming livestock responds quite distinctly, though in varying degrees, to their relative prices and to the price ratios of livestock products to feed grains.

Although most of the national aggregate supply analyses for crops have dealt exclusively with acreage, figure 9 indicates another sort of response that is also available to farmers. Figure 9 is adapted from a research study conducted by Earl O. Heady and others at Iowa State College. The economic principle governing the optimum quantity of fertilizer to be applied is as follows: Increase the amount of fertilizer until the expected market value of the last unit of corn produced is barely equal to the cost of the fertilizer needed to produce it. The production curve shown relates to a particular soil type in Iowa. If a farmer knew that this relationship held on his farm, he would expect to get the maximum net profit per acre on his corn by applying about 195 pounds of soil nutrients if the corn price were \$1 a bushel and about 260 pounds if the corn price were \$1.40 a bushel. His expected corn yield would be about 10 percent higher in the second case, reflecting an elasticity of corn yield with respect to corn price of about 0.25. (Of course, weather conditions would have important effects on the actual yield obtained in a given year.)

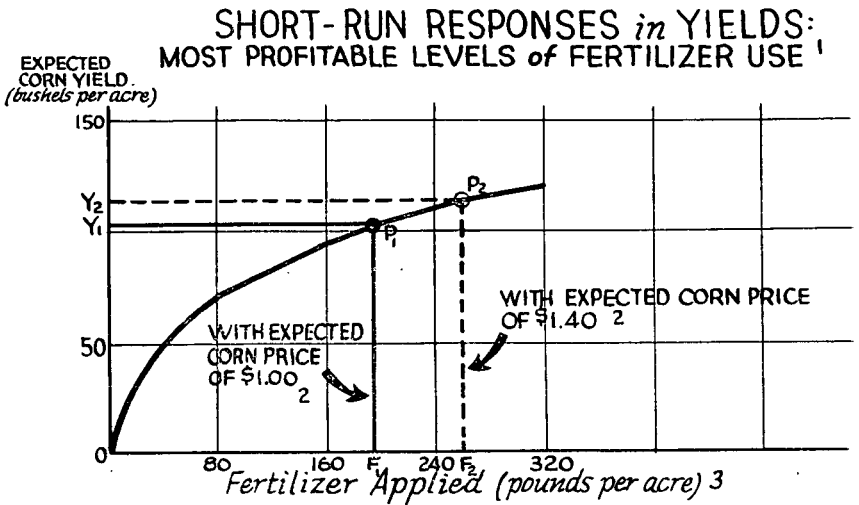


FIGURE 9.

¹ Adapted from Earl Heady, John Pesek, and William Brown, *Crop Response Surfaces and Economic Optima in Fertilizer Use*, Research Bulletin 424, Iowa Agricultural Experiment Station, 1955.

² Assume fertilizer cost of \$0.18 per pound of N plus P_2O_5 .

³ Pounds of N plus P_2O_5 assuming the two nutrients are applied in equal amounts.

B. Research results

Some scattered estimates of short-run elasticities of supply are indicated in table 3. Analyses of the response of acreage planted to changes in price must be confined to the period before 1933 in the cases of crops that have since been subject to marketing quotas and acreage allotments.

TABLE 3.—Short-run elasticities of supply by commodity and apparent response of supply to preceding year's farm price

Flue cured tobacco, burley tobacco, and peanuts (before 1933)-----	¹ +0.4-0.5
Sows farrowing, farm chickens raised (before 1941)-----	¹ .4-.5
Corn-----	² .09
Cotton-----	² .20
Wheat-----	² .47
Response of acreage to "expected price:"	
Corn-----	³ .18
Cotton-----	³ .67
Wheat-----	³ .93

¹ Rough estimates based on scattered unpublished analyses.

² From Nerlove, Marc, *Estimates of the Elasticities of Supply of Selected Agricultural Commodities*, *Journal of Farm Economics*, May 1956, pp. 496-509.

³ Also from Nerlove. Derived by new method which needs further experimentation and appraisals; may overstate true elasticities of acreage response. However, allowance for yield response (see fig. 9) might raise total elasticities of supply (production equals acreage times yield) with respect to "expected price" to or above the levels shown.

Most studies of supply response have related changes in acreage, in numbers of animals raised, or in quantities of livestock products produced to absolute or relative prices in the previous year. In a few cases, the price received 2 years in advance of current production is also taken into account. Sometimes the percentage increase in supply from year 1 to year 2 has been expressed as the result of a change in the price of the commodity from year 0 to year 1; sometimes the supply

response has been attributed to deviations of the previous year's price from some "equilibrium" or moving average level. Many of these responses for individual classes of grain-consuming livestock and for crops using a moderate proportion of the suitable acreage have shown supply elasticities of around 0.4 to 0.5. Supply elasticities of 0.2 to 0.3 have been obtained for cotton prior to 1933 and elasticities of 0.1 or less have been obtained for corn.

Logically, of course, there is no reason for farmers to adjust next year's production to this year's price unless they regard it as a fairly close approximation to the price that will likely be obtained next year. If the price of hogs has averaged \$20 a hundredweight for 3 or 4 years and suddenly falls to \$10 there is little reason for farmers (or economists) to assume that next year's price will be \$10 rather than \$20 or at least \$15. However, we have no direct evidence for earlier years as to what prices farmers really expected when they made their production plans. It would be possible in future years to learn more about the nature of farmers' price expectations through interviews and followup studies.

Marc Nerlove has recently applied a very ingenious hypothesis which leads to a reconstruction of the "expected prices" to which farmers presumably responded in earlier years. However, his approach should be tested by other investigators and on other commodities before it is wholeheartedly accepted. Roughly speaking, his studies for corn, cotton, and wheat during 1909-32 imply that the prices expected by farmers were only about half as variable as actual prices. If the actual price in a given year was extremely low, farmers would presumably expect a price in the following year about half way between this level and average."⁵ Using this approach, Nerlove obtains elasticities of acreage in response to changes in "expected prices" of about 0.2 for corn, 0.7 for cotton, and 0.9 for wheat.

For more than 20 years economists have pointed out the tendency of average yields of quota crops to increase when marketing quotas are reduced. Selection of the more productive acres is one factor; heavier fertilization and more careful and intensive use of insecticides, labor, and other inputs also contribute. Under certain conditions, a tightening of marketing quotas would tend to encourage the response indicated in figure 9. Similar production curves have been derived for certain livestock products showing the relationship of gains in weight or in eggs or milk produced to increases in the quantity of feed fed. An increase in the average market weight per hog or steer sold would be analogous to the yield effect observed in crops.

I have no research results at hand to show the relation between supply elasticities for particular products and for aggregates of competing commodities, total acreage, or total farm output. Under free market conditions, the total acreage planted to crops remains nearly constant from year to year; this is analogous to the constancy of total calories per person in the case of food consumption. Total farm output from this acreage, weighted by the farm values of the different commodities, may nevertheless increase as a result of practices that increase crop yields and livestock production per acre. Figure 9 and other considerations suggest that the short-run (year-to-year)

⁵ This statement is intended to give only a rough indication of Nerlove's approach; an accurate description of it would be overly technical for the purpose at hand.

elasticity of supply for total farm output might be as high as 0.2 if all farmers made the adjustments that would maximize their net profit under assumed price conditions.

C. Factors affecting long-run changes in domestic production

We are all familiar with the major changes that have taken place during the past two decades in total farm output, in the output of individual farm products, and in the techniques by which these products are produced. The bulk of the increase in farm output in recent years must be attributed to improvements in technology (hence, indirectly, to research); considerably less than half of the recent increase in farm output can be attributed to increased quantities of labor, capital, and land—the visible resources used in production.

Under free market conditions, an improvement in technology that permits most farmers to produce a given commodity at lower cost will result in a lower price for that commodity relative to others and to the prices of items used in its production (fig. 10).

EFFECTS of TECHNOLOGICAL CHANGE on FARM PRICES and PRODUCTION RESPONSE

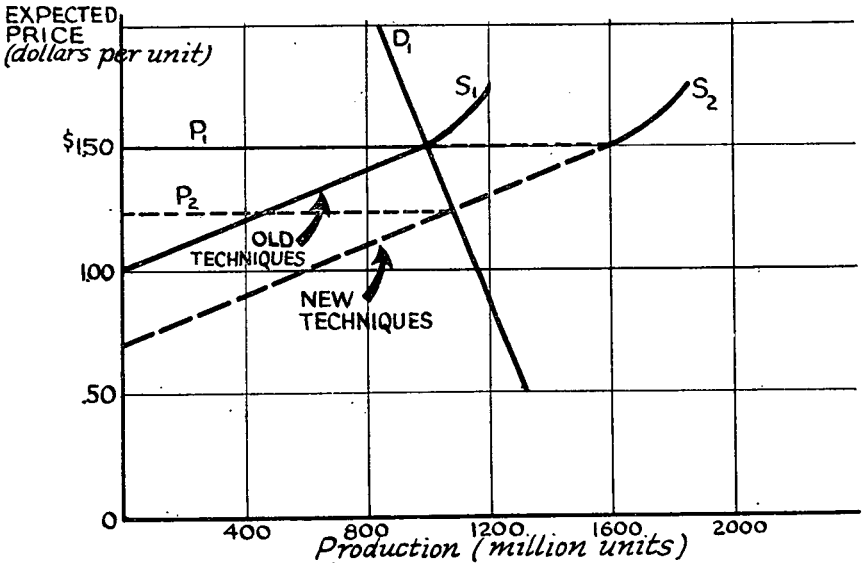


FIGURE 10.—Early adopters of improved techniques gain substantial net income advantages. As use of these techniques becomes general, the price declines from P_1 to P_2 . Consumers then purchase a somewhat larger quantity per person at a significantly lower price.

The early adopters of the new technology may greatly improve their profit positions so long as the market price is being determined primarily by the output of persons using the old technology. When the new technology has been almost universally adopted, the relative position of the early adopter may be not much better than before.

It is clear that supplies of individual farm products and even of farm products in the aggregate are very elastic if several years are

allowed for response and if price expectations are relatively sure. During World War II, support prices on certain commodities were guaranteed for a period of at least 2 years after the cessation of hostilities, and in the first year or 2 of the war reasonable individuals may have expected the guarantees to apply for as many as 4 or 5 years. I would guess that a study of the Steagall amendment period might yield a supply elasticity of at least 1.0 with respect to changes in the parity price ratio if as many as 5 years were allowed for the production response.

Both in the long-run and the short-run, it seems preferable to assume that the farmer is trying to maximize net income from the use of his available resources rather than that he is adjusting only to the expected prices of his products. These prices will, of course, largely determine his opportunities for gross income; his opportunities for net income will depend also upon the prices of goods and services used in production and upon the efficiency with which he organizes his resources. Price elasticities of supply may be regarded as incidental results of the efforts of farmers to improve their net incomes.

D. Factors causing changes in foreign production and imports

Figure 11 indicates the effects of improved techniques in the production of a given commodity in the United States upon net foreign trade under free market conditions. The results would be larger production in the United States, a somewhat lower price in both countries, and an increase in our exports. The same diagrams could be used to illustrate the effects of improved technology in other countries as well or the effects of trying to maintain the old price in the United States. It is clear that if prices are supported at too high a level in this country and export subsidies and special financing programs are avoided, powerful pressures are set up to increase production both at home and abroad.

EFFECTS of PRICE and TECHNOLOGICAL CHANGES UPON FOREIGN TRADE (Schematic)

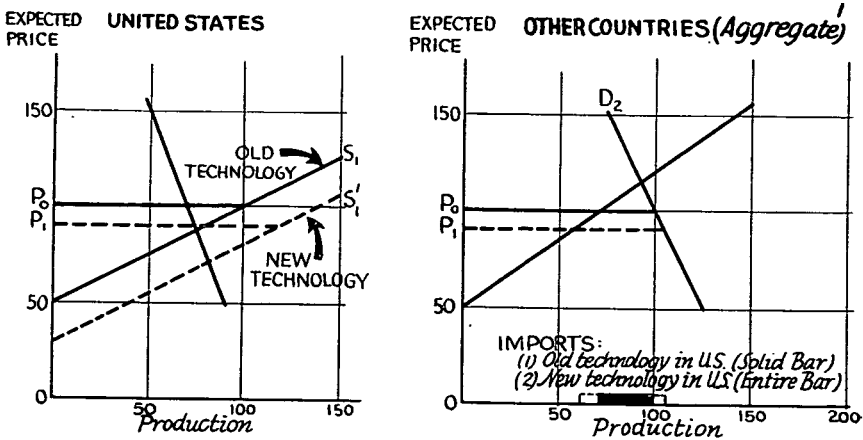


FIGURE 11.—The price level in "Other countries" implies no transportation costs in order to simplify the diagram.

IV. SUMMARY AND CONCLUSIONS

Consumers make substantial adjustments to year-to-year changes in the retail prices of many food products, including most of the important livestock products. Although the percentage variation in prices is somewhat greater at the farm level than at retail, the probable variations in farm prices of livestock products under free-market conditions do not seem to be unreasonably large. Percentage changes from year-to-year in the production of individual livestock products and of livestock products in the aggregate are small enough that the consequent changes in farm prices should be tolerable. A program that would reduce considerably reduce variations in feed prices would further reduce such fluctuations in livestock output and prices. Figure 12 outlines the mechanism involved in a true ever-normal granary program for corn that would not raise the average level of corn prices over a period of years above the expected free-market level. Starting from our present stock position such a policy would be unsatisfactory to some and the feasible level of price support would be lower than if we could begin with normal feed reserves. Such a program would work better than most alternatives under ordinary conditions. The 10-cent hogs of 1955-56 must be attributed to the strictly abnormal effects of a 30-million acre forced reduction in plantings of wheat and cotton with no safeguards to keep the diverted acres out of feed production.

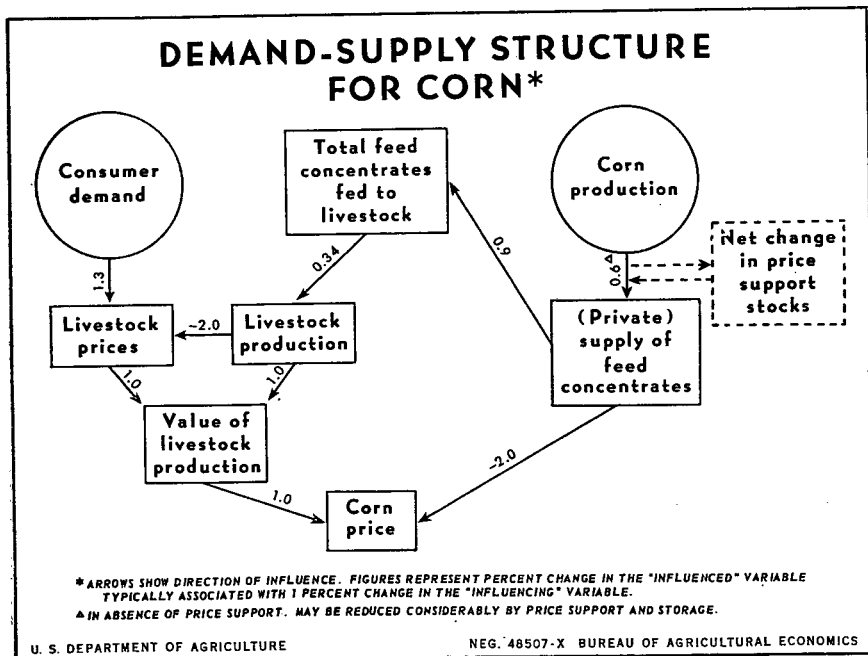


FIGURE 12.—This is a highly simplified model of the feed grain and livestock economy. There are timelags of a few months between corn production, its consumption by livestock, and the marketing of the resulting livestock products. The percentage change coefficients are based on 1922-41 relationships.

Where elasticities of demand at the farm level are exceedingly small and/or where production is sufficiently localized that producers can organize and maintain a limited degree of monopoly power, marketing orders and agreements with provisions for diversion of surpluses at lower prices represent a reasonable approach to price and income stabilization.

Most of the potential price elasticity of demand for commodities such as wheat, cotton, and tobacco lies in other uses than the primary domestic market. If domestic price levels for these products were in touch with the world market, considerable elasticity of demand would be found to exist despite trade interferences on the part of other countries. A reduction of trade barriers in any part of the world would tend to increase the elasticity of total demand for United States production. When we support the domestic prices of these products well above export or feed price levels we support them at points where their demand curves are extremely inelastic. Under our current price support policies for the major export crops we can achieve elasticity only through the use of export subsidies, gifts, or sales for foreign currency.

In my opinion the long-run effects of prices of food products upon domestic demand will not differ greatly from those of the short run. In the case of fibers and farm products for industrial use the long-run effects of relative prices may be extremely important. However, we cannot expect lower market prices for such farm products to head off important advances in technology based on the use of inherently cheaper raw materials such as coal or petroleum byproducts.

The long-run effects of prices on domestic and foreign production of farm products and the production of competing synthetics are extremely important. Although we often become preoccupied with market strategies and tactics based on factors other than price, price is the most potent instrument we have for balancing production and commercial sales.

HOW EFFECTIVE ARE PRICES AND INCOMES IN BRINGING ABOUT ADJUSTMENTS WITHIN AGRICULTURE?

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A brief answer to the question is that they are very effective. Indeed, given any situation as to the knowledge of the arts of production and as to the available resources, considerations of price and income are of dominant importance in determining how much of each commodity commercial farmers will attempt to produce. Similarly, changes in prices and incomes, or in prospects for them, are of primary importance in causing commercial farmers to decide to make adjustments in their output. This is bound to be the case where we have intelligent farmers and each individual is free to make his own decisions as to what he should produce.

The general principles involved are well known. A farmer, like any other businessman, with certain resources at his disposal will attempt to devote those resources to the production of whatever will yield him the highest net return. What he will produce will then depend upon:

1. The resources he has at his disposal—including his knowledge of the arts of production.
2. The costs which he anticipates will be incurred under different plans of production.
3. The prices he anticipates for the various things which he might produce.

Since each farmer's decisions will be based largely upon expected prices of the things he would have to sell, the total output of the farms of the country will depend largely upon those prices. As anticipated prices change, so will farmers' plans for raising crops and livestock—and so will actual output, in due time.

From this reasoning then, it should be apparent that the output of farm products will depend upon prices, and that changes in production will be brought about by changes in prices. It should also be clear that what is produced will depend upon other things as well as upon prices.

Anyone in the least familiar with the conditions of farming is well aware that crop production in any 1 year depends largely upon the weather. Since weather conditions differ widely from one crop-growing season to another they cause changes in yield per acre and in total output. Of course weather affects different crops in different ways. A season that is favorable weatherwise, for corn may not be good for oats. A season which results in poor yields for peas may still be favorable for wheat. Furthermore, weather variations are different in different parts of the country and a drought in the Cotton Belt may not coincide with a drought in the Corn Belt or in the main wheat-growing areas. We must not expect, consequently, that

year-to-year changes in prices will be responsible for most of the year-to-year changes in production.

Weather conditions, of course, influence crop plantings, the acreage abandoned, and numbers of livestock raised, as well as crop yields per acre. Thus, a wet spring may make it impossible for farmers to plant as much corn as they intended, an unusually severe winter will cause heavy abandonment of winter wheat, or reduce the number of pigs saved. These are examples of how weather may cause farmers to be unable to carry through their plans for production. But weather conditions may also cause farmers to change their plans for planting crops and raising livestock. In semiarid regions a few years of heavier than usual rains may induce farmers to change from an alternate cropping system to annual cropping, to plow up new land or to increase their breeding herds. Again, if the weather is too unfavorable to plant the intended acreage of corn, farmers will probably decide to increase their plantings of some other crop.

It has been previously mentioned that among the resources available to contribute to agricultural production is the knowledge of the arts of production. The knowledge of how to produce is quite as important in determining how much will be produced as is the amount of land, the number of men, or the amount of machinery and credit available to agriculture. Changes in our knowledge of the arts of production—including such things as the use of fertilizers and insecticides, development of hybrid seed, and the use of mechanical power—have been of great importance in causing changes in farm output, both directly and through the changes which they have brought in costs of production.

The dependence of changes in farm output on many other things in addition to changes in prices make it very difficult to measure quantitatively just how changes in prices affect output. If we could conduct a controlled experiment with all of agriculture over a long period of years it would be easy to see how price changes operate. Thus, if we could arrange to have a long series of years in which there would be no deviation of weather from a normal pattern and in which there would be no changes in the arts of production or other resources, we could hold constant the factors other than prices which influence farm output. If we could then change prices at the will of the experimenter, first, one price at a time and then all sorts of combinations of prices, we would be able to observe directly what changes in production resulted from each change in price and from each combination of price changes. We would also have evidence of how long a price change would need to be maintained in order to have its full effect on production.

Since economists cannot conduct controlled experiments to obtain objective proof of the effect of price changes upon output, they are limited to observing what has happened to output under conditions where the weather, techniques of production, and other resources as well as prices are constantly changing. In order to analyze the influence of uncontrolled variables economists resort to statistical methods such as multiple correlation and multiple regression. These help them to demonstrate and to measure quantitatively the response of production to changes of prices.

It should be noted also that the prices and incomes which directly affect farmers' decisions as to what they should try to produce are expected or anticipated prices. We have no record of these expected prices and they are likely often to differ widely from the prices prevailing at the time farmers are making their decisions. It seems reasonable to believe, however, that the expected prices will be based upon the farmers' experience with actual prices over a considerable period of time before the decision. Hence, it is useful to study the relation of actual prices to subsequent production or acreage, even though we may not know what farmers' price expectations are at different times or the precise relation between actual prices and farmers' price expectations.

Numerous studies have been made of the response of agricultural production to actual prices or incomes. A common procedure has been to relate the price or income received for a crop of one year to the change in acreage planted—or perhaps harvested—from that year to the next. Another procedure is to relate change of price or of per acre value from the preceding year to the subsequent year's change in acreage. The first procedure has demonstrated for a number of crops that if prices were higher than a certain indicated level in any year there has usually been an increase of acreage in the following year, whereas prices lower than the level indicated were associated with acreage decreases in the following year. The second method of analysis usually indicates that price (or income) increases in a given year are typically followed by acreage increases in the following year.

Both sorts of empirical studies serve to substantiate the reasoning presented earlier, that changes of prices or of incomes do bring about adjustments of production. However, neither of these sorts of studies should be expected to indicate the extent to which a given price change will influence the output of that commodity if that change is maintained until farmers fully adjust to it. In other words, neither sort of study may be expected to indicate the long-run elasticity of supply of the commodity in question.

The first type of study, if its results were accepted at face value, would seem to indicate that if the price is maintained at a high level over a period of years, there will be a continued increase of acreage which will not stop until the price is lowered. Similarly, the maintenance of the price at a lower than the no-average-change point would result in acreages decreasing year after year as long as this "low" price was continued. If such were the case, the long-run elasticity of supply would be infinite.

The other type of analysis tends to give coefficients of change of acreage relative to the preceding year's change of price which are much lower than the true coefficient of long-run supply elasticity. This is because a given change of price—say an increase of 20 cents per bushel in the price of wheat—will not have nearly as much effect on the acreage of wheat if it is maintained for only 1 year as it will have if it is maintained for 10 years. This is partly because thoughtful farmers who are accustomed to wide year-to-year price fluctuations are not likely to give a single year's increase in price much heed in influencing their plans—unless, indeed, their experience with the crop has been such as to indicate that the price change is likely to be maintained for another year or unless the increase of income which it occa-

sions serves to remove an involuntary restriction on their acreage imposed by limited financial resources.

Furthermore, it takes time to make changes in agricultural production. Some changes can be made within a year. Others take longer. Suppose we had all prices fixed under strict Government control and that prices had remained unchanged over a long enough period of years that farm operations were perfectly adjusted to the price pattern. Suppose that a 20-cent decrease in the price of corn were then announced with assurances that it would remain in effect for a period of 10 years and that there would be no change in any other price during that 10-year period. How long would it take agricultural production to adjust to the new price pattern? The adjustment would require changes in acreage of other crops and changes in livestock production. Surely the adjustment would not all take place within a single year. Perhaps it would not even be complete at the end of the 10-year period, and long before that time had come farmers' production plans would probably be influenced by uncertainties as to what prices would be after the close of the 10-year period.

Some statistical studies of acreage or production response to price have taken into account the possible effect of prices or incomes over a period of several previous years, and allow either for differing influence of the various years or take "trends" into account.¹ These have presumably yielded results from which it is possible to get a better approximation of coefficients of long-run elasticity than do those studies which use only a single year's prices. However, whenever long-term price responses are to be dealt with statistically there is almost sure to be great difficulty in distinguishing between long-run effects and the trend influences of changes in production techniques.

The many statistical studies which have been made of the response of acreage or production to price changes provide ample evidence that price changes have been, in fact, effective in bringing about changes in agricultural production. However, since most of them determine the average amount of response over only a relatively short and specified time period, they cannot be expected to measure more than a part of the full effect of long-run changes on production.

It has been argued by some that a decline in price of an agricultural product will cause farmers to increase their production in the attempt to maintain their incomes. While there is the possibility of a short-run perverse response of this nature, I know of no valid statistical evidence to support the view. An analysis of changes in Saskatchewan wheat acreages and prices was claimed to support the hypothesis of a perverse response of acreage to price.² However, Farnsworth and Jones showed the analysis to be in error because of both faulty method and erroneous data.³ They have shown, furthermore, that the evidence indicates both Saskatchewan farmers and farmers of the Prairie Provinces as a whole tend to respond normally to price changes—increasing acreage in response to increases in prices or incomes, and decreasing acreage in response to lowered prices or incomes.

¹ Examples may be found in Marc Nerlove's *Estimates of the Elasticities of Supply of Selected Agricultural Commodities*, *Journal of Farm Economics*, vol. XXXVIII, No. 2 (May 1956), pp. 497-509.

² G. R. Allen's analysis reported in *Wheat Farmers and Falling Prices*, *The Farm Economist* (Agricultural Economic Research Institute, Oxford, 1954), vol. VII, No. 8, pp. 338-345.

³ Helen C. Farnsworth and William O. Jones, *The Economic Journal*, vol. LXVI, No. 262, June 1956, pp. 271-287.

One helpful way to consider the effectiveness of prices in bringing about adjustments in agriculture is to pose the question: "How effective would a 10-percent change in the price of a commodity be in bringing about an adjustment? How much effect it would have on the production of the commodity whose price was changed, and the production of other commodities, would depend upon a number of things. These would include:

1. The elapsed time after the price change
2. The commodity
3. The duration of the price change
4. The cause of the price change
5. Adjustment by whom?
6. The prices of alternative commodities

It is obvious that the extent of adjustment will depend on the length of time allowed for it. Production processes in agriculture take time. For a crop, the minimum length of time for much adjustment to take place would ordinarily be from seedtime to harvest, though of course price declines can make it unprofitable to harvest a crop which has already been grown. For potatoes it will not take long to make a change in output, partly because they are an annual crop and partly because the planting season in the United States extends over so much of the year as we go from the early to the late potato States. On the other hand, most tree fruits and nuts require several years to elapse between planting and the harvest of the first crop. Similarly, it takes much longer to increase the production of beef cattle than of broilers.

But the length of time will not depend only on the length of the life cycle of production. The difference in requirements of specialized buildings, machinery and other special facilities is also important. A farmer can't go into market milk production as readily as he can grow onions, and once he has sunk his money into buildings and special equipment those facilities are likely to continue to be used for dairying even though prices should decline materially. For some crops special equipment is also involved, but usually the same equipment can be used for several crops and it is easy to shift from one of these crops to another.

The amount of time elapsed after the price change is also important in affecting farmers' price expectations, and hence their decisions to adjust or not to adjust. Here lapse of time is also related to the duration of the change. Obviously day-by-day fluctuations in the futures market can have no counterpart in day-to-day fluctuations in agricultural output. If they have any influence, it would seem likely that the risks associated with price instability might have some deterrent effect on the production of crops whose prices are unstable. Hence, price instability would tend to reduce production and raise slightly the price of the product subject to that price instability. In order to have any considerable influence on production the price change would have to be either of sufficient duration or to be due to causes which lead farmers to expect significantly different prices in the ensuing production period. Generally, price changes which most farmers attribute to temporary or quickly reversible causes such as a drought, will have less influence on production than a similar change which is interpreted as the result of some more enduring factor. Thus, if a price were increased by 10 percent as a result of inauguration of governmental guaranteed forward pricing, that

would have a much greater effect on the next year's planting than would an equal increase attributable to unusually low yields of the crop in Europe.

The extent of adjustments which would be made as a result of a 10-percent change of price will also vary in different sections of the country and as between different farmers. At this point, however, it should be noted that price changes will almost always be by different percentages in different parts of the country. If wheat prices in Minneapolis decline by 10 percent the change in eastern Montana is likely to be about the same number of cents per bushel, but a larger percentage. However, the percentage adjustment made in different regions (and by different farms) would depend not only upon the varying percentage changes of price, but also upon the relative profitableness of other production alternatives available to them. Climate and soil conditions largely determine the physical alternatives of production. How good these alternatives are from an economic standpoint depends upon the prices of the alternative crops and the costs which would be incurred in producing them. In the light of these alternatives, even though a 10-percent decline of wheat prices in Minneapolis would mean a considerably greater percentage decline in Montana than in southeastern Minnesota, wheat acreage in southeastern Minnesota might decline by a greater percentage than that in Montana.

The foregoing reasoning surely serves to indicate that the process of bringing about adjustments in agriculture through prices and incomes is fairly complicated. Any price change has many and diverse ramifications. It would be difficult for any farmer to decide what he might best produce if he knew beforehand what prices would be. It is far more difficult for him to decide what he should produce in view of the instability of prices and the uncertainty as to their future. But in any economy of private enterprise with freedom of the individual to pursue his own gain it is a primary function of the entrepreneur to decide what he should produce.

What are the alternatives to reliance on prices and incomes to induce adjustment within agriculture? Acreage allotments and marketing quotas are alternatives. Thus, prices can be supported at some fixed level and adjustments can be brought about by acreage allotments or marketing quotas imposed by Government authority and by changes in those controls. Government decision and authority may take the place of the free choice of the individual farmer.

In practice, however, the individual may not lose his freedom of decision when acreage controls and marketing quotas are in effect and we may still have prices and incomes determining the adjustments that are made. Why, for example, has there been overplanting of wheat in the past year? Is it not because wheat farmers decided that their incomes would be higher if they overplanted? In effect there were two prices for wheat, the "regular" price and the price for "hot" wheat. The latter was the regular price minus the penalty. The price for the "hot" wheat applied to the quantity which would have been produced at average yields on the excess acreage. The regular price applied to wheat grown on the allotted acreage, plus whatever was produced by higher-than-average yields on the excess acreage. In the light of these two prospective prices and quantities (along with the expected costs of growing wheat and the expected prices, quantities

and costs of alternative crops) which he might expect, the wheat grower had to decide how large an acreage of wheat he should grow.

Under such circumstances, acreage allotments and marketing quotas merely provide more complicated rules under which farmers must operate in seeking to maximize their incomes. In another year the rules may be changed so that it doesn't pay to overplant, but so long as commercial farmers are free to choose what they produce in the light of anticipated prices, quotas and penalties, we may expect that considerations of expected prices and incomes will continue to be of overriding importance in their decisions.

Because we live in a changing world—a world of changing weather, changing knowledge of the arts of production and changing consumer needs and preferences—it is essential that we make adjustments in the production of agriculture. So long as we maintain a system of competitive private enterprise with individuals largely free to choose their occupations, what they produce, and how they spend their incomes, changing prices and incomes will be of key importance in bringing about adjustments within agriculture. They will also be of key importance in determining the scale of agricultural production and hence the balance between agricultural and nonagricultural production.

However, we must recognize that price changes have a dual role as far as agriculture is concerned. They serve as a guide to farmers in planning future production. Price changes also serve as a guide to marketers and consumers in disposing of past agricultural output. There seems to be reason to suspect that these two roles might be more efficiently performed if prices received by farmers fluctuated less widely than we have frequently seen them under the free market prices, and if prices paid by consumers at retail were more responsive to abundance and shortages of supplies in market channels.

This is not to say that the efforts of Government price control over farm products which we have thus far had have helped to facilitate needed agricultural adjustments.

As I have indicated elsewhere, I suspect that the contrary is the case.⁴ Such unsatisfactory results, however, are to be attributed primarily to having "parity" prices as the goal. If parity prices had been defined as those prices which would efficiently adjust supply to the changing conditions of demand, instead of as a price relation which prevailed in the past, our controlled prices would have constituted better guides for adjusting agricultural production.

⁴ *The Effectiveness of Free Market Prices in Allocating Resources Within Agriculture*, *Journal of Farm Economics*, vol. XXXV, No. 5, December 1953, pp. 784-794.

THE MOBILITY OF FARM LABOR

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INTRODUCTION

My assignment is to discuss the importance of the level of farm prices and of the earnings of labor in agriculture in determining the rate of transfer of labor from farm to nonfarm employment. Particular attention will be given to forces underlying the transfer of labor from farm to nonfarm employment.

The farm population of the United States is highly mobile. Over the period 1920-50 the average rate of migration per decade has been 21 percent of the farm population. The rate of migration during the present decade has been very high. Since 1950, over 3.5 million people have migrated from farm to nonfarm residences, excluding persons entering military service.¹ Migration data alone, however, do not indicate the full mobility of the farm population in adjusting to changing economic conditions. In addition to the large number of people who have moved from farm to nonfarm residences, many people who continue to live on farms have transferred their labor resources to nonfarm employment. In 1950 there were 2,359,243 persons living on farms whose major occupation was in nonagricultural employment. Between 1940 and 1950 the number of farm persons whose major occupation was in nonagricultural employment increased 255,041. Including the net changes in number of persons migrating from farms and in the number of farm persons whose major occupation is in nonagricultural employment, approximately 9,375,000 persons transferred from farms between 1940 and 1950.

BASIC FORCES DICTATING NEED FOR MIGRATION

There are certain basic characteristics of the United States economy which dictate that labor must transfer from farm to nonfarm employment if the incomes of farm families are to increase in line with the incomes of nonfarm families and if resources used in agriculture are to receive returns equal to those received for comparable resources in nonfarm employment.

Low income elasticity of demand

One of the factors contributing to the need for a transfer of labor from agriculture is the low income elasticity of demand for farm products. The consumption of farm products does not increase in proportion to increases in consumer income. Rather, as consumer

¹ Gladys K. Bowles, Farm Population Net Migration From the Rural Farm Population, 1940-50. Statistical Bull. No. 176, USDA, Agricultural Marketing Service, Washington, D. C., June 1956, and Farm Population Annual Estimates published by the Agricultural Marketing Service, USDA.

incomes increase, a higher proportion of the increased income is spent on nonagricultural commodities and a lower proportion on agricultural commodities. Most agricultural economists agree that the percentage increase in consumption of farm products corresponding to each percentage increase in consumer income is approximately 0.20. The remainder of the increase in income is saved or is spent for non-farm commodities. Furthermore, as consumers become wealthier, the percent of the incomes spent for farm commodities declines. It appears, therefore, that as the Nation undergoes additional economic progress, income elasticity of demand for farm products will fall below 0.20. These facts mean that the rate of growth in the demand for nonfarm products is likely to be much greater than the rate of growth in the demand for farm products.

Rapid technological progress

The rapid rate of technological progress in the production of farm commodities has exerted downward pressure on farm product prices and has been a force underlying the migration of people from farms. Changes in technology have been an important factor in expanding agricultural output in the United States. One author recently concluded that between 1930 and 1950 United States agriculture achieved a 39-percent increase in output with only a 1-percent increase in input.² Much of this increase in output, however, has been accomplished with a substitution of inputs. Items purchased from the nonfarm sector have replaced farm-produced items in the production of many commodities. Machinery has been developed which makes it possible to greatly reduce the amount of labor used in agriculture. The adoption of most of these innovations has involved rather large outlays of capital, and in many instances it has been necessary to increase production per farm in order to make adoption of the new technology profitable. This increased output has contributed downward pressure on the prices of farm commodities. It also has created pressure for families which were unable to adopt the improved technology to leave agriculture for nonfarm employment.

High birthrates on farms

The necessity for transfer of labor from farms to nonfarm employment is intensified by high birthrates in farm families. The farm population is producing far more people than are needed to replace those now living on farms. During the current decade, it is estimated that about 35 percent more males will enter the 25-69 age group than will depart from this group through death or retirement.³ The problem is further complicated by the fact that the number of males entering the 25-69 age group relative to those retiring is greater in low-income areas than in other areas. The high birthrates mean that some migration from farms is necessary just to keep the farm population constant. The high rate of technological progress in agriculture and the patterns of consumption of farm products make it necessary to increase the average size of farm businesses if incomes of farm families are to increase at the same rate as incomes of nonfarm families. Given this fact, the high birthrate in farm families makes

² T. W. Schultz, *Reflections on Agricultural Production Output and Supply*, *Journal of Farm Economics*, vol. 38, August 1956, p. 752.

³ *Development of Agriculture's Human Resources*, USDA, Washington, D. C., April 1955, p. 28.

it necessary to transfer large amounts of labor from farm to nonfarm employment if the gap in incomes of farm and nonfarm families is to be narrowed.

CONDITIONS AFFECTING MIGRATION DECISIONS

Individuals will transfer labor from one position to another only if they expect to improve their situation. Decisions to migrate from one location to another are based largely upon expectations concerning real incomes in alternative locations, transfer costs and availability of capital for financing the transfer, nonmonetary transfer costs, and differences in cultural environments.

Comparative real incomes

The rate of growth of demand for labor in farm and nonfarm sectors is a major factor determining potential real returns from farm and nonfarm employment. The rate of growth of demand for labor is determined largely by the rate of growth of the demand for products, and we have already pointed out that the rate of growth of demand for farm products is less than the rate of growth for nonfarm products. There is a tendency, therefore, for incomes of nonfarmers to increase relative to the incomes of farmers.

In an earlier study I concluded that labor in agriculture was underemployed in 1950 in the sense that the returns for farm labor were considerably less than the returns for comparable nonfarm labor, taking into consideration differences in costs of living in farm and nonfarm locations and costs of transferring labor to nonfarm employment.⁴ Since 1950 the return for labor in agriculture has declined relative to the return for labor in nonfarm employment. One author recently concluded that in 1956 the real return for labor in agriculture was about 35 percent less than the real return for comparable labor employed in nonfarm occupations.⁵

The tendency for nonfarm labor returns to increase relative to farm labor returns can be offset by technological improvement in agricultural production and migration from farms. If migration is to be most effective farm people must have reasonably accurate information relative to their earning capabilities in nonfarm occupations and they must be convinced that the differences in incomes available to them in farm and nonfarm employment are not temporary. The reliability of information that potential migrants possess in regard to earning opportunities differs among regions. Personal contact with friends and relatives is the most frequent source of information concerning job opportunities used by migrants. A recent study has demonstrated that migrants from areas near large industrial centers have much better information in regard to employment opportunities and living conditions in industrial areas than migrants in distant locations.⁶

Transfer costs

Transfer costs also work against people who are concentrated in low-income areas that are distant from industrial centers. The actual

⁴C. E. Bishop, Underemployment of Labor in Southeastern Agriculture, *Journal of Farm Economics*, vol. 36, May 1954.

⁵D. Gale Johnson, Labor Mobility in Agricultural Adjustment, paper presented for North Central Farm Management Research Committee, Chicago, March 1957.

⁶Eldon D. Smith, Nonfarm Employment Information for Rural People, *Journal of Farm Economics*, vol. 38, August 1956, p. 816.

expenses of migration increase with distance. Nonmonetary costs also are likely to be greater for long distances in that difficulties involved in disruption of family ties, loss of community status and difficulties in becoming assimilated into a new cultural environment are accentuated. Numerous studies have demonstrated that, although individuals increase their income from migrating, as a rule first generation migrants occupy a lower social status in the community to which they migrate than in the community in which they formerly lived.

These conditions discussed above affect decisions of individuals to migrate. In view of the uncertainty in regard to employment conditions and the high cost of transferring to industrial centers, many farm persons are unwilling to migrate to nonfarm locations. Numerous studies have demonstrated that young adults are most likely to migrate. These persons have less cost in migrating in that they have not developed strong community ties, they seldom have become established in agriculture and the risk in migrating is less than with older people.

AN EXAMINATION OF RECENT NET MIGRATION FROM FARMS

The rate of net migration from farms was higher during the decade from 1940-50 than in the preceding two decades. Net migration was higher during the decade 1920-30 than during the 1930's. In each decade, however, the pattern of migration with respect to age was quite similar. The highest rate of migration has taken place in the late teens and early twenties.⁷

Migration and farm product prices

Changes in farm product prices are often used as an index of incentive for migration from farms. Other persons argue that agricultural production does not respond to changes in the prices of farm products and that the transfer of labor from farm to nonfarm employment is not influenced by farm product prices. In table 1, the net migration from farms is compared with the prices received from farm products and income from farming for 5-year periods beginning with 1920. By comparing net migration and prices received for farm products, it is noted that when the prices received by farmers decrease, net migration from farms also decreases. On the other hand, when the prices received for farm products increase, net migration from farms also increases with the exception of the period 1945-49. This period is probably atypical in that the on-farm training program and other Government programs served as deterrents to migration during this period.

⁷ Gladys K. Bowles, *op. cit.*, p. 8.

TABLE 1.—*Net migration from farms and selected indicators of income opportunities in farming, 1920-54*

Years	Net migration from farms ¹	Prices received by farmers (1910-14=100) ²	Net income per farm from agriculture ³	Ratio of annual income per farmworker and factory worker ⁴
	<i>Thousands</i>			<i>Percent</i>
1920-24.....	3,331	150	\$776	40
1925-29.....	2,965	147	939	44
1930-34.....	1,051	87	454	32
1935-39.....	3,542	107	741	40
1940-44.....	5,309	155	1,445	52
1945-49.....	3,811	251	2,504	67
1950-54.....	4,250	271	2,631	53

¹ Farm Population, Migration To and From Farms, 1920-54, pp. 8 and 9.

² Outlook Charts, 1956, p. 93.

³ Farm Income Situation, October 1955, p. 46.

⁴ Outlook Charts, 1956, pp. 71 and 94, and Farm Income Situation, October 1955, p. 45.

The behavior observed in the migration from farms and in prices received for farm products is not what would be expected in a fully employed economy. We might normally expect that as agricultural prices increase, migration from farms would decrease. The higher prices would provide incentive for farm people to remain on farms. We observe that this is not the case. But, on closer reflection we would not expect migration to be guided solely by prices received by farmers for their products. Although farm prices are an important factor in determining migration rates from farms, they are only one factor. Decisions to migrate are based largely upon expected levels and stability of real income in alternative uses of resources. Farm product prices are not a good indicator of stability of relative earnings in farm and nonfarm employment. Farm prices might rise and at the same time, industrial prices, nonfarm wage rates, and employment opportunities may rise relative to farm prices thereby providing an incentive for farm persons to migrate to nonfarm residences. Likewise, prices of farm products may fall suggesting that it might pay farm people to transfer labor to nonfarm uses, but at the same time nonfarm earning opportunities may decline relative to earning opportunities in agriculture thereby discouraging migration from farms. Farm product prices, therefore, are not a good indicator of migration incentives.

Migration and comparative earnings of labor in farm and nonfarm employment

A better measure of when it would pay farm people to transfer labor to nonfarm employment is the ratio of earnings per farmworker and factory worker. In comparing the ratio of earnings of farmworkers to factory workers in table 1, we note that in four of the periods migration from farms changes in the same direction as changes in the ratio of annual income per farmworker relative to income per factory worker. In only two periods did migration proceed as we might normally expect. During the period 1925-29 the ratio increased and migration decreased as would be expected. During 1945-49, the ratio

increased and migration decreased. During the other periods, migration changed in the same direction as changes in the ratio of income per farmworker relative to income per factory worker. During periods of rapid expansion of industrial output, farm people moved to nonfarm jobs in spite of the fact that the earnings of labor in agriculture were increasing relative to the earnings of labor in nonfarm sectors of the economy. We would expect this type of behavior only under conditions under which labor had been dammed up in agriculture because of lack of nonfarm employment opportunities or lack of information regarding earning potential in nonfarm employment.

The data in table 1 suggest that the supply of farm labor to nonfarm industries is highly elastic at prevailing rates of return for labor in farm and nonfarm employment. Furthermore, since 1940 employment has been high and reasonably stable, and farm people have migrated in large numbers even though the ratio of earnings in nonfarm employment to earnings in farm employment have been less than during the 1920's and 1930's. The data indicate that as information is made available that workers can obtain higher earnings in nonfarm employment than in farm employment farm people do respond to employment opportunities by transferring labor to nonfarm employment.

Migration and the farm programs

In view of the fact that these hearings are primarily concerned with the development of a foundation for agricultural policy, we should consider the effects of present farm programs upon migration. Let us consider first, price supports.

Price supports and migration

Government price-support programs for farm commodities have been undertaken in an effort to increase the prices received by farmers. If prices are supported above free market levels, this would tend to impede migration. The large surpluses that have accumulated in Government warehouses during the 1950's are ample evidence of the fact that the prices of selected farm commodities have been supported above free market levels. During this period Government price-support programs have increased the incomes of farmers.

Now, can we conclude that the Government price-support programs have impeded migration? The answer is "no." Although Government price programs probably have been instrumental in increasing the incomes of farm families, this is not sufficient evidence to conclude that they have impeded migration. As was pointed out above, there is evidence of considerable underemployment of labor in agriculture and farm people have transferred to nonfarm employment in increasing numbers during periods when incomes of farm families were increasing. During such periods expectations regarding nonfarm employment likely have improved and higher incomes of farm families have made it easier to finance the transfer of labor to nonfarm employment. Furthermore, even though price supports have been instrumental in increasing farm incomes it is not likely that the return for labor in agriculture has been increased to the same extent. It will be pointed out later that most of the increased income would be expected to be capitalized into land values as a result of tying the price-support programs to acreage control programs.

Another aspect of the price programs of Government that has tended to impede migration is the reduction in price variability of price-supported commodities. Price stabilization decreases the range in income expectations. In discussing the conditions affecting migration decisions, it was noted that the expected stability of income is an important factor in determining whether people migrate. When the prices of some products are stabilized or the variability is reduced as compared with other products, we would expect producers to expand production of the stabilized products. One recent study attributed much of the difficulties encountered in the potato programs in the 1940's to the price stabilization features of the program which reduced risk of planting potatoes.⁸ There are definite tendencies created in price stabilization to encourage the production of those commodities which are stabilized. Again, however, the migration data give us no indication that price stabilization has impeded the transfer of labor from farm to nonfarm employment.

Production controls and migration

The effects of production control programs on migration also are difficult to determine. If control programs are effective, they would be expected to increase the incomes of farmers at least in the short run and thereby to create some incentive to remain in agriculture. Actually, only a few commodities have been subjected to control and the rates of substitution in production and consumption of farm products is so high that aggregate production has been affected very little. However, certain provisions of the control programs have been inconsistent with reduced production and have tended to impede migration. Here I have reference to those provisions which penalized individuals for not producing their allotted quotas of crops. In some instances failure to plant an allotment resulted in forfeiture of allotment rights. The allotments have not been negotiable. They have been tied in with the price-support program, and a value has been created for allotments in that they insure the holder the right to produce certain crops which are supported at artificially high price levels. Most of the value of the allotment rights has been capitalized into land values and farmers have been forced to choose between planting their allotment or selling their farms in order to receive the value of their allotment. Evidence obtained in a study of the underplanting of tobacco allotments in North Carolina indicated that many farmers planted their allotments periodically in an effort to reduce the possibility of forfeiture of allotment through failure to plant.⁹ Clearly, it was inconsistent to try to reduce production through production control and then to penalize farmers for not producing the allotments assigned to them. Since most of the benefits of the program have been capitalized into land values, however, it is unlikely that the transfer of labor to nonfarm employment has been greatly affected except possibly in areas characterized by part-time farming and unstable nonfarm employment conditions.

⁸ Gray, Sorenson, and Cochrane, *An Economic Analysis of the Impact of Government Programs on the Potato Industry of the United States*, Minnesota Agricultural Experiment Station, Technical Bulletin 211, Minneapolis, 1954.

⁹ C. E. Bishop, W. R. Henry, and A. L. Pinkner, *Underplanting Tobacco Allotments, Factors Affecting Tobacco Planting Decisions in Forsyth County and Northern Piedmont*, A. E. Information Series No. 42, Department of Agricultural Economics, North Carolina State College, March 1955, p. 26.

In summary, some of the provisions of farm programs have created forces that tend to impede the transfer of labor from farm to nonfarm employment. However, whether in fact, farm programs have resulted in less migration than would have been the case without these programs is a question that cannot be answered with the data at hand. Available data suggest that there is considerable underemployment of labor in agriculture and that many farm people stand ready to accept nonfarm jobs at prevailing wage rates. If this is correct, then we are forced to conclude that migration of labor from agriculture is not greatly impeded by existing farm programs.

Regional variations in migration

There are pronounced variations in the earnings of farm families within agriculture. In 1950, the earnings of labor in the Corn Belt, for example, were substantially above the earnings of labor in agriculture as a whole and were approximately equal to the earnings of comparable labor in nonfarm sectors of the economy. In the Southeast, on the other hand, earnings of labor were only about 65 percent of the earnings of comparable labor in other parts of the Nation's agriculture.¹⁰ With such wide variation in labor returns in different regions we would expect that migration rates from agriculture also would differ among regions. Between 1930 and 1940, when nonfarm employment opportunities were very limited, net outmigration from agriculture was greater from the medium and high-income farming areas near industrial centers than from the low-income areas. Between 1940 and 1950, however, when nonfarm employment opportunities were more plentiful, net outmigration was substantially greater from low-income areas. Furthermore, the rate of net outmigration was greatest in those areas with most serious low-income problems.¹¹

If we relate net migration from farms by States between 1940 and 1950 to farm incomes we find that the net migration increases as the average farm income per farm decreases. The average rate of migration between 1940 and 1950 for States with farm incomes per farm in 1950 of less than \$2,000 was 33 percent compared with 30 percent for States with average income per farm \$3,000 and \$4,000 and 23 percent for States with average income per farm of \$5,000 or more. It appears, therefore, that people in low-income areas are responding to a greater degree to nonfarm employment opportunities.

Since the benefits of Government farm programs have not been uniformly distributed among regions, we might expect migration to be impeded in those areas receiving the greatest benefits. The prices of the basic commodities have been supported above free-market levels during much of the past two decades. The prices of these commodities have also been less variable than the prices of many other farm commodities. Other things being equal, we would expect these factors to impede migration of labor from farms. Actually, the available data indicate that the percent of the total farm cash receipts received in each State from the six basic price-supported commodities during the period 1945-50 had no significant effect on net migration of the rural farm population between 1940 and 1950. In fact, both the net migration and the net rate of migration from those States receiving a high proportion of their income from the basic commodities were greater

¹⁰ C. E. Bishop, op. cit., p. 263.

¹¹ Gladys B. Bowles, op. cit., p. 8.

than from those States receiving a low proportion of their income from these commodities.

Government payments per farm do not appear to be a major deterrent to migration either. It is generally known that Government payments per farm tend to increase with the net income per farm. This is due to the fact that Government payments are based primarily upon the quantity of resources controlled by farmers. Incomes also tend to be closely related to the quantity of resources controlled. Therefore, Government payments tend to increase as incomes of farmers increase and we cannot isolate the effects of Government payments upon migration. We have already noted that migration is heaviest from low-income areas.

Now let us turn for a moment to the question of whether migration from agriculture has come from the low-income farms in the various regions. If we examine the changes in sizes of farms in terms of acres of land and acres of cropland, we find that in all regions of the United States, the average acreage per farm has been increasing during the past two decades. This increase in acreage has been the result of a decrease in the number of farms in medium size acreage classes and increase in the number of farms with large acreages and with small acreages. There has been a substantial increase in part-time farming in families living on farms with small acreages. It appears, therefore, that a large part of the labor that has transferred from farm to non-farm employment came from low-income farms. Another bit of evidence on this point can be obtained from the changes in distribution of farms by value of farm products sold. Since 1930 there has been an increase in the number of farms selling farm products valued at \$5,000 or more (valued in terms of 1954 prices).¹² On the other hand, the number of farms selling less than \$5,000 of farm products has decreased 54 percent. The percentage decrease in low-income farms has been less in the South than in other areas but the absolute decrease has been greater. The number of farms in the South selling farm products valued at less than \$5,000 decreased by about 1,100,000 between 1930 and 1954. Again, these data are consistent with the transfer of labor from low-income farms to nonfarm employment.

AN APPRAISAL OF THE EFFECTIVENESS OF RECENT MIGRATION IN INCREASING RELATIVE RETURNS FOR FARM LABOR

We have concluded that farm labor is responsive to nonfarm employment opportunities. We would like now to examine the effectiveness of labor mobility in increasing the relative returns for farm labor. If workers in agriculture are dissatisfied with the returns for labor services as compared with the potential return in nonfarm sectors of the economy, we would expect that over time substantial migration from agriculture would lead to an increase in returns for labor in agriculture relative to nonagricultural employment. Figure 1 indicates that the return for labor services in agriculture increased relative to the return in nonagricultural sectors between 1935 and 1949. In fact, the real income of farm workers during the period 1942-48 was about as high relative to the incomes of industrial workers as it was during 1910-19. Since 1948, however, income per worker in agricul-

¹² J. V. McElveen, *Family Farms in a Changing Economy*, Agricultural Information Bulletin No. 171, ARS, USDA, 1957, p. 76.

SUMMARY

Farm people respond to differences in earnings of labor and labor has been transferred from farm to nonfarm employment at comparatively high rates. The patterns of migration have been consistent with what one would expect to find in an economy characterized by excessive labor in agriculture. The rate of migration has not been sufficient in the past, however, to substantially improve the economic position of labor in agriculture relative to that of labor in the nonfarm sectors of the economy. Likewise, migration and adjustments within agriculture have not been sufficient to greatly improve the productivity of labor in low income areas as compared with high income agricultural areas. Farm people, through a phenomenal rate of transfer of labor from farm to nonfarm employment, have made a striking effort to narrow the gap in returns for labor in farm and nonfarm employment. This has led to increased returns for labor in farm employment. The progress that has been made in improving the productivity of labor in nonfarm employment has been so great, however, that the gap in labor earnings has not been closed. Basic forces continue operation in the economy that make it necessary for large amounts of labor to transfer from farm to nonfarm employment during the next one to two decades even to maintain the relative productivity of labor in agriculture. If the productivity of labor in agriculture is to be increased relative to the productivity of labor in the nonfarm sectors of the economy, it seems clear that a policy of encouraging migration must be publicly accepted and programs must be developed to strengthen the rate of migration and the assimilation of farm people into nonfarm populations.

FARM PRICES, RESOURCE USE AND FARM INCOME

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There is little question that there exists a considerable body of opposition to the abolition of farm-price supports and other forms of governmental intervention in the process of agricultural price formation. The basis for this opposition seems to be two major propositions which, if valid, constitute significant criticisms of the performance of a free or open market system.

The two propositions are: First, in a free market farm prices would be too low to provide an adequate or satisfactory level of income for farm people. Second, the prices of farm products would be very unstable or highly variable. Variable or uncertain prices are undesirable because they make it difficult for farm people to plan both their spending and production activities. As I interpret the discussion of agricultural price policy during the past few years, much greater emphasis has been given to the question of the level of farm prices than to their variability.

The complaint that farm prices are too low is related primarily to the question of the adequacy of farm incomes and not to whether farm resources are used efficiently. The view that low farm prices result in low farm incomes represents an excessive simplification of the operation of our economy, if it is not actually wholly erroneous. Farm prices and farm incomes (the returns to workers, land and capital) are determined by a complex system of economic relationships. Insofar as one can attribute causality to the relationship between farm incomes and farm prices, it is that farm prices are low because the owners of farm resources are willing, within the setting in which they find themselves, to accept low returns for their resources.

It is not unreasonable that many should believe that the level of farm prices is the major long-run determinant of the income of farm people. If you have a steer for sale, it would appear that, if you received \$400 instead of \$250, your net income as a farmer would be higher in the first case than in the second. Or, if you sold fluid milk for \$5 a hundredweight instead of \$4, you could perhaps anticipate that your net returns as a dairy farmer would be increased as a consequence. But, as is so frequently true of obvious statements concerning economic phenomena, there is very little validity to the statement that the level of farm prices is the major long-run determining factor of the income of farm people.

I do not want to be interpreted as saying that the level of farm prices in 1958 will not have a significant effect on the level of net farm operator income in that year, for it will have such an effect. The reason why such an effect would occur is that a few months is too short a time for adjustments in costs and in inputs to have any significant effect upon the average costs or upon the volume of output.

Farm operators do absorb most of the gains or losses that result from changing prices in the short run of 1, 2, or even 3 or 4 years.

The basic nature of the point that I will attempt to develop in the new few pages can be illustrated by the two examples of price changes given above. If the price of milk were to increase by 25 percent during the next 12 months, it is possible, though not necessary, that the net income of dairy farmers would increase. Net income would increase if there were not an equivalent or greater increase in the price of an important cost item, such as feed. If feed prices were to increase enough, the income position of dairy farmers could remain unchanged or actually deteriorate. It is a fairly common reaction in the major fluid-milk producing areas that they have gained little from price-support actions, since the presumed effect of price supports has been to increase their feed costs. It should be noted, however, that in a period as short as a year a significant increase in fluid-milk prices would probably result in an increase in net operator income for that period. This is true because many of the costs in dairy production are relatively fixed in the short run—the investment in the dairy herd, in barns and equipment, and in land used to produce forage.

But the farmer who is engaged in feeding steers may not gain at all from price changes that occur over a period of a year. This is true because the price of feeder steers reacts very quickly to changes in the anticipated price of finished steers. If it were generally recognized that the value of a finished steer was going to be \$400 in one case and \$250 in another, the farmer engaged in feeding steers would be no better off in the first case than in the second (assuming that he fed the same number and quality of steers in both cases). In both cases the price of feeder steers would adjust to the price of the finished steers. Relatively large profits occur in cattle feeding when the actual price of finished cattle is substantially greater than the expected price at the time when the feeder cattle are purchased. The absolute level of the price of the finished steer is of little significance. Losses will occur if the value of a finished steer is \$400, but feeder stock were purchased in the expectation of a value of \$450. Similarly, profits will be realized if the value of a finished steer were \$250, but feeder stock were purchased in anticipation of a finished value of \$200.

Table 1 presents certain comparisons that are relevant to an understanding of the interrelationships between farm prices and farm incomes. In that table there are 5 comparisons of 2 or more years in which the parity ratios were identical or nearly so. These comparisons indicated that within each set there is a wide variation in the deflated average annual income per farmworker. For example, the deflated income for 1954 is more than double that of 1923 and almost exactly double that of 1924, while the parity ratio was the same in each of the years.¹ A comparison of 1953 with 1929, 1936, or 1937 indicates an increase in income of 75 to 85 percent. Between 1940 and 1955 income per farm worker increased by 60 percent, though it should be noted that there was a small increase in the parity ratio.

¹The use of the parity ratio, which uses the index of prices paid, interest, taxes, and wage rates as a measure of the price of nonfarm goods, is not quite the appropriate index because it includes farm wages. However, the inclusion of farm wage rates has little effect on the index, and much of the effect of wage rates is offset by the somewhat anomalous inclusion of interest and taxes paid per acre in the index. Since the early twenties the parity ratio would be increased by about 3 to 6 points if prices received were divided by prices paid rather than by the current parity index.

TABLE 1.—Comparisons of deflated average annual net income per farmworker and parity ratio, United States

Year	Average annual net realized income per worker ¹	Prices paid by farmers, family living (1947-49=100)	Deflated average annual income per worker	Parity ratio (1910-14=100)
1923.....	\$480	64.0	\$750	89
1924.....	502	64.0	784	89
1954.....	1,764	112.4	1,569	89
1929.....	593	63.2	938	92
1936.....	487	50.9	957	92
1937.....	519	52.5	988	93
1953.....	1,943	110.8	1,754	93
1940.....	484	49.7	974	81
1955.....	1,738	112.0	1,552	84
1956.....	1,888	114.1	1,655	83
1917.....	615	58.7	1,048	120
1918.....	767	69.8	1,099	119
1919.....	831	82.9	1,002	111
1947.....	1,926	97.3	1,979	115
1948.....	1,829	103.0	1,776	110
1912.....	341	41.0	832	98
1913.....	350	41.0	854	100
1914.....	331	41.9	790	99
1949.....	1,660	99.7	1,665	100
1950.....	1,671	100.9	1,656	101
1952.....	1,968	111.2	1,770	100

¹ Average annual income per worker is calculated by adding realized net farm-operator income, including Government payments but excluding changes in farm inventories, and wages paid to hired farmworkers, and dividing this sum by the total number of farmworkers, including unpaid family workers.

Sources: U. S. Department of Agriculture, *The Farm Income Situation, July 1957*, pp. 25 and 27; U. S. Department of Agriculture, *Agricultural Statistics, 1952*, p. 682; and *Economic Report of the President, January 1956*, p. 209.

The last two sets of comparisons cover longer periods of time. There was almost a doubling of real income per worker between the late teens and 1947 and there was slightly more than a doubling between the early teens and the years of 1949, 1950, and 1952.

There are two other aspects of the data that may be noted. First, in 1955, with a parity ratio of 84, the real income per worker is substantially higher than for any of the years included in the table prior to 1947, even though the parity ratio was 120 in 1917. Second, in the years from 1947 to date there is a fairly significant relationship between the parity ratio and the real income from farming per farmworker. However, this relationship is in part fortuitous due to the particular definition of farm operator income used. The income concept used for farm operator income was that of net realized income, which excludes the effect of changes in farm inventories. Income as measured by this concept includes the value of a reduction in inventories that may be sold in response to favorable current prices. This is what occurred in 1947 and the reduction in inventories was about one-tenth of net farm operator income. Table 2 presents data on average annual net income per worker on the basis of two concepts—realized and total net income. The latter concept includes the effect of changes in the value of inventory and gives a more accurate measure of the value of the income produced in a given year. When changes in the value of inventories are taken into account, it is seen that the year with the highest parity ratio (1947) has the fourth highest deflated average annual income per worker. It may also be noted that

1949, with the fifth highest parity ratio, has the next to lowest income figure. However, there is no question that, if the period as a whole is considered, there is a statistically significant relationship between the parity ratio and the deflated income per worker.

TABLE 2.—*Deflated average annual net realized and total income per farmworker and parity ratio, United States, 1947-56*

	Average annual income per worker ¹		Deflated annual net income per worker		Parity ratio (1910-14 = 100)
	Realized	Total	Realized	Total	
1947.....	\$1,926	\$1,759	\$1,979	\$1,808	115
1948.....	1,829	1,998	1,776	1,939	110
1949.....	1,660	1,579	1,665	1,584	100
1950.....	1,671	1,763	1,656	1,747	101
1951.....	1,974	2,120	1,794	1,927	107
1952.....	1,968	2,068	1,770	1,860	100
1953.....	1,943	1,871	1,754	1,689	93
1954.....	1,704	1,822	1,569	1,621	89
1955.....	1,738	1,771	1,552	1,581	84
1956.....	1,888	1,828	1,655	1,602	83

¹ Net realized farm income excludes the net change in farm inventories, while net total income includes the net change in farm inventories.

Source: U. S. Department of Agriculture, *The Farm Income Situation*, July 1957, pp. 19, 25, and 27 and table 1.

While there was 28 percent drop in the parity ratio between 1947 and 1956, the deflated total farm income per worker has declined by less than 12 percent.² This difference reflects a very considerable response by farmers to the declining prices since 1947. Much of the response, though certainly not all, has consisted in a significant reduction in the level of farm employment.

We will never know, of course, whether the adjustment to changing conditions since 1947 would have been greater had it not been for the Korean war and the considerable expansion of demand that occurred during 1950-51. Obviously, farm people do not make decisions that have long run implications, such as buying land, purchasing machinery, or changing occupations, on the basis of prices or incomes of 1 year. These decisions are based on their expectations of prices and incomes over a period of time. The rapid reversal of the declining trend in farm prices and incomes that started in early 1948 may have resulted in a significant upward revision of expectations of income prospects in agriculture on the part of many farm people. Similarly, we will never know what effects the farm price policy pursued during the period from 1950 through 1954 may have had in delaying adjustments that it is now all too evident were required.

It is now necessary to move from the examination of the movement of farm prices and incomes to a consideration of the basic economic

² If it were true that the level of farm prices were the major determinant of the level of farm income, one should expect that drop of, say, 25 percent in the parity ratio would result in a reduction in net income greater than 25 percent. This is true because the numerator of the parity ratio—prices received—covers essentially all the income of farm operators, while the denominator—prices paid, interest, taxes, and wages—covers only part of the net income and costs involved in farming. Thus, in 1952, for example, production expenses, which can be roughly equated with the coverage of the prices-paid index, amounted to 60 percent of gross farm income. Gross income was \$37.3 billion, and production expenses were \$22.4 billion. Assume that the prices-paid index remained constant and that prices received had decreased by 10 percent, resulting in a parity ratio of 90. Gross income would have fallen by \$3.7 billion and net income by the same amount from \$14.9 to \$11.2 billion. This would be a reduction of almost 25 percent in net income for farm operators and 20 percent in the net income of farm operators plus farm wages.

relationships that are involved in the determination of the level of farm incomes. The evidence presented is relevant in that it indicates that there is no simple, causal relationship between farm prices and incomes in the sense that the level of farm prices determines the level of farm incomes. In my opinion, any effort to improve the income position of farm people by increasing prices above the level that would prevail in an open market assumes that such a causal relationship exists.

If farm prices did determine the level of incomes of farm operators, this would mean that farm people merely accepted whatever level of income the "fates" gave them and failed entirely to use their intelligence and initiative to adjust to the circumstances in which they found themselves. If such were the case, there presumably would be as many people living on farms and as many workers engaged in agriculture today as there was in 1947 or 1940 or 1929 or even 1910. This we know is not the case and, consequently, we must turn to a somewhat more sophisticated analysis of the factors that determine the level of farm income. Such an analysis should be equally relevant whether there are price supports or whether there exists an open market.

The most important factor affecting the return to labor in agriculture is the general level of labor productivity in the economy as a whole. If we trace the course of farm income over the past century, we will find that it has followed very closely the general trends of income in the economy as a whole. This is not to deny that there have not been periods when incomes in agriculture have moved either more slowly or more rapidly than in the rest of the economy. From 1940 to 1947 farm incomes moved upward more rapidly than nonfarm, and since 1947 the average real income of the farm population has declined slightly while there has been a substantial increase in the nonfarm sector. However, if we compare 1956 with 1940 or with 1929 or with the period 1910-14, we find that farm incomes are now in about the same or higher relative position with nonfarm incomes.

The reason for the rather similar development in the incomes of farm and nonfarm people over time is that we live in an economy in which there is a great deal of mobility. The incomes that can be earned in the nonfarm part of the economy represent an alternative to farm people. They do have a choice other than farming, and the fact that over the past 16 years approximately a million people have either changed their residence from farm to nonfarm or have accepted nonfarm employment while remaining on a farm means that the alternative is a real one.³ It seems reasonable that, if farm incomes had been expected to be higher during this period and over the next decade, the migration rate would have been lower. If farm prices are increased by governmental action, the likely effect is that there will be more labor and other resources engaged in agriculture with only a moderate effect on average net earnings per worker.

³ Estimates based on A. M. S., USDA, Farm Population—Migration to and From Farms, 1920-54 (December 1954), and USDA and USDA, Series Census BAE, Nos. 14, 21, and 23. Most of the mobility—about 850,000 per year—involved a move from farm to nonfarm communities. The remainder—roughly 200,000 per year—represented workers and their dependents who changed from a farm to a nonfarm occupation without a change in residence. It should be understood that the concept of migration includes all persons who move, not just persons who are in the labor force.

My argument up to this point should not be interpreted to mean that there is no relationship between the level of farm prices and the returns to labor engaged in agriculture. If the demand for farm products were to increase much more rapidly during the next decade than during the past one or if no improvement in the state of the arts were economically applicable to agriculture, the level of farm prices would increase. Furthermore, the number of people engaged in agriculture would be greater than if demand had increased more slowly or if many technological innovations had been made in agriculture. Consequently, there would be a lower rate of migration out of agriculture than would otherwise occur. The differential between the income of farm and nonfarm people of similar abilities and tastes that is required to induce a net movement of 1 million persons a year from farm to nonfarm is certainly greater than the differential required to induce a net movement of half that number. Thus, if the rate of decline in farm employment can be reduced, we would expect higher returns to labor in agriculture. However, the converse is also true—if we could speed up the rate of movement of people from farm to nonfarm, the income of those who remain in agriculture would be increased.

What has been said above can be put somewhat more directly. If job opportunities in agriculture were increasing somewhat more rapidly than in the rest of the economy and there were no need for a net movement of people out of farming, then we could expect that farm incomes would be at roughly the same level as nonfarm.⁴ If job opportunities increase more slowly in agriculture, so that 250,000 persons decide each year to migrate, farm incomes will be below nonfarm. If the number who decide to move is one-half million, the income differential will be greater, and if the number is 1 million—the rate of the past 16 years—the differential will be still greater. To summarize, the greater the number of persons who find it to their own advantage to shift from agricultural to nonagricultural occupations, the greater will be the difference between the incomes of farm and nonfarm people of similar skills and capacities and preferences.

Most people who have given thought and study to the problem believe that the incomes of farm people are today less than that of comparable nonfarm people. I agree with this view. I have tried to show in another place that it would be necessary for the per capita income of the farm population to be about 65 to 70 percent of the per capita income of the nonfarm population if the real labor returns to farmworkers (including farm operators, unpaid family workers, and hired workers) were to equal what workers of comparable skill and capacity receive in the rest of the economy.⁵ In 1956 the Department of Agriculture estimated that the per capita income of the farm population was only 45 percent of the nonfarm average. While both my estimate of what is required for equivalent earnings and the

⁴ The point involved here is important. As stated, it would be necessary for job opportunities in agriculture to increase more rapidly than in nonagriculture if there were to be no net outmovement from agriculture. This is true because the rate of natural increase (excess of births over deaths) is greater on farms than in the rest of the economy. Consequently, if there were no outmovement from agriculture, employment in agriculture would increase more rapidly than in the rest of the economy.

⁵ D. Gale Johnson, *Labor Mobility and Agricultural Adjustment*, to be published by Iowa State College Press as a part of a symposium on agricultural adjustment problems.

USDA's estimate of farm income may contain some errors, the difference is so large as to indicate that farm labor returns are substantially below that of comparable workers in the rest of the economy. And, since I do not believe that the million farm people who have migrated each year for the past 16 years are fools aimlessly and needlessly wandering around the United States searching for better economic opportunities, some difference in earnings surely exists.

But the difference in earnings that is implied in the estimates of the previous paragraph is disconcertingly large, at least to me. The difference can be used as a basis of criticism for both the governmental intervention that we have had in farm product pricing in recent years and the functioning of an open market price system. It is a criticism of the price policies of the last two decades because the differential between the earnings of farm and nonfarm people is now as large as it was in the twenties. It stands as a criticism of an open market system because there has been little, if any, governmental intervention in the functioning of the labor market.⁶

Since there has been no significant intervention in the labor market, one might have hoped that the transfer of labor from agriculture to nonagriculture would have functioned on the basis of a smaller income differential. Except as the price-support programs and other governmental actions mislead farm people with respect to their long-run income prospects in agriculture, it cannot be argued that governmental programs have been responsible for the large income differential that now exists. In my opinion, the governmental programs have tended to delay realization, on the part of farm people, of the relative decline in economic opportunities in agriculture. The programs have probably resulted in increases in output that would not otherwise have occurred, and thus had some depressing effect on farm income. However, the major factor resulting in relatively low incomes has been the magnitude of the adjustment in labor that has been and still is required in agriculture.

We have seen that a net transfer of population from dependence upon agriculture to dependence on nonagricultural pursuits of approximately 1 million each year since 1940 has not been sufficient to result in a large increase in the relative incomes of the farm population.⁷ Over the next decade the net outmovement will have to be at least as great absolutely and substantially greater relative to the size of the farm population, if there is to be an important improvement in the relative income position of the farm population.

The basic policy problem, if we are concerned with the level of incomes of farm people, is that of reducing the differential in income that is required to induce a given rate of migration. I believe that it is possible to devise programs that could reduce the income differential substantially without interfering directly with the freedom of choice of the individual and without having any undesirable

⁶I am not unaware of the encouragement that the Federal Government has given to labor unions during the past 24 years, nor of other interventions in the labor market, such as minimum wage laws. But I do not believe that labor unions have had an important restrictive effect upon nonfarm employment and inflation has tended to negate whatever effects minimum wages might have had.

⁷In 1940 the average net income of the farm population from all sources was 38.2 percent of the nonfarm average; in 1956 the percentage was 44.7 percent. The peak in the ratio was in 1948 when farm per capita income was 62.8 percent of the nonfarm. (See the Farm Income Situation, July 1957, p. 24.) However, it should not be forgotten that the real income of the farm population increased by about 50 percent from 1940 through 1956—a somewhat larger increase than for the nonfarm population.

effects on the nonfarm labor market. The major problem, as I see it, is not devising the measures to do this but rather that of reaching agreement that it is both necessary and desirable to approach the farm income problem in this way. Generally, most people who are concerned with national agricultural policy have been reluctant to accept the fact that farm employment is declining, and even more reluctant to consider measures that would result in an even more drastic reduction in the farm population. Until this reluctance is overcome, not very much consideration is going to be given to ways and means of increasing the rate of migration out of agriculture.

To summarize my discussion of the relation between farm product prices and the returns to farm people, it has been shown that over periods of a decade or more there has been little relation between the parity ratio and the real income of farm workers. Even in shorter periods, significant adjustments occur that tend to minimize the effects of changes in the parity ratio upon the level of farm incomes per worker. Farm price supports and other subsidy measures may increase the number of people engaged in agriculture, but the long run effect on income per worker would be slight. I should add that, since the amount of land devoted to agriculture has been rather constant and is likely to continue to be so in the future, changes in the level of product prices do and would have an important effect on land prices. Thus higher product prices, whether the result of price supports or market actions, do result in gains for persons owning farmland at the time of the increase; however, subsequent farm entrants gain nothing from the higher land prices unless they inherit land.

The second major criticism of open market prices is that such prices are highly variable and uncertain. The major emphasis should be placed upon the uncertainty, since if the variation in prices over time could be predicted with fair accuracy such variability would not have serious impacts upon the use of agricultural resources. When it is said that farm prices are uncertain to a significant degree, it is implied that farm prices do not serve as reliable guides to farmers in making their production decisions. In the face of such uncertainty, farmers may not be able to utilize efficiently their resources, since many of their decisions may turn out to have been inappropriate. It is true that farm prices change significantly—by 10, 20, or even 50 percent—from the time the farmer must make his decisions to plant a crop or breed his livestock and when these products are available for sale. Thus, it is not unusual for farmers to expand production in response to relatively high current prices only to find that when the products are ready for sale he has produced more than he would have, had he known the actual prices that he received for the products. The opposite case also occurs, namely that production plans are made in terms of relatively low current prices, while the actual prices received would have resulted in a profit on a substantially larger output.

Price instability may have longer run effects on resource use as well as upon current production decisions. Over time methods of production are subject to change and the size of farming operations must be adjusted to changing economic conditions. If price variability is large and uncertainty about the future is substantial, farmers may delay changing production methods or modifying the size of their

farms, even though in terms of the actual prices that materialized certain changes would have been profitable.

The major causes of price instability in farm product prices are fairly evident. Price instability results from certain well-known characteristics of the demand for farm products, the nature of the agricultural production process, the relatively high storage costs for many farm products, and more or less frequent and contagious errors in expectations concerning future price levels. First, the price elasticity of demand of farm products is low. This means that a small change in the quantity consumed is accompanied by a large change in price. With no change in income or tastes, an increase in consumption of 5 percent might result in a price decline of from 10 to 30 percent for many farm products. This statement assumes price elasticities of demand ranging from a high of 0.50 to a low of 0.16. Second, the output of most farm products varies significantly from year to year because of factors beyond the control of farmers—weather, disease, insects. Given the low price elasticities, a change of 5 percent in output due to unplanned factors would generally result in a much larger opposite change in price. Third, the relatively high storage costs for many farm products means that even with large fluctuations in prices from year to year it is not profitable to store from one year to the next. Even those farm products that can be stored relatively cheaply at an annual cost of 10 to 20 percent of their value are subject to considerable price variations.

Finally, certain of our farm products illustrate a peculiar market condition of contagious behavior. When production is profitable on the basis of current prices, output is expanded to such a degree that prices are lowered substantially when the increased output is marketed. Conversely, when current prices are at relatively unprofitable levels, output is contracted and prices subsequently increase as a consequence of the reduction in output. The most notable cases where such a pattern seems to exist are hogs and potatoes.

If we are to have open market prices, we must anticipate that there will be a considerable amount of price variability and uncertainty. Before we accept such a statement as a major criticism of open market prices, two points must be weighed. First, while the type of price supports that we have had in recent years has tended to reduce price variability, in the case of some commodities—especially corn and wheat—the reduction in variability has not been very great. In the case of cotton and tobacco, the reduction in price variability has been quite significant. However, the reductions in price variability have been costly in terms of the Federal budget cost, deterioration of farm products in storage, loss of markets due to the unrealistic levels of prices, and the encouragement of production of certain commodities when demand conditions would not result in a price sufficient to cover the additional costs of the output.

In our criticisms of price variability, we must never go so far that we ignore the important role that market prices play in the allocation and distribution of farm products. When a crop, such as wheat, becomes available only once a year, prices must perform the role of allocating the use of that wheat over time, of distributing the various grades and qualities of wheat among innumerable uses and users, and of providing a basis for consumers to choose between wheat products

and other products in making their decisions. There is not the slightest evidence that any other technique for synchronizing these millions of decisions has been devised that will work with anything like the effectiveness of a price system.

This does not mean that if we start from the premise that the price system has great advantages we may not be able to make it function somewhat more effectively than it has in times past. It is obvious, for example, that an open-market price system functions more effectively in an economy with high and growing levels of employment and a reasonably stable general price level than in an economy subject to great variations in employment and serious inflations and/or deflations. It is also true that the more complete and accurate the information about market processes and developments and the more general the access to that information, the more effectively the price system will function.

For the past three decades our Government has played an extended role in providing more and better information about prices and underlying market conditions. It has been suggested that the Government might go substantially further; namely, to make predictions of future levels of prices for specific farm commodities and then to institute machinery to assure farmers that they would receive some major fraction, say 90 percent, of the estimated price. These ideas were called forward prices.⁸

I believe that it is possible to describe a situation in which the basic idea of forward prices as a means of reducing the price uncertainty confronting farmers could be made to function in a way that would be superior to a completely free price system. However, I am not now convinced that the American political system provides a setting that would permit forward prices to function in a manner that would reduce uncertainty without also being used as a means of raising the general level of farm prices. Once the criterion for establishing forward prices is changed from that of the best available prediction of future prices to that of providing a fair or reasonable level of prices, the gains that can be achieved by reducing price uncertainty are soon lost by impeding the functioning of the price system as a means of directing production.

In all my discussion I have ignored most of the consequences of the agricultural policies of the past decade. The large accumulations of stocks and the somewhat frenzied efforts to dispose of those stocks through export dumping, tied sales, barter arrangements and sales for soft currencies mean that a return to an open market price system would have to be carried out over a period of years. During the transition period, it would undoubtedly be necessary to provide some type of income assistance to farmers.

I have given major emphasis to the question of the relation between the level of farm product prices and the returns to agricultural resources, especially labor. I have attempted to show that the return to labor is determined by a complex set of economic relationships, but that the most important determining factor seems to be the general level of labor productivity in the economy. However, at the present

⁸ See T. W. Schultz, *Redirecting Farm Policy*, New York, Macmillan Co., 1943; and D. Gale Johnson, *Forward Prices for Agriculture*, Chicago, University of Chicago Press, 1947.

time farm labor does not receive the same level of returns as comparable labor in the rest of the economy because of the high rate of migration out of agriculture that is required by high birth rates in agriculture and the impact of economic growth upon the demand for and supply of agricultural products. The only major policy suggestion that was made is that governmental efforts should be directed to reducing the income differential associated with a given rate of migration out of agriculture.

FULL FLEXIBILITY WILL NOT SOLVE FARM INCOME PROBLEM—FARMERS NEED STRONGER BARGAINING POWER IN MARKETS

J. A. Baker, National Farmers Union

Amending existing farm programs in the direction of free market full flexibility will weaken farmers' market position. Still lower price supports, still tighter credit and still higher interest rates would reduce farm income—not increase it.

FARM INCOME IS TOO LOW

For many decades, farm income has been too low. This has had a debilitating effect upon farm people. It has retarded the economic and social development of rural areas. It has acted to prevent the Nation as a whole from the maximum attainment of its economic goals.

Congress, many years ago, recognized the importance of solving this problem. Existing Federal law states: "It is hereby declared to be the policy of Congress * * * to assist farmers to obtain * * * parity of income * * *" (sec. 2, 7 U. S. C. 1281) and contains the following definition: " 'Parity' as applied to income, shall be that gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful employment" (sec. 301 (a) (2), 7 U. S. C. 1281).

In this definition, Congress recognized the fact that farm people and the resources they own make at least as much contribution on the average to national economic welfare as do nonfarm people.

The risk to invested capital in farming is greater, not less, than the economywide average.

Modern family farming requires more skill and as great human strength and attention to details as does average nonfarm work.

Modern family farming requires as high type of management ability as that required of the average manager of nonfarm business enterprises.

In terms of pure interest return on invested funds to repay time preference, a dollar should be a dollar throughout the economy. However, the farmer pays a higher interest rate on borrowed money and earns a lower interest rate on the funds he invests in his own business than any other businessman in the economy.

In sharp contrast to their comparable contributions, farmers' returns are little more than two-fifths as much as nonfarm. Farmers' market bargaining power is so low that farmers' own productivity is an economic handicap.

According to United States Department of Agriculture Information Bulletin No. 176, the return to operator and family labor per

hour on typical commercial family-operated farms was less on many types of farms in many recent years than the average hourly wages paid to hired farm labor on those same farms.

For 23 of 28 types of commercial family-operated farms for which the USDA computed and published data, the return to operator and family labor was less than \$1 per hour in 1956. For 6 types, labor returns were negative (that is net farm income was not large enough to cover the charge for the use of capital).

The per hour earnings on commercial family farms are very much lower than the hourly earnings of hired workers in various other industries. For example, production workers in retail trade averaged \$1.57 per hour in 1956; in nondurable-goods manufacturing \$1.80; in durable goods manufacturing \$2.10; and in soft coal mining and building construction \$2.80. Farm work is quite similar to building construction labor, yet national average per hour return on the farm is only one-fourth that of building construction workers.

The disparity between farm income and nonfarm income is becoming greater each year. Current trends are not moving in the direction of closing the gap. Interest income to persons in August 1957 was up 64 percent from 1951; dividends were up 37 percent; rental income, up 14 percent; and weekly earnings of manufacturing workers up 28 percent and per farm net income was down 17 percent.

LOW FARM INCOME NOT IN NATIONAL INTEREST

A depressed agriculture acts as a drag or brake on the rest of the economy. A depressed agriculture may not immediately pull the economy into a general business depression during a period of unbalanced inflation. But a depressed agriculture will hold down the level of national income and would mean a reduced rate of national economic growth. Falling farm income further unbalances the economic structure and contains the seeds of a national depression.

PARITY FARM INCOME NEEDED TO PRESERVE FAMILY FARM

Fully flexible farm income policies will seriously weaken the family farm pattern of the Nation's agriculture.

Family farms are conducive to preservation of the American democratic free enterprise system. Industrialized agricultural units, whether corporate or individually owned or vertically integrated with big business are basically inimical to national well-being and continuation of the democratic rights and liberties enshrined in the United States Constitution and its Bill of Rights and other amendments.

On family farms, the farm family itself supplies most of the labor, management, financing and capital ownership. Even on the largest family farms, the family supplies most of the manual labor.

In contrast, on industrialized agricultural units with or without vertically integrated piece-work contracts, most of the labor is provided by hired hands. On such units, the economic functions are split and farming loses its integrative cohesive force in society. Economic class conflict is invited. If such units should become universal within the economy, society would lose a major balancing force for political and social stability.

Such a trend would, also, be unfortunate with regard to international affairs. The family farm ideal is one of the Nation's most potent exports of hope and good example to nations whose population is largely farmers.

Moreover, farm income parity for family-type farmers would be a source of spiritual strength for the society as a whole which cannot attain its maximum potential if economic injustice is done to the farming or any other segment of the population.

EXISTING COMMODITY PRICE AND INCOME PROTECTION PROGRAMS

Although farm income is currently too low, farm gross income would be at least a third less and farm net income would be more than a third lower if it were not for the existing Federal farm program.

There is a 185-page Compilation of United States Statutes designed in one way or another to strengthen the bargaining power of farmers in the commodity markets and to protect and improve farm income in other ways. This is Federal legislation relating to the sugar program, the wool program, marketing agreements and orders, various measures for expanding domestic and foreign consumption of farm commodities, price supports, acreage allotments and marketing quotas, the soil bank and crop insurance.

In addition, many States have laws that help farmers to acquire better bargaining power.

Most of the Federal programs have been whittled down in effectiveness by administrative decisions over the past four and a half years some of which whittling was made possible when mandatory minimum levels of support were reduced in the Agriculture Act of 1954.

As helpful as they are, existing programs are not, however, fully adequate to enable farmers to earn a parity of income. Even with these programs, farm income is too low.

THE SO-CALLED FREE MARKET

Some contend, incorrectly, I think, that if controls over market supply are gradually eliminated and average annual prices allowed to drop to market clearing levels, this will ultimately result in a demand and supply balance that will return a satisfactory income to farmers. This group has faith, if not economic proof, that changing existing programs toward the fully flexible free market will solve the farm income problem of commercial farmers.

The idea of the so-called competitive free market for farm commodities involves a situation where no farmer or group of farmers would be assisted or allowed by Government to exercise any control over marketings to raise prices. This would eliminate the price protective features of marketing agreements and orders for fruits, vegetables and nuts. It would probably bring chaos to the fluid milk marketing industry. It would place United States wool and sugar production in full competition with imports without protection of tariffs, import quotas or Government payments.

In a competitive free market, the prices of cotton, rice, tobacco, and wheat and all other farm commodities would be allowed to drop to

the unprotected world level established by unrestricted production. The prices of corn, other feed grains, soybeans, flaxseed, and cottonseed would be allowed to drop to the level where the entire year's production would move into channels of trade during the year. Peanuts would be allowed to drop to the oil price rather than being protected at the edible price. Manufacturing milk prices would be allowed to drop toward the oleo level. Some of the land now used for production of price-protected commodities would be transferred into production of fruit, vegetable, and nuts, whose prices would not then be protected under market agreements and orders.

Importers would be allowed to import as large a volume of competitive farm commodities as they saw fit. The International Wheat and Sugar Agreements would be abolished.

Farmers would be "free" to produce and market as much of any quality of any and all commodities as they could, but the Government would not stand by as now to buy up or make loans on such commodities to hold up the average annual market price above the "free" market level.

The preceding is an accurate description of Secretary Benson's full flexibility recommendation, as I understand it. He would use price support loans only to prevent wide swings in seasonal fluctuations but not to hold average annual prices above the so-called free-market level.

FARMERS' BARGAINING DISADVANTAGE

In the fully flexible free market the commercial family farmer would have an even weaker bargaining position than he has now.

The prices of things that farmers buy, both production and family living items, are retail prices like the prices all consumers pay. These retail prices are based on the wholesale prices behind them, which are administered prices—prices set by manufacturers, money-market bankers, railroad companies, and many others, on the basis of their Government-sanctioned ability to withhold supply to maintain the set price.

Manufacturers and other nonfarm segments of the economy protected by tariffs and corporation laws and Government commissions can hold down production and maintain price partly because of the small number of firms and the concentration of economic power within each industry. They can do so profitably because their overhead fixed costs are but a small proportion of their total costs, thus enabling them to make large cuts in costs as a result of reduced production.

The farmer not only buys his needs in an administered-price market dominated by sellers. Farmers sell their products into markets where buyers have the upper hand.

The farmer does not sell, usually, to the final consumer of food and fiber products. Farm commodities must move through processing and marketing channels where those who perform these services possess enough control over supply of their services to enable them to administer or control the prices they receive for such services. Since 1951, the processing and marketing agencies have had enough bargaining power to obtain for themselves the entire drop in farm returns without sharing any with the consumer.

WOULD SO-CALLED FREE MARKET DECREASE SUPPLY OF FARM COMMODITIES?

We in Farmers Union have made an extended and diligent search through libraries and by personal interview, without success, to uncover currently applicable scientific research results bearing on the question of the short- and long-run price or income elasticity of total farm production or supply. As far as we have been able to determine there are no published results of sound scientific, statistical and economic research of current significance that indicates any connection or relationship between market prices or farm income and the volume of farm production or farm marketings.

However, our knowledge of the history of farming in this country, observation of farming conditions in the Phillipines, Japan, India, and Egypt as well as other more developed countries, and the attitudes and economic motives and circumstances of American farmers leads us to believe that the following hypothesis concerning the effect of free-market prices or supply of farm commodities is probably correct.

The effect of lowering farm prices and falling farm income would be to motivate the individual farmer to try to increase his total production. The individual farmer would be forced to do so to attempt to keep his income from dropping as a result of the falling prices.

Each farmer would keep on trying to do this, if he did not give up and quit farming, until he had reduced his soil-conserving expenditures to the minimum, refinanced his delinquent short-term indebtedness repeatedly into long-term debt and had finally exhausted his credit. He would still keep trying until he became delinquent upon his real-estate mortgage.

Then he might try to sell before the foreclosure date. If he did sell, a neighbor, trying to increase his scale of operations, would buy the farm, if he had the needed funds or credit. Or a nonfarmer with savings from nonfarm income sources would buy the farm. In either event, the new owner or a renter would take up where the old owner left off and continue to try as long as he could to maximize his income by producing and selling more and more at an everfalling price.

This would be a long and painful process of financial distress, reduced levels of living and business failure. More and more farmers would find themselves unable, or unwilling to invest in new and improved practices, new and more productive machinery and equipment and fertilizers and irrigation, and other facilities. The rate of applying improved technology in farming would slow down and this would in the long run dampen down the rate of increase in farm production and volume of marketings.

This "free market" approach using "full flexibility" as the national policy would take a long time to reach a solution. It would do so only through untold financial distress, personal suffering of millions of farm and small-town people, destroyed farm resources, and reduced technological advance. By then farming might well be (1) concentrated on a few hundred thousand factories-in-the-field; (2) conducted by vertically integrated nonfarmers; (3) performed by poverty stricken peasants on eroded run-down farms; or (4) a mixed pattern of all three of these.

This prospect has grave implications for the future safety and security of a nation whose population is expected to be a fourth larger in less than 20 years during a period when we are subject to emergency situations that could develop suddenly at any time in the foreseeable future from the unsettled world political and diplomatic situation.

We have no fear but that this increased need for farm production for the growing population can be fully met in the foreseeable future, if, as a nation, we do not allow our magnificent farm plant to become deteriorated and run down.

Official historical figures do not necessarily prove this conclusion that falling prices and income will not reduce farm output. But any who would try to prove the opposite that falling prices will reduce output would be required satisfactorily to explain them away. For example:

(1) In the period since 1929 there have been 11 different years in which farm prices were lower than the year before. In only 2—from 1932 to 1933 and from 1937 to 1938—did total farm output drop. Only from 1932 to 1933 did farm output per man-hour drop. (To measure output response to price and income changes in a particular year, I have used a 2-year average of output figures covering the year to which price and income data apply and the following year. This is an approximation of a smoothed 6 months' lag.)

(2) Since 1929 there have been 12 different occasions when the parity ratio dropped from one year to the next, in only 2 years (from 1932 to 1933 and from 1937 to 1938) did total farm output decrease and only from 1932 to 1933 did farm output per man-hour decrease.

(3) There have been 10 occasions since 1929 when national farm gross income, national farm net income, and average per farm net income (adjusted for price change) dropped from 1 year to the next, in only 2 years did total farm output drop and per man-hour farm output dropped only once.

(4) From 1929 to 1932 prices received by farmers dropped by 56 percent, the parity ratio dropped by 37 percent, national farm gross income dropped by 54 percent, national farm net income dropped by 67 percent, and net income per farm (adjusted for price change) dropped by 53 percent; total farm output did not drop; farm output per man-hour increased by 2 percent.

(5) From 1946 to 1949, average per farm net income (adjusted for price change) dropped by 25 percent, farm output per man-hour rose by 17 percent, and total farm output increased by 4 percent.

(6) From 1947 to 1949, the parity ratio dropped 13 percent, yet total farm output rose by 1 percent and output per man-hour rose 11 percent.

(7) From 1951 to 1956, prices received by farmers dropped 22 percent; the parity ratio dropped 25 points (23 percent), national farm gross income dropped 11 percent, national farm net income dropped 38 percent, and per farm net income (adjusted for price change) dropped by 23 percent; yet per man-hour farm output increased 10 percent and total output increased by 7 percent.

(8) In no extended period when farm prices and income fell over a long period of years (the drop from 1951 to 1956 is the longest sustained drop since USDA began keeping records in 1910) did either total or per man farm output decrease.

FORCING FAMILIES OUT OF FARMING IS NO ADEQUATE SOLUTION

There are those who agree generally that falling prices will not substantially balance supply with demand in the near future at prices anywhere near the current level or higher. But they contend this is not the goal we should shoot at.

These analysts say—let farm prices keep on dropping down to the equilibrium level; of course, total farm gross income will fall; but low incomes will move enough people off the farm, they calculate, that ultimately per person farm income will rise to the parity level we are seeking.

Farm population, farm employment, and the number of farms have already been dropping at a rapid rate yet farm income continues to fall. Between 1950 and 1956, farm population decreased by 11 percent—from 25,058,000 to 22,257,000. The net migration from farms was more than twice as great as the “natural increase” in farm population was 14 percent smaller in 1956 than in 1950.¹

GOOD ARITHMETIC BUT BAD ECONOMICS

The gentlemen who urge moving families out of farming as a solution to the income problem may be good in fractions but they are unsound in economics, political science, and sociology.

In the first place, we cannot condone, much less support, a deliberate policy of driving families out of farming by way of forced reductions in farm income. But laying aside its human social and political implications, such a policy will not drive families out of farming fast enough to raise per person farm income to the parity level in the face of the rate at which farm prices and total national farm gross incomes would fall in a fully flexible free market.

It is not the lowness of farm incomes but the existence of known and available nonfarm job opportunities that is the major factor which encourages farm people to take part-time off-farm employment and to migrate. If low farm income alone would cause farm families to migrate to cities, there long since would have been nobody to operate the Nation's farms. Even in the best years in history, 1947 and 1951, farm family income was only 55 percent of a parity with nonfarm income.

As the depression of the early 30's deepened and nonfarm unemployment rose and nonfarm job opportunities dropped, the number of farms increased although farm prices and incomes were dropping disastrously.

Since 1935, the number of farms has been falling at an approximately steady rate of 100,000 per year whether farm income rose or fell or farm prices rose or fell. The number of farms dropped at substantially the same rate per year from 1939 to 1946 when prices received by farmers and farm income per farm was rising as they did from 1948 to 1949 when prices, the parity ratio and farm income dropped. The number of farms dropped as rapidly from 1949 to 1951 when net farm income rose by 20 percent and the parity ratio was up 7 percent as they have since 1951. A similar situation prevails with respect to farm population numbers.²

¹ See Farm Population Estimates for 1956, USDA, August 1956.

² Data source: Economic Indicators.

MIGRATION INCENTIVES

Some of those who urge moving families out of farming as a solution to the low farm-income problem do not favor the force-out procedure but recommend the enactment of a program of Federal grants, loans and education to make it easy and attractive for farm families to move to town. For example, a cotton sharecropper who wanted to move to Detroit would be able to obtain from the Government the needed retraining to fit him for a city job, his moving expense would be wholly or partially subsidized or covered with a loan; he would be eligible to receive a weekly subsistence and living cost compensation during the period he was looking for a job.

This policy would, of course, be preferable to the force-out approach. Farm people have already been making great efforts to adjust. The transitional problems of those who want to leave the farms should certainly be made as bearable as possible.

But even in connection with the migration incentive program, we would remind its advocates of this significant fact:

To raise farm income to parity by reducing the population numbers denominator of the fraction rather than increasing the income numerator would require a cut in farm population from 22 million to approximately 10 million, and a reduction in the number of farms from 4.9 million to approximately 2.2 million. This would be in addition to the annual out-migration now required by the excess of births over deaths on farms.

To have maintained average per farm income (adjusted for price changes) at the 1951 level while allowing national farm income to drop to the 1956 level, would have required a reduction in number of farms to 3.9 million instead of the 5.0 million reported for that year.

WILL "FREE MARKET FULL FLEXIBILITY" INCREASE CONSUMPTION AND EXPORTS?

Some advocates of free market full flexibility argue that while falling farm prices may not greatly reduce the volume of farm marketings this is of no concern because the drop in prices will increase consumption and exports to such an extent that total national farm gross income will rise because of the greater volume.

FULLY FLEXIBLE PRICES WILL NOT INCREASE EXPORTS

We are already selling as much farm commodities as we can to other countries at competitive world prices through forced-pressure export subsidy programs and otherwise. In addition, we are selling all the so-called surplus commodities that we can up to a billion-dollar-a-year rate for local or soft currencies under the Public Law 480 program. In addition, Congress has demonstrated a willingness to make available all the funds that may be needed to make United States farm commodities available on a grant basis to relieve famine and other emergency situations of people throughout the world.

United States exports of farm commodities in 1956-57 totaled \$4.7 billion, nearly one-sixth of total cash receipts for farm marketings, the highest absolute volume and the highest percentage in recent history.

Further lowering of export prices might bring some slight increase in export sales but it would be but a very small fraction of the total volume of farm marketings.

Further reductions in the price of export commodities would probably result mainly in retaliatory measures as other countries sought to protect their own producers from the increased competition; exporting nations would lower their asking prices, importing nations would raise their barriers to farm and other imports from the United States.

Moreover, launching upon cutthroat competition by lowering world prices of all farm commodities is the opposite of intelligent foreign policy and would be bad for farm producers all over the world. Doing this could only result in ill will for America.

Instead of trying to expand exports by cutting prices, we favor the negotiated establishment of an International Food and Raw Materials Reserve Bank with at least four operating divisions (1) to stabilize prices, (2) to relieve famines, (3) to use abundant food and fiber supplies to establish universal free general and vocational education systems and otherwise as capital to promote through loans and grants a more rapid rate of economic development and growth, in nations requiring such assistance; and (4) to act as a sort of holding company for additional international commodity agreements similar to the International Wheat Agreement. Continuation of export subsidy, Public Law 480, and Reciprocal Trade Agreements programs would largely operate through or in coordination with the International Food and Raw Materials Reserve Bank.

DOMESTIC CONSUMPTION INCREASE LESS THAN PRICE DROPS

As to increased domestic consumption, we know from the evidence that farm income cannot be raised by dropping prices through adoption of the free market full flexibility formula. In fact, there is no way to avoid lower farm gross and net farm incomes if falling farm prices are relied upon to bring an increased volume of consumption.

The reason is simple. To obtain increased consumption the price drop must be greater percentagewise than the desired percentage increase in volume. This is true both for farm commodities as a combined group and for practically all individual commodities. It is simple arithmetic to observe that the total of price times volume can in that event only be lower not higher. In this regard the following

table (based on scientific statistical research of Federal and State agencies) is instructive:

Commodity or commodity group	Effect on consumption of 1 percent cut in farm price	Effect on farm price of a 1-percent cut in market supply	Commodity or commodity group	Effect on consumption of 1 percent cut in farm price	Effect on farm price of a 1-percent cut in market supply
(A)	(B)	(C)	(A)	(B)	(C)
	<i>Percent</i>	<i>Percent</i>		<i>Percent</i>	<i>Percent</i>
All farm food products.....	+0.2	+5.0	Fluid milk.....	+2	+5.0
All livestock and products....	+5	+2.1	Manufacturing milk.....	+7	+1.4
All food livestock products....	+4	+2.5	Potatoes.....	+3	+3.5
All meat animals (hogs, cattle, lambs).....	+6	+1.6	Hay.....	+7	+1.4
Hogs.....	+7	+1.5	Wheat (domestic food).....	+0.5	+20.0
Beef cattle.....	+8	+1.2	All feed grains.....	+5	+1.9
Veal calves.....	+1.2	+8	Corn.....	+8	+1.3
Eggs.....	+3	+2.9	Oats.....	+1.4	+7
All milk.....	+3	+2.3	Grain sorghums.....	+3.9	+2
			Barley.....	+2.2	+4

Moreover, lowering food and fiber prices do absolutely nothing to shift the demand curve to the right. As a matter of fact, a low price policy may actually cause the demand curve to shift to the left. Consumers might get into the habit of using the extra money for nonfarm goods and thus present to the farmer a lower schedule of volumes of farm products they would be willing to take at different price levels.

It would take a 5-percent drop in the average prices received by farmers for all foods to bring about a 1 percent increase in consumption, provided consumer incomes and other factors remained unchanged (preceding table.)

Thus to sell a 101-percent volume farmers would have to reduce prices to 95 percent of the previous level. If 100 baskets sell for \$100 each, the total gross is \$10,000. If 101 baskets will sell for only \$95 each, total gross drops to \$9,595, or 4 percent less than before the price drop.

DROPS IN FARM PRICES MAY NOT REACH CONSUMERS

Less and less percentage of farm prices drops are being reflected in reduced retail prices. Percentage-wise retail food prices dropped 62 percent as much as in prices received by farmers in the 1929-32 period; 45 percent as much in 1937-39 period; 31 percent as much in the 1947-49 period and only 14 percent as much in the long 1951-56 drop.

On a year-to-year basis, somewhat more of the drop in prices received by farmers was reflected in lower retail prices. [This caused farmers to absorb (or mask) the nonfood price inflation from 1952 to 1956.] In 1952-53, 16 percent of the farm-price drop was reflected in lower retail prices; in 1953-54, about 6 percent; and in 1954-55, about one-third. But in 1955-56 retail prices rose when prices received by farmers declined. When prices received by farmers rose by 2 percent from July 1956 to July 1957, retail food prices, also, rose by 2 percent.

Considering the net result of all the changes for the entire period from 1951 to July 1957, prices received by farmers dropped by 18 per-

cent from an index of 302 in 1951 to an index of 247 in July 1957 (1910-14=100), but over the same period, retail prices paid by consumers for food rose by 4 percent, from an index (1947-49=100) of 112.6 to an index of 117.4. If dropping farm prices will not reduce retail food prices, certainly the farmer has no opportunity whatsoever to increase volume of consumption by allowing his prices to drop.

This appears to be the result of a greater elasticity of the demand for packaging, food stamps, parking lots and advertising than of the demand for the food nutrients in farm food products.

Even if farm price drops were passed through to retail prices, consumers will not increase the volume of their purchases by as large a percentage as the retail price is dropped.

Demand for food becoming more inelastic.—Indications are that the farm price and the retail price elasticity of demand for farm food products is becoming more, instead of less, inelastic.

This situation results primarily from two developments, both of which seem certain to continue for some time.

(1) As consumers' personal incomes increase their demand for food becomes more and more inelastic with reference to price. They are already able to buy almost as much food as they want; they take whatever money they might save from lower food prices and spend it not on buying more food or fiber but to buy more nonfarm goods and services.

(2) The other factor responsible for increased inelasticity of domestic demand is the continuing increase in the dollar and cents marketing margins or spread between prices received by farmers and those paid by consumers.

No economist now predicts that either of these trends has run its full course; they expect both to continue. If this outlook is correct, demand for farm food products measured at the farm-price level will be more inelastic next year than it was last year, and still more inelastic year after next. By then instead of taking a 5-percent cut in farm price to move 1 percent more goods, it may take a 6- or 7-percent cut in farm price.

Demand shifters in the long run.—It is clear that in the short run reducing farm prices will not increase volume of consumption sufficiently to raise farm income. But what about the longer run when population increases and rising per person incomes may cause the demand curve to shift to the right? (Meaning that consumers as a whole will buy bigger volumes at the same prices.)

Two separate considerations are involved. First the income elasticity of the demand for farm commodities appears to be decreasing. And, in any event, little more than one-fourth of any annual percentage increase in consumer income would be reflected in increased demand for farm food products.

Secondly, the only commercial market food demand shifter that we can depend on for really significant increased demand for food is the approximately 1.7 percent annual increase of the national population.

Combining the demand-increasing effects of both population increase and of increasing per person incomes the maximum average annual increase in demand at the same price level would at the most be not more than about 2 percent.

COMMODITY BARGAINING POWER APPROACH MORE PROMISING THAN FULL FLEXIBILITY

The same economic forces that spell farmers' ruin under full flexibility can be used by farmers, with the aid of Government, to improve their incomes. If farmers could cut total marketings of food from 100 baskets to 99 baskets and thereby receive \$105 per basket, as they could, if current research results are correct, they could raise their gross income from \$10,000 to \$10,394, an increase of almost 4 percent for each 1 percent cut in market supply. By obtaining greater control over their own products, farmers could literally raise their income status by their own bootstraps.

Farmers' control over the volume of marketings would have to be airtight; no bootlegging could be permitted. But given the right, and the needed help, to maintain control over total supply for domestic consumption, farmers could raise the prices for the domestic part of their sales to any level permitted by Congress. Each cut in supply marketed and the resulting 5-to-1 increase in price would bring an increase in farm gross income of approximately 4 percent and on the average farm a 10-percent increase in net farm income for each 1 percent cut in market supply.

This opportunity applies only to that part of total farm production that is consumed domestically. The volume destined for export would have to be insulated from the domestic market and handled under a separate operation.

In addition, this economic opportunity is as bright as that pictured only if the control over volume of marketings is applied to farm output as a whole and to all individual commodities uniformly as well as to individual commodities separately. The possibility of commodity substitution comes into play and the income effectiveness of raising price by restricting the volume of commercial marketings diminishes. This consideration is particularly important with respect to operations expected to continue for more than a year or two.

In light of these economic facts, farmers' best hope to reach parity income is to obtain the right and assistance from Government, State and National, to make use of bargaining power similar to the market proration practice of the oil industry through a comprehensive and integrated system of commodity market supply adjustment and price improvement programs along the following general lines:

1. *Single-commodity market proration goals.*—Through such programs as marketing agreements and orders, individual commodity marketing goals, marketing quotas, stabilization funds or similar private or public operations, adapted to the needs and economic characteristics of the different commodities, farmers producing each commodity would acquire the right to cooperate with each other, privately or through government programs, to balance market supply with effective demand at a price that would return a parity of income to the farmer by means of enforcement of marketing restrictions or by engaging in surplus removal purchases with private or public funds or by a combination of the two methods.

2. *All-commodity farm market proration goals.*—By establishment of a compulsory all-commodity marketing goal and voluntary conservation acreage-reserve program to balance the total volume of farm marketings with effective demand at parity income equivalent prices.

3. *Use parity-income formulas.*—No system of commodity-supply adjustment and price-protection programs is adequate if it contains no specific income and price goals and mandatory support floors. To provide for this need the parity income formula in existing law should be placed into effect to replace the price parity formulas now being used.

4. *Administered by elected farmer committees and boards.*—The system of commodity-supply adjustment and income-improvement programs I have recommended should be administered and controlled, within limits established by Congress and the President, by farmers themselves through a Federal Farm Income Improvement Board in the United States Department of Agriculture, composed to a large extent of farmers elected by elected members of the State farmers committees, and at the State level by farmer committees, a majority of the members of which would be farmers elected by county farmer committeemen and at local levels by elected county and township committees of farmers.

5. *Import controls.*—Imports of competing farm commodities would have to be restricted at all times when the domestic market price was below the parity income equivalent level or alternatively, and preferably, a system of parity deficiency or production payments would have to be instituted or the two methods be used in combination as has been done in the case of wool and sugar.

6. *Continue export-subsidy programs.*—The export-subsidy programs would need be continued. Otherwise producers of export commodities would have to accept world prices for the export fraction of their production.

As soon as possible, additional international-commodity agreements such as the International Wheat Agreement should be negotiated and put into operation for all farm commodities that enter importantly into international trade. The international commodity agreements should be buttressed and backed up by establishment of an international food and raw materials reserve bank through which the United States export subsidy and Public Law 480 type programs would largely be operated.

7. *REA-type marketing and processing facility loan program.*—As a long-term program to improve the bargaining power and economic position of farmers and help provide needed consumer protection, we continue to urge enactment of a nationwide REA-type loan and technical-assistance program to enable farmer-controlled business enterprises to acquire, or build, and operate facilities and services to assemble, process, distribute and market farm commodities and products thereof. Such a program successfully carried out would serve as an effective yardstick to measure and hold down the rapidly increasing spread between prices received by farmers and those paid by consumers.

8. *Supplementary programs.*—To improve their incomes, farmers need stronger bargaining power in money as well as commodity markets to balance up their position with respect to the generally administered-price and administered-production nonfarm economy. In addition to the above improved programs, Federal farm policy should be improved by amendments to existing laws that will:

(a) Transform Farmers' Home Administration into an effective yardstick family farm credit agency along lines of bills introduced

by the chairman of your subcommittee, Senator Sparkman (S. 1533), and by Congressman Patman, a member of your subcommittee;

(b) Revitalize and expand the crop-insurance program more rapidly;

(c) Improve effectiveness of old-age and survivors insurance program as applied to farmers;

(d) Provide supplemental income improvement programs for particularly low-income farm families in depressed rural areas along lines proposed by the House Subcommittee on Family Farm Policy and in the bills sponsored by Senators Sparkman and Douglas and Congressman Patman, members of your subcommittee.

Any of these recommendations, if put into effect, would improve the existing situation. If all these recommendations were placed into operation, the total program would operate to improve farm income gradually, but certainly, to a full fair parity level with the rest of the economy. It would do so without building up stocks of commodities in Government ownership and at little or no net cost to the Federal or State Governments except for the supplemental low-income farmer program and the consumer safeguard programs outlined below.

CONSUMER SAFEGUARDS REQUIRED

In making the above recommendations, I fully recognize that I am suggesting that Congress make a very broad grant of authority indeed to farmers to make use of the same devices that have in the past been granted only to railroads, airlines, steel companies, money lenders, labor unions, and many other nonfarm segments of the economy.

For example, using the authority allowed them by Government, farm implement manufacturers in 1932 cut output to only 17 percent of the 1929 level.

Obviously neither the Congress nor the people should grant the power to farmers to cut food and fiber production by any such degree. To do so would be unthinkable. You can get along and live without a new car or a new tractor but you cannot live long without food. Food is in a different category.

For this reason I suggest that farmers not be allowed to use their market supply adjustment programs to raise market prices above the parity income equivalent level of prices.

Role of parity income deficiency payments.—Moreover when market prices of farm commodities begin to drop owing to the increase of unemployment, they should be allowed to drop to the full extent of the reduced demand that is due to the less than full employment condition. The difference by which market price failed to reach the price goal would be made up by a parity income deficiency or production payments. Such payments would also be used to make up for market price drops due to forecasting errors that overestimated the volume of marketings that full employment demand would take at the price goal. We need to recognize that the Farm Income Improvement Board would probably be inclined to overestimate rather than underestimate the volume needed so as to not take a chance on having too small a market supply in the year ahead. Such payments to any one farm should be limited to actual sales and not more than the sales of a maximum family-size farm.

National food allotment and school-lunch programs.—In addition, unemployed and other low-income consumers should be protected by means of the enactment and operation of a national food allotment stamp plan. Other groups such as schoolchildren should be protected by expansion of the milk for children and the school-lunch program.

National safety reserve.—To avoid the possibility of food and fiber scarcity owing to sudden development of widespread drought, floods, insect or disease infestation, and disruptions to the peace, a national safety reserve of storable farm commodities and storable products of perishable commodities should be established, located at strategic points, at levels determined by the President, upon the advice of the Security Council and the Administrator of Civil Defense, to be adequate, but completely separate from the commodity supply adjustment and price protection programs and fully insulated from depressive effects upon commodity markets.

SUMMARY

1. Farm income is too low. This is not in the national best interest. It is not satisfactory to farm people.

Yet attainment of full parity farm income was declared the intent and policy of Congress many years ago (secs. 2 and 301 (a) (2), U. S. C. 1281).

2. Farm income would be even lower than it is if existing Federal statutes that provide commodity price improvement and supply-demand adjustment programs were not still in effect even though their effectiveness has been scaled down over the past 4½ years. Elimination of existing price and income protection programs would reduce national farm gross income at least one-third below current levels. Farm net income would be further reduced by nearly half.

3. Farmers need stronger bargaining power in commodity and money markets and with respect to governmental decisions to balance up their position with respect to the generally administered-price and administered-production nonfarm economy to which they sell and from which they buy and in regard to their equitable access to governmental protection and services.

(a) To do this requires extensive improvement of existing laws, the major of which are amendments that would:

(b) Revitalize and expand the crop-insurance program more rapidly;

(c) Improve effectiveness of old age and survivors' insurance program as applied to farmers;

(d) Provide supplemental income improvement programs for particularly low income farm families in depressed rural areas:

(e) Amend existing Federal farm price support and related programs into a comprehensive system of workable commodity programs and supplementary policies that will provide full parity of income protection for the family farm production of all farm commodities through giving farmers greater control over the market supply and price of their products with adequate consumer safeguards.

4. In the so-called free market, the family farmer would have to sell his products for what price administering buyers would offer, and

pay what price-administering sellers ask. He would be completely devoid of bargaining power, unprotected by price supports, or marketing quotas, unprotected by import duties and quotas, unauthorized even to cooperate with other farmers to join together, through marketing agreements and orders, or otherwise, to protect his price by controlling market supply.

5. All the evidence of experience and knowledge of farmers' economic position in an administered-price economy indicates that in the short run lower prices will increase total farm production. In the long run, lower prices may slow down, but will not stop, expanding farm output resulting from the thrust of advancing technology in spite of the resource depletion, financial distress, and human suffering that would result.

6. Moving farmers out of farming, by force-out or by migration incentives, will not reduce farm production. Nor would this be a feasible way to raise farm income to parity. Even, if feasible, it would do so very slowly, if at all, in periods of falling national farm gross income.

7. Practically all farm commodities are now being offered in foreign markets at competitive world prices or less. Exports in 1956-57 were at an all-time high. Increased volume of commercial exports could probably be bought only at the expense of greater percentage drops in price which would lower farm gross income thus injuring our own farmers as well as those in other countries.

8. Lowering of farm prices to increase volume of domestic consumption cannot raise farm income for several reasons:

(a) Assuming no change in the demand curve itself, lower prices cannot bring increased gross farm income because price per unit must be dropped by approximately 5 times the percentage increase in volume of consumption.

(b) Lowering of farm prices will not reduce the widening marketing margin which trend is both increasing the farm price inelasticity of demand and pushing downward the demand curve at the farm level.

(c) Lowering of farm prices will not speed up the rise in consumer incomes. Moreover, as consumer incomes rise both income inelasticity at the consumer level and the farm price inelasticity of demand become greater.

(d) Lowering of farm prices will do nothing to speed up population increase. However, the 1.7 percent per year increase in population will, to be sure, increase demand (shift the demand curve upward and to the right), if per person income does not drop.

(e) In total, demand can be expected to rise (demand curve shift to right) not more than 2 percent a year from the combined effects of increasing population and rising per person consumer incomes in an expanding full employment economy. But this will occur whether or not farm prices are reduced by application of the full flexibility policy.

9. Under the full flexibility policy it would probably take at least two decades for the less than 2 percent annual increase in domestic demand, to catch up with the existing level of overproduction and overtake at some future date the slowed-down rate of output expansion brought on by falling farm prices and income.

10. However, the volume of farm marketings can feasibly be adjusted to effective demand in a way that will improve farm income.

By obtaining a 5 percent price increase for each 1 percent cut in total volume farmers can improve their gross income in percentage terms by approximately four times the percentage cut in market supply.

11. The fact that the farm price inelasticity of many individual commodities handled singly is less than the farm price inelasticity of the demand for all food and fiber commodities as a combined group, suggests the desirability of an integrated system of market proration which would include:

(a) *Individual-commodity market proration goals.*—Such programs as marketing agreements and orders, individual-commodity marketing goals, marketing quotas, stabilization funds and similar private and public individual-commodity operations, adapted to the needs and economic characteristics of the different commodities, through which farmers producing each commodity would acquire the right and the power to cooperate with each other, privately or through Government programs, to balance market supply of the commodity with effective demand at a price that would return a parity of income to farmers by means of enforced marketing restrictions or by surplus removal operations with private and public funds or both methods in combination.

(b) *All-commodity market proration goals.*—Establishment and operation of a compulsory all-commodity farm marketing goal and voluntary conservation acreage reserve program by which farmers would be enabled to balance the total volume of all farm marketings to effective demand at parity income equivalent prices.

(c) *Parity income formulas.*—Use of the parity farm income provisions of existing legislation (sec. 301 (a) (2) 7 U. S. C. 1281) to replace price parity formulas as the basis for measuring the effectiveness of farm commodity price and income improvement programs.

(d) *Administered by farmers.*—Placing the control and administration of governmental as well as private farm income and commodity price improvement programs in the hands of farmers themselves through Federal, State, county, and township farm income improvement boards or committees, elected democratically by farmers, established within the United States Department of Agriculture.

(e) *Parity import controls.*—Automatic fluctuating parity level tariff or compensatory payments or both combined, as in sugar and wool programs, on competing imports.

(f) *Nationwide REA-type farmer-owned processing plants.*—Enactment and establishment of a nationwide REA-type program to extend loans and technical assistance to farmer-owned and controlled business enterprises to acquire, or build, and operate farm marketing, storage, and processing facilities and services.

12. *Consumer safeguards.*—Establishment of this commodity supply adjustment and price improvement program should be accompanied by enactment of the following safeguards for consumers, for foreign policy, and other purposes:

(a) National food allotment stamp plan to protect unemployed and other low-income consumers and expanded school-lunch and milk-for-children programs;

(b) Additional international commodity agreements and an international food and raw materials reserve bank through or in connection with which United States export subsidy and expanded

Public Law 480, point IV, and reciprocal trade agreement programs would largely operate;

(c) Farmers should be prohibited from using market supply adjustments to raise farm prices above the parity income equivalent level;

(d) Parity deficiency or production payments, rather than market supply reductions, should be used to make up for insufficiency of demand resulting from increase of unemployment above the frictional minimum. Payments would, also, be used to compensate for forecasting errors and where required by certain commodities, such as probably cotton and peanuts, to successfully operate multiple-price plans. When payments are used they should be subject to a family farm cutoff placing an upper limit upon the eligibility of an individual producer.

(e) Establishment of a national safety reserve or security stockpile of storable farm commodities of storable products of perishables, stored in strategic locations and in a volume determined as needed by the President, upon advice of the National Security Council and the Administrator of Civil Defense.

CONSIDERATIONS ON THE PROPER RELATIONSHIPS OF PRICE-SUPPORT LEVELS AND MARKET PRICES

Warren E. Collins, American Farm Bureau Federation

The proper relationship of price-support levels to market prices is not a simple matter, as evidenced by the extensive research, voluminous writings, and endless debate of this subject over the last quarter of a century. As we continue our pursuit for greater enlightenment on the subject, however, we can take consolation in the realization that, while the problem is becoming none the less complex, we are becoming progressively better equipped to deal with it as each new experience is added to our store of knowledge. Although many of the price-support efforts of the past have proved sorely disappointing, and in no case has any program worked to the satisfaction of all concerned, we have through these efforts established invaluable guideposts to direct our work on the problem in the future.

OBJECTIVES OF FARM POLICY

It is reasonable to assume that each member of this committee, as well as participating panelists like myself, has in mind a set of objectives around which his thinking on farm price-support and adjustment policy revolves. Judging from materials written on the subject of policy over the last few years, it is also reasonable to assume that a comparison of the objectives which each of us has in mind might reveal some rather glaring differences. In view of this possibility, it occurred to me that perhaps one way to get a set of objectives explicitly stated, and at the same time avoid unnecessary misunderstanding, would be to work from the statement set forth by the Congress in the Agricultural Adjustment Act of 1938:

It is hereby declared to be the policy of Congress * * * to assist in the marketing of agricultural commodities for domestic consumption and for export; and to regulate interstate and foreign commerce * * * to the extent necessary to provide an orderly, adequate, and balanced flow of such commodities in interstate and foreign commerce through storage of reserve supplies, loans, marketing quotas, assisting farmers to obtain, insofar as practical, parity prices for such commodities and parity of income, and assisting consumers to obtain an adequate and steady supply of such commodities at fair prices.¹

Certainly this statement does not eliminate the possibility of differences of opinion, but it offers sufficient latitude for many points

¹ Declaration of Policy, sec. II, Agricultural Adjustment Act of 1938, as amended. Congress has developed other statements over the years which shed further light on what it intended to be the general objectives of farm policy, such as secs. II (I) and (II) of the Agricultural Marketing Agreements Act of 1937, but in the interest of conserving space these are not reproduced here.

of agreement. Considering experiences with the various price support and adjustment programs which have been tested over the last few years in attempting to fulfill the objectives of farm policy and conditions prevailing in agriculture today, a general modification of this general policy statement would undoubtedly aid in the development of programs better suited to the needs of present-day and future agriculture.

A knowledge of experiences with price supports, particularly as reflected by Commodity Credit Corporation operations, and problems evolving out of acreage controls and marketing quotas alone substantiate the need for such a modification. Equally as significant is the concept of parity which is the origin of much trouble frequently associated with other causes.²

Irrespective of the shortcomings, inconsistencies, or inadequacies which the different ones of us might associate with the above policy statement, I'm sure we can all agree that the intent of Congress is to improve economic circumstances of farm people. Obviously, there is much that Government can do in this regard, but also there are definite limits to what Government can logically be expected to accomplish.

For purposes of both clarity and brevity, therefore, the objective of farm policy as used in this paper is to foster the development of economic conditions whereby farmers operating as free and independent businessmen may realize a return for labor and other resources available to them commensurate with returns realized in other segments of society.

DEFINITION OF PRICE AND THE PRICEMAKING MECHANISM

Because of the somewhat varied notions people have regarding the concept of price and the pricemaking process in our economy, I shall attempt to establish the meaning of these terms as they appear throughout this paper. Briefly stated, "price" is used in the conventional sense as the means by which the forces of supply and demand are equalized. A thought recorded a few years ago by another member of this panel describes the term as: "A price is a cost to someone and an income to someone else."³

Price may be established in a number of ways. Perhaps the most ideal system of price establishment is through the free interplay of

² Despite the obvious inadequacies of either the concept of parity price or parity income as a standard for evaluating the price or income position of farmers, there is a glaring inconsistency between the two concepts. Some idea of the extent of the inconsistency is borne out by the following application of price parity as defined in the law and what seems to be a reasonable interpretation of the parity income concept to corn.

The effective parity price of corn as of September 1957 was \$1.82 per bushel. The farm market price for new corn in principal corn States at the same time was running about \$1.10 per bushel. Thus the market price was 60 percent of parity. Over the last 5 years, 1952-56, market prices have averaged 79 percent of parity.

As contrasted to the market price and parity price relationships, parity income on corn per acre at the present time is \$46.11 per acre (product of average price and yield per acre for 1910-14 times index of prices paid); but actual income per acre, as computed from USDA estimated yield for 1957 and the present market price of \$1.10, will average \$48.62 per acre. Thus average gross income from corn this year will be roughly 105 percent of parity as compared to the parity price relationship of 60 percent. Parity income over the 5-year period, 1952-56, averaged 134 percent as compared to the parity price average of 79 percent. There are varying degrees of disparity between the parity price and parity income relationships of other commodities.

³ Johnson, D. Gale, ch. 3, *United States Agriculture: Perspectives and Prospects*, Columbia University, May 1955.

economic forces which prevail in the market at a given time under purely competitive conditions. Technically, this is the type of price-making implied by the term "free market prices." In practice, however, the interplay of economic forces is subject to some restriction and thus the term "free market prices" has of necessity taken on a different connotation in the mind of the economic realist from that which the everyday meaning of the words might imply. This thought has been well expressed by E. J. Working.⁴

The system of price-making in most general use today throughout the economy is more accurately identified as administered pricing. The practice of administration in pricing is commonplace among individuals, the various types of business firms and even Government. Farmers as a group are perhaps in a less advantageous position to exercise administration in pricing than most other groups although they have had considerable assistance in this regard from Government.

The prevalence of administrative pricing does not mean that competitive forces have ceased to function as a price-making factor. On the contrary, administrative pricing may create competitive forces of even greater severity than might be reasonably expected in a purely competitive society. On occasions this proves beneficial to agriculture; but perhaps, on the whole, administrative pricing places agriculture in a somewhat poorer bargaining position than some of the groups with which they have business transactions. Whatever disadvantage this creates, however, applies to the industry as a whole and not to one individual farmer contrasted to another.

In a sense all businesses, agricultural or otherwise, have certain inherent advantages and disadvantages due to the economic peculiarities of that specific business as related to others. Thus I feel on occasion that some people try to get a little more mileage out of this idea regarding agriculture's relative position than is warranted by economic circumstances.

The degree to which different types of products lend themselves to price administration varies over a wide range depending on the character of the product in question—particularly its physical characteristics, its supply-and-demand elasticities, and the economic environment in which it is produced, marketed and consumed. The nature of agricultural products in these respects is considered in subsequent sections of this statement.

PURPOSES OF PRICE AND THE EFFECTS OF PRICE SUPPORTS ON PRICE PERFORMANCE

The primary purpose of price as applied in the above price definition is to regulate and thereby balance production and consumption. Price is thus one of the principal characters in a three-variable equation which forms the basis of our entire economic system. Since both supply and demand by necessity fluctuate, it obviously follows that price must fluctuate if there is to be a balancing of supply and demand, except in those rare instances when fluctuations in supply and demand

⁴ Working, E. J., *The Effectiveness of Free Market Prices in Allocating Resources Within Agriculture*, *Journal of Farm Economics*, vol. XXXV, No. 5, December 1953.

counterbalance each other. More specifically, the principal functions of price as applied to the problem under consideration are:

1. To serve as a multiline signal system among the various segments of agriculture, between agriculture and market outlets, and between farmers and farm supply industries.

2. As an aid to the farm operator in deciding how productive resources available to him might be most advantageously employed.⁵

The functions of price listed above are to some extent interrelated, but for convenience of presentation are treated separately.

PRICE AS A SIGNAL SYSTEM

The signal system provided by price serves agriculture in three ways: First, it continuously supplies farmers with information concerning the kind, grade, and quantity of farm products desired by industry and the consuming public. In reality, information of this kind is being constantly supplied farmers from market centers via radio, television, newspapers, farm publications, the Extension Service, farm organizations, various advertising mediums, and by word of mouth.

Through the application of price information, the farmer is continuously making adjustments in his operations to take advantage of what appears to him to be the best income opportunity. It is, of course, understood that the farmer is interested in price as such only to the extent that it serves as a factor in his planning of how to maximize income.

On the day-to-day basis, the application of price information may mean harvesting cucumbers a little more or less mature, or feeding his hogs a few days longer or less than he had originally planned. In the longer run, it may mean expanding or reducing his acreage of cucumbers or possibly going out of the cucumber business entirely. The degree of success realized by the farmer in making the adjustments suggested by the information available to him through price signals determines the degree to which he serves the best interest of both himself and the economy generally.

Secondly, the farmer uses the information available to him on commodity prices jointly with current farm-supply-item prices in making decisions concerning purchases of machinery and production supplies. Depending on his appraisal of profit opportunities, he may buy more or less fertilizer, he may overhaul the old tractor or trade it in for a new one, or he may build a hog feeder instead of buying a new one. In a related manner, the manufacturers and handlers of farm-supply

⁵ It should be recognized that "most advantageously" is interpreted differently by different farmers. To most farmers the most advantageous use of resources means seeking a high net return from the use of resources so long as this use is compatible with good farming practice. To at least a few, yet an important segment, the only concern is to obtain the highest possible net return at the moment without regard to long-run consequences. Still others may think in terms of merely securing the bare essentials for subsistence living. The latter group is necessarily of considerable importance but has perhaps been reduced somewhat as a problem in this committee's work in that it has established its bound as "commercial farming." (The census definition of commercial farms includes all farms with gross sales of \$250 or more, with certain qualifications. According to the 1954 census, 3,327,617 farms, or 69.6 percent of all farms, met this qualification. In practice many of us have used the term "commercial farm" to include farms with gross sales of \$2,500 or more. In 1954, 2,101,842 farms, or 43.9 percent of all farms, qualified under this definition. The value of sales from these farms represented 90.9 percent of total sales from all farms. I believe the latter definition is what the committee had in mind when it established its bounds as "commercial farming.")

items use the signals emitted by farmer decisions at purchase points, along with information concerning costs, in making decisions regarding adjustments in production plans and pricing schedules.

In the third place, many farmers produce raw products primarily for sale to other farmers, as is the case with livestock breeders and cash grain farmers. Those on both sides of such transactions are constantly studying price relationships and planning whether to reduce, expand, or change their operations entirely. In doing this their foremost concern is the effect of this change on the prevailing price-cost relationship of the commodity in question and the cost-price relationships of all commodities to which their productive resources may be diverted if warranted by the income-outlook situation.

Consumers on the opposite side of the equation reason and act on changes in prices just as do farmers. Their primary concern is how the price change affects relative prices of alternative items which will serve the same purpose. Depending on changes in relative prices, this may mean buying less or more of one meat in favor of another, or a rayon shirt instead of a cotton shirt.

In regard to farmer and consumer reaction to price changes, D. Gale Johnson has said:

Since prices are an income, and since people generally strive to increase their incomes, a higher price acts as an inducement to a farmer to produce * * *. It is true that we sometimes observe that the price of hogs rises, but there is no increase, now or later, in the production of hogs. In such cases one will usually find that the prices of most things the farmer buys and sells have also increased in about the same proportion. Thus, the price of hogs has really not risen, except in terms of money. * * *

But if the price of hogs really rises compared to, say, the price of corn and of cattle, farmers will be induced to produce more hogs. The reason is quite obvious—hogs are now more profitable than before and, relatively, cattle are less profitable. But the increase in total production of hogs must reach a limit, since the price of hogs is a cost to the meat processor and eventually to the consumer. Thus, the consumer, while he may be willing to pay a relatively high price for relatively small amounts of pork, will not be willing to pay the same price for increasing amounts of pork. While each consumer may have a preference for some pork, this preference is not absolute. The amount of pork purchases at any price will also depend upon the prices of other things, such as beef steaks. * * *

In a free market economy prices reflect what consumers think a product is worth, on the one hand, and indicate what the producer believes the product costs him, on the other hand. [Italic added for emphasis.]⁶

The above examples suggest that price plays a dominant role in the day-to-day and year-to-year decisions of the farmer in the operation of his farm business. It is apparent that many of the adjustments which the farmer makes are on a moment's notice while others are

⁶ Johnson, op. cit., pp. 45-46.

of a longer run nature. Adjustments inspired by price changes may be of great or little magnitude but, most importantly, the farmer is constantly making adjustments in the interest of improving his income position. To the extent that he succeeds in attaining this objective, he is contributing to a balancing of the forces of supply and demand.

Reasoning along these lines, it becomes rather apparent that any interference with the normal functioning of price will readily be reflected through maladjustments in the production and marketing of farm products. The seriousness of the economic consequences which will inevitably follow depends on the degree of the interference.

There seems to be ample reason to believe that a price-support system can be established which would aid farmers in using farm resources wisely, marketing farm products in an orderly manner, and fulfilling the other objectives of farm policy so long as the level of support is kept low enough to avoid interference with the normal functioning of price as a production-demand adjustment mechanism. Conversely, it is almost inconceivable that the level of support can be much closer to the market price than the lower level of price fluctuations resulting from normal economic circumstances without interfering greatly with this function of price. This raises a question as to whether a politically acceptable price-support program can be devised which is sound economically.

PRICE AS AN AID TO FARMERS IN USING PRODUCTIVE RESOURCES MOST ADVANTAGEOUSLY

A thorough treatment of the potential effects of price supports on the performance of price in aiding farmers to use their resources most advantageously is a gigantic undertaking.

Anyone familiar with agriculture is aware that all principal factors of production employed in agriculture are variable. Consequently, the total output of agriculture is potentially variable over a wide range. Although experience in this country suggests that as a practical matter the variability is usually upward, obviously it could be in either direction. Economic circumstances, profit expectations or personal desire may lead a farmer to add or reduce labor, personal or hired; increase or decrease capital inputs; or vary the degree of intensity with which he uses each unit of any input, particularly land. The farmer's decisions in making adjustments from time to time among the different factors of production are influenced primarily by relative prices of the alternative inputs available in relation to potential returns. In spite of these adjustments among alternative resources that are constantly being made, total agricultural inputs have remained amazingly stable over a long period of years.

On this point Dr. Schultz says:

It is doubtful that one could find another major variable in the entire economy that is as steady—come depression followed by recovery, or mobilization, war and peace, or bumper crops, or a run of bad yields. Variations in total inputs from year to year in agriculture, measured in terms of the change from the preceding year, corrected for the slow upward drift that has taken place, averaged about 1 percent

per year from 1910 to 1950.⁷ [This statement in no way conflicts with expressions throughout this paper in regard to changes in agricultural inputs due to changes in relative prices.]

As contrasted to the stability of inputs over the years, improved technology has resulted in a rather rapid rate of increase in total agricultural production. The index of total agricultural output (1947-49=100) has averaged 110 during the last 5 years as compared to 62 during the 5 years 1910-14. In 1956 the index reached an all-time high of 113, or almost double the 1910-14 average.

The upward trend in agricultural output has been continuous for many years with the exception of temporary interruptions due to drought or other natural causes. There have been significant differences, however, in the rates of increase in different periods, and these changes have been rather closely coordinated with changes in the levels of farm commodity prices. During the periods 1910-15, 1923-29, and 1935-40, prices received by farmers were fairly stable; and during the same periods, agricultural output also increased at a rather slow pace.

Periods of most rapid increase in prices were, of course, during wars and immediate postwar years; and the periods of most rapid increase in output were roughly the same. Interestingly enough, however, the rate of increase was much more rapid during World War II and the 1950's than during the World War I period. The difference was due in large part to differences in available but yet unadopted technology in the two periods.

Relative price is undoubtedly a major influence in the application of technology, but of course technological ideas must be available and generally known by farmers before they can be incorporated into the farm business. During the 1930's the discovery and development of new ideas in farming far outran the adoption of these developments by farmers. Prices and price expectations during that period were not conducive to incurring expenses on new technology, particularly in cases where risks in returns were high. The higher prices and improved income situation which came with the outbreak of the war, led farmers to start drawing on the pent-up supply of technology which had developed over the preceding "lean" years. Production responded accordingly.

On this point Dr. Heady says:

* * * A changed form of capital, representing a new technique, is not profitable if the ratio of its price to that of the old form (the old technique) is greater than the ratio of their productivities. For example, even though oat yields were increased by as much as 6 bushels per acre on some farms by the use of Clinton oats, many farmers could not profitably use the seed when it was priced at \$10 per bushel in the first year of distribution. The same economic consideration undoubtedly applies to use of fertilizer and other improved technology during depression. However, as product prices rise relative to factor costs (fertilizer in the new form) during prosperity, it becomes profitable for the farmer not only to

⁷ Schultz, T. W., *The Economic Organization of Agriculture*, New York, McGraw-Hill Book Co., Inc., 1953, ch. 13, p. 210.

“apply fertilizer” (more capital) but also to apply it in the new form.⁸

The response in production of individual farm commodities to changes in relative prices of the respective commodities, among which resources can readily be shifted, is much greater than can be detected in the response of overall production to changes in price. On occasion one may have reason to believe this is a matter on which there are some rather distinct differences of opinion. The controversy is not so much in regard to whether the production of individual commodities is more responsive to price changes than overall output, but rather whether the response is negative or positive. While I have seen nothing of an analytical nature to suggest that farmers respond to a price reduction by attempting to increase output of that commodity, I frequently hear such statements made and even find them now and then in print. It is regrettable that sometimes such statements are made by individuals or groups who are in responsible positions. The following serves as an example:

As the farmer's price has gone down, he has increased his production to protect his level of income as far as possible. Despite price-support reductions of 20 percent for corn, production in 1956 was 159 million bushels more than in 1952. Likewise, price support reductions for such commodities as barley, flaxseed, rye, sorghums, soybeans, butterfat, and milk resulted in greater production in 1956 than in 1952.

* * * Further, as it (Department of Agriculture) advocates reduced production, it then provides the two greatest incentives for increasing production, reduced acreage and reduced prices.⁹

I would have no quarrel with the accuracy of statistics used in this report, but the explanation of why these increases took place cannot be substantiated by fact, theory, or by logical reasoning. Apparently the authors overlooked even such obvious facts as forced changes in land use resulting from marketing quotas on wheat and cotton, and the upward trend in corn production which has been underway for many years despite a downward trend in corn acreage.¹⁰ Statements

⁸ Heady, Earl O., *Economics of Agricultural Production and Resource Use*, New York, Prentice-Hall, Inc., 1952, ch. 27, p. 811.

⁹ Report of House Committee on Appropriations, Rept. No. 438, pp. 6 and 9, May 10, 1957.

¹⁰ The diversion of land as a result of marketing quotas is discussed in a subsequent section. Changes in corn acreage and production since 1930, by period averages, have been as follows:

Period	Planted acreage	Production
	<i>Millions</i>	<i>Billions of bushels</i>
1930-34.....	107.3	2.29
1935-39.....	97.0	2.32
1940-44.....	90.8	2.85
1945-49.....	87.1	3.06
1950-54.....	82.4	3.11
1955-57.....	77.7	3.29

of this kind are not only misleading to the Congress, but seriously impede the possibilities of getting the kind of understanding which must precede general acceptance of a workable price-support program. Furthermore, such statements defy the findings of the most reputable researchers who have given years of analytical work to the study of this problem.

The implication of such statements is that agriculture is characterized by a backward rising or perverse supply curve. Among the annals of research reports are records of a few cases where researchers have thought they found such supply curves under somewhat peculiar circumstances, but I believe that, without exception, all of these which proved of any interest were later found to be completely invalid. Allen's work on wheat production in Canada is a classical example of a study in which it was concluded that backward sloping supply curves do exist in agriculture.¹¹ The findings of this study were later repudiated beyond any reasonable doubt by Helen C. Farnsworth and William O. Jones.¹²

The principal cause of Allen's trouble was faulty data both on price and production. Under such circumstances it is quite understandable that his conclusion might be erroneous.

Perhaps the basis for confusion on the part of the "practical economist," or the outright propagandist, as the case may be, on the question of response in production of a given commodity to price changes, is that he fails to take into account how this price change affects the relative prices between the commodity under consideration and alternative commodities to which productive resources may be diverted. As an example, reference has often been made to how dairy farmers increase production with declining prices. Usually these statements are substantiated by citing price and production data from some particular period during which these two variables did move in opposite directions. The period most frequently used is the early 1930's when, following the serious price break, the production of milk increased considerably.

To the person who limits his observations to the price and production of milk alone, this makes a convincing argument. If this person broadens his consideration to include changes in price relationships between milk and hogs during this period, however, and also applies a little farmer psychology regarding the steady income assurance associated with dairying, a matter of more than a little concern in depression periods, he may become somewhat doubtful of what was previously an unquestionable conclusion.¹³

¹¹ Allen, G. R., *Wheat Farmers and Falling Prices*, Farm Economist, vol. VII, No. 8, Oxford University Research Institute, 1954.

¹² Farnsworth, Helen C., and Jones, William O., *Response of Wheat Growers to Price Changes: Appropriate or Perverse?* The Economic Journal, vol. LXVI, No. 262, June 1956.

¹³ Hogs and dairy, a number of years ago, were considered as complementary farm enterprises, particularly in smaller unit farm operations. Also milk was used in part for hog feed when price relationships warranted. Both these practices are still not uncommon in some areas of the country today.

Changes in the relative prices of these two commodities during the early 1930's, as compared to the 1925-29 average relationships, were as follows:

Commodity	Index of prices				
	1925-29	1930	1931	1932	1933
Milk.....	100	90	69	52	53
Hogs.....	100	88	53	37	35

From these data it is noted that although milk prices were drastically low during 1930-33, as compared to the base period, the relationship of milk prices to hog prices was much more favorable to dairying than was the relationship which prevailed during 1925-29, which at that time might have been considered normal. Thus there is little doubt as to why milk production responded as it did to the lower price.

On the positive side of this question, the study of virtually any farm commodity over a period of time will show that the output of that commodity varies with changes in the relation of its market price to costs, and also its relation to other farm commodities. Hogs and potatoes are among the more obvious examples.

There are innumerable sources of evidence to substantiate the rather general notion among informed people that farmers do attempt to adjust the use of farm resources in response to changes in both the relative costs of different inputs and market price relationships of different commodities. Such evidence is to be found in various research reports,¹⁴ from the study of USDA input-output data on farm operations and individual farm commodities, and certainly from talking with farmers whose well-being is the center of attention in this committee's present study.

In addition to the understanding of the relationship of production and price which has been demonstrated over the years by agricultural economists, farmers, and others, the Congress of the United States has, on occasion, indicated its understanding that higher price expectations on the part of farmers will lead to greater output.

It is recalled that with the outbreak of World War II, the question of how to increase the output of agriculture loomed as a matter of vital concern. Almost immediately, the Congress, in its wisdom, acted to guarantee farmers higher commodity prices. The response of farmers, now a matter of record, certainly leaves no doubt regarding the prudence of having a price-support level consistent with produc-

¹⁴To mention a few:

(1) Tolley, G. S., North Carolina State College, *Price Policy and Agricultural Supply Behavior*, paper presented at the American Farm Economic Association meeting, Lake Junaluska, N. C., August 1957.

(2) Schultz, T. W., *The Economic Organization of Agriculture*, op. cit., and various other works.

(3) Kohls, R. L., and Paarlberg, Don, *The Short Time Response of Agricultural Production to Price and Other Factors*, Purdue University Agricultural Experiment Station, Bulletin 555, Lafayette, Ind., October 1950.

(4) Johnson, D. G., University of Chicago, *The Nature of the Supply Function for Agricultural Products*, American Farm Economic Association, vol. XL, No. 4, September 1950.

(5) Puhols, B. H., and Klamon, S. B., *Farmers Response to Price in the Production of Potatoes, 1922-41*, Bureau of Agricultural Economics, U. S. Department of Agriculture, July 1945.

(6) Fox, Karl A., *Factors Affecting Farm Income, Farm Prices, and Food Consumption*, Agricultural Economics Research, U. S. Department of Agriculture, vol. III, No. 3, July 1951.

lion objectives.¹⁵ Obviously many factors other than commodity price-support levels contributed to the increased rate of expansion in output which began at that time.

There are other aspects of the relationship of price and production which warrant consideration in a thorough treatment of this important question. In my opinion, however, an analysis of these is unnecessary to conclude that a price-support system which interferes appreciably with the normal function of price as established by the laws of the market can only further aggravate the already poor economic situation in agriculture.

Prevailing conditions in agriculture today, after the price-support efforts of the last few years, are in reality a testimony to this conclusion. The principal problem is that there are too many resources in agriculture relative to the rest of the economy, and the situation is complicated further by poor distribution of resources among the alternative uses within agriculture.

Ill-advised programs have undoubtedly contributed to existing excessive capacity in agriculture and certainly these programs have been a major influence in the maldistribution of resources. The story portrayed by the following table substantiates this statement.

Changes in acreages of all crops, 2 crops under marketing quotas and 3 principal alternative crops between 1953 and 1957

Crop	Planted acreages		Acreage change, 1953-57	Percentage change
	1953	1957		
Tilled crops, total ¹	Thousands 358, 833	Thousands 333, 822	Thousands -25, 011	-7. 0
2 principal controlled crops:				
Wheat.....	78, 931	49, 658	-29, 273	-37. 1
Cotton.....	25, 244	14, 224	-11, 020	-43. 7
Total.....	104, 175	63, 882	-40, 293	-38. 7
3 principal alternatives:				
Soybeans.....	16, 394	22, 551	6, 157	37. 6
Sorghum.....	14, 590	27, 130	12, 540	85. 9
Barley.....	9, 615	16, 311	6, 696	69. 6
Total.....	40, 599	65, 992	25, 393	62. 5

¹ Includes the 59 principal crops as reported by U. S. Department of Agriculture.

The changes in acreages of various crops over the last 4 years clearly denotes how interference with market prices and the free will of farmers to exercise their better judgment can upset the workings of economic forces in allocating farm resources. It's doubtful that any group of farmers has benefited from this administratively directed readjustment which has taken place.

In the case of wheat and cotton farmers, it's reasonable to assume that costs have risen on their remaining cotton and wheat operations and that the second alternative crop is a less profitable use of resources than the first. And certainly these changes have been injurious to farmers who over the years have depended primarily on corn and other feed grains. Finally, this excess feed at low prices

¹⁵ Some people may feel there has been some hesitancy on the part of Congress to recognize that this is also a matter of importance when the objective has been reversed.

will encourage livestock production and in all likelihood this will ultimately result in lower returns to livestock farmers.

Records of the Commodity Credit Corporation also offer a testimonial to the futility of price-support programs which have been in force over the last few years. On July 31, 1957, the total investment of the Corporation stood at \$7.28 billion. This figure consisted of an inventory valued at \$5.32 billion and loans outstanding in the amount of \$1.96 billion.

Although these values in themselves are staggering, the most disturbing fact is that \$6.54 billion of the total amount is accounted for by the 5 crops—cotton, corn, wheat, tobacco, and rice. It is indeed fortunate that the Congress did not extend the "privileges" of "basic designation" to additional farm commodities.

It is very doubtful that even those of us who claim a reasonable degree of familiarity with this situation can conceive of the real and potential economic consequences of the price support and adjustment programs which have led to the existing Commodity Credit Corporation situation. Already we have seen the analytical tools for grain price forecasting, an almost absolute necessity for orderly grain marketing, become virtually useless. Charts, graphs, and estimating equations, may reflect perfectly economic expectations, but an announcement of change in CCC inventory management policy may completely reverse the market.

Many years ago the dangers associated with permitting any individual or firm to become too influential in the grain market were recognized and laws were written to prevent this from happening. Either unwittingly, carelessly, or possibly by willful design on the part of a few, we, through our price support and adjustments efforts, have not only authorized, but encouraged, a group of Government officials to do what no individual or business firm can under any circumstances do—corner the market. The evils resulting vary only in degree.

We are all aware that the pricing system contain imperfections which limit its precision in directing the use of farm resources, but no one in this country, nor any other, has ever been able to come forth with anything that has appeared to have the remotest chance of doing the job nearly as well as free market prices. Needless to say, however, much time has been devoted to finding substitutes.

In the light of the indisputable facts available to us from the soundest and truest source of all information—the university of experience—I see no hope for ever developing a price-support program which has a glimmer of a chance to improve the farm situation unless it is consistent with the laws of the market. If, however, we are willing to face up to realities and dedicate ourselves to the task, there is no question in my mind but what we can measure up to the challenge of rebuilding a strong, prosperous agricultural economy. In these efforts, however, let us become ever more conscious that there are definite limits to what Government price-support programs can contribute to attaining this objective.

TO WHAT EXTENT SHOULD FARM POLICY RELY ON FREE MARKET PRICES?

Everette B. Harris, Chicago Mercantile Exchange

PRESENT FARM PRICING POLICIES REAPPRAISED

The present dilemma of most farm policy and farm price experts is so evident to everyone that the need for a nonpartisan reappraisal of the situation before this important subcommittee is obviously appropriate.

Who is the blame for the present situation is less important than what can be done to correct it and prevent its recurrence.

In the interest of brevity, at the moment let us go back only to April 7, 1949, when the then Secretary of Agriculture, Charles Brannan, stated:

* * * Economic analysis of resource allocation and income distribution tells us that the pricemaking mechanism is not an appropriate apparatus for lessening the inequality in the personal distribution of income. If it were, why would we encumber ourselves with a complicated system of progressive income and inheritance taxes instead of simply increasing the price of the resources which the particular families who should receive more income have to sell? To attempt to use price supports for this purpose will have two highly undesirable consequences: (1) It will seriously impair the capacity of prices in allocating agricultural resources and (2) it will affect adversely the distribution of income within agriculture in spite of the restriction imposed to limit the size of the benefits going to large farm operators. * * *

With this particular statement I must agree. The present Secretary has stated and restated that rigid, artificial, arbitrary, and administered prices can only react to the farmer's detriment and to the disadvantage of the general public. With this I also agree.

It is, therefore, not surprising that the Congress is seeking a new and more successful approach to the continuing problem of farm price policy. This problem must be recognized as an economic problem primarily but it is also a social problem and of course a political problem.

I submit that our basic mistake in past and present farm price policy has been an indiscriminate commingling of these policies.

We are not here to testify regarding politics, at which members of the committee are obviously currently competent. But in testifying as an economist and farm price authority, please allow me to emphasize that the social and/or political problems must be considered briefly before we go to our principal thesis or argument strictly in the economic farm price field.

May I timidly suggest that such things as the Federal Government temporarily acquiring large, and I mean large, segments of farmland

traditionally planted to certain crops now in burdensome surplus might be one happy solution to part of the social and political problem. This is a soil-bank approach which would work and cost less overall. Incentives to accelerate the already rapid exodus of people from farms to other fields might help. Here I would suggest special emphasis on plans to lessen the hardships on older people who leave farms. When I left the farm as many other young people have done and helped solve the social farm problem, we suffered little hardship. Obviously programs for training farm folks in new skills, new occupations and for a somewhat different way of life might be helpful. But believe me, it is better to be prosperous in town than poor on a farm—at least that is my experience. Compensatory payments, supplemental payments, or what have you, should be used to get people off farms not to freeze them on farms.

FARM PRICES, FARM PRODUCTION, FACTS AND FABLES

In the early 1930's there was a group of economic braintrusters in the Department of Agriculture, subsequently much publicized one way and another, who sold large segments of farmers and the public on the idea that the lower the farm price the more production would result. They had some evidence peculiar to that period to support this idea. The great depression was a phenomenal combination of depressing economic forces no more easily explained than a 10-foot snowfall which might descend on Washington once in 2,000 years. As we used to say on the farm, all signs fail in dry weather. All economic laws seemed suddenly to be repealed in 1933 and economic black became economic white with many, many economic blues in attendance.

But there is no supportable evidence that this fable of low price, high production and high price, low production pertains in the farm field any more than elsewhere in more normal times. Present times may not be normal but 1933 thinking does not solve 1958 problems.

Present evidence is overwhelming that artificially high prices mean high production with the inexorable law of supply and demand bringing inevitably depressed prices later. Artificially high prices—I say artificially high prices not normal or natural prices—will not solve the economic problem or the social problems of American farmers or the political problems of American Congressmen.

PRICE RATIONING VERSUS POLITICAL RATIONING

When World War II rationing ended and it was no longer necessary to use little paper coupons when we bought gas, shoes, or steaks, we all were pleased and relieved. But of course thoughtful people realized we still had a rationing system. We simply had returned to price rationing instead of political rationing. We again had wonderful free-to-change prices and OPA price ceilings with political rationing and all its attendant evils were happily gone. Rationing coupons now consist of green and gray coupons—the \$1 bill, with "In God we trust" properly inscribed upon it. These rationing coupons, hard earned and highly taxed currency with the full faith and credit of our Government behind them, do a job of rationing our great production to our people in such an efficient manner that it has been the marvel of the world.

One of the primary questions to be considered by this subcommittee, it seems to me, is this: Are we ready to have the Department of Commerce fix rigid industrial prices and the Department of Labor fix wages, as was done to a degree during World War II, and continue to have the Department of Agriculture attempt to fix farm prices. Can our free-price, free-choice, free-enterprise system operate half fixed and half free?

Now our free-price system for agricultural commodities did not always exist. Countries had dictators and socialism and food price-control systems of many kinds for many centuries before the American price system ever existed. And governments were often concerned with food problems because populations have a way of getting hungry three times a day. Let us look for a moment at our ancient economic history lesson. A fairly recent archeological discovery reveals that the oldest known laws in the world were price-control laws—3,800 years ago in ancient Babylonia.

One of the best summaries of historical experience with price controls is easily accessible to governmental officials and others. In 1922, Mary G. Lacy, Librarian of the Government's Bureau of Agricultural Economics, addressed the Agricultural History Society under the title, "Food Control During 46 Centuries." She pointed out how her search of history over this entire period revealed repeated attempts in many nations to curb by law the inflationary rises of price. She said:

The results have been astonishingly uniform. The history of government limitation of price seems to teach one clear lesson: That in attempting to ease the burden of the people in a time of high prices by artificially setting a limit on them, the people are not relieved but only exchange one set of ills for another which is greater * * *. The man, or class of men, who controls the supply of essential foods is in possession of supreme power * * *. They had to exercise this control in order to hold supreme power because all the people need food and it is the only commodity of which this is true.

And, of course, the converse is true. It is just as ineffective in the long run to force farm prices up artificially by Government edict as it is to try to hold them down artificially by similar methods.

No system ever considered rations our agricultural commodities so efficiently, with such low middlemen's costs, higher returns to producers, and lower costs to consumers, as our own free to change price system. Around commodity markets there is an old saying that, "a large crop has a short tail and a short crop has a long tail." Under a free-price system if there is overproduction 1 year the price falls, rations out the commodity and gives the producer a fresh and hopeful start the next year. No burdensome surplus hangs over the market to make the possibility of a substantial price rise hopeless.

If there is a short crop of some commodity some year (and it could happen) under a free-price system, the price would go high and ration out the commodity more sparingly—requiring some substitute product at a lower price at times—and spread the short supply over the entire following year until a new crop can be produced. This may be something of an oversimplification but I hope it is not so simple, so logical, so tried and true, so commonsense, and practical that it loses appeal for this reason. Why is free-enterprise and a

free-price system best for America? In my view, simply because it works best for us. If we have to accept the economic systems of socialistic and communistic countries to compete with them, we will lose the personal freedoms for which we have fought. I don't believe this is necessary. I still believe that our free price with the most ruthless competition at times gives off more social benefits both directly and as byproducts than can ever be achieved under any socialistic system of a planned economy.

Certainly farmers have a right to bargain in the market place. They are free to sell their commodities or to store them. They are free to work, bargain collectively as is labor. They may wish to work through co-ops. They may expect to obtain Government loans in time of distress. But under the guise of a loan system for the Government to take over the acquisition and disposal of all commodities with resultant fixed prices means that markets are no longer free and farmers are no longer free. Controls upon controls are required and we have come a long, long way toward this sorry end.

FORWARD PRICING—HELP OR HINDRANCE

Everyone has at some time wished he could read tomorrow's newspaper and see the future in this manner. Similarly among some agricultural economists there has long been a belief that if farmers could know that prices would be low for one product or commodity next years and that prices would be high for another, they could be guided intelligently in expansion and contraction of various crops. There is something to this. The Department from time to time makes forecasts as to production, acreage, prices, and similar factors. These, in the opinion of most, are helpful to farmers. The most accurate forward pricing, however, is based upon actual supply-and-demand factors projected into the future and backed up with the money of those who are making the forecast. These are the quotations published daily in the press, announced by radio and transmitted promptly by other media to the Nation's farmers. They are the prices arrived at through futures trading on the Nation's organized and supervised commodity exchanges. These quotations may be projected from 1 year to 18 months in advance and give farmers the most accurate gage of the future price picture obtainable. Studies of forecasts of economic fortune tellers on the other hand have often indicated that they are less accurate than pure chance or coin tossing.

The relation of nearby prices or spot prices to distant futures prices is also a useful tool for the thoughtful farmer.

FLUCTUATIONS IN FARM PRICES

It has long been known that farm prices fluctuate more than the general price level or more than farmers' costs. This point has been so widely discussed that I believe it is agreed that some degree of greater stability in farm prices is desirable for many reasons. Futures markets help stabilize farm prices without injecting any unworkable artificiality into the situation. Without futures trading in cotton or grain, for example, one would see a ruinous and artificial postharvest decline with dealers and others storing the commodity to profit later. With futures trading in a free and open market, deal-

ers can pay higher prices at harvest time and hedge in the futures market where speculators risk their money in the hope of future profit. All competent studies show that futures trading smooths the curve of seasonal price fluctuation in commodity after commodity.

HOW THE FREE-TO-CHANGE PRICE SYSTEM, THE NECESSARY SPECULATOR AND FUTURES TRADING HELP THE FARMER

No element of our efficient and effective marketing mechanism is more misunderstood or less understood than the hedging of commodities to obtain price protection in a futures market.

Although contracts or agreements to buy or sell have existed in various degrees of formality for many centuries, the modern futures contract dates its beginning from Civil War days. Chicago papers of this era listed quotations for grain "to arrive" at a future date. Located between the producing West and the consuming East, Chicago was a logical place for development of the world's greatest futures markets. Destined to become a center of both rail and water transportation, Chicago became the home of the Chicago Board of Trade and the Chicago Mercantile Exchange, presently the two largest futures markets in the world. The former exchange provides for trading in grains and other storable commodities and at the latter, butter, eggs, onions, potatoes and other perishable commodities are traded.

In 1869 the Chicago Board of Trade adopted its first rules for regulating trading in futures contracts and until 1880 trades were usually for only 1 or 2 months in advance. The Chicago Mercantile Exchange was incorporated as the Chicago Butter and Egg Board in 1898 and changed its name with an amended charter in 1919.

In futures trading the parties through their respective brokers meet upon the floor of an exchange or board of trade and one agrees to sell and the other to buy a specified commodity for delivery in a specified future month. The exchange, by a resolution of its board of governors, specifies certain delivery months and opens trading for delivery in such months and also specifies grades for the commodity and sets a time for the start of such trading. Such future month for delivery may be as distant in the future as a year or 18 months. If one looks at the commodity price quotations published every day by all principal newspapers, he will note under the board of trade such terms as "December wheat," "March corn" or "July rye."

Under Chicago Mercantile Exchange quotations one will note "September eggs," "March onions" or "January potatoes." Prices quoted are for the commodity to be delivered in the later month specified. Trading in any contract month is terminated on the trading day prior to the last few days of the delivery month so that a seller who does not close out his sales by offsetting purchase has the last few days of the delivery month to obtain the commodity (if he does not already have it) so that he may tender delivery not later than the last business day of the month.

The procedure for settling is provided by the rules of the exchange and it takes place through the medium of the clearinghouse of the exchange. Immediately after a person sells a commodity to another on the exchange for future delivery, both sale and purchase are cleared, which means that the clearinghouse then becomes seller to the buyer

and buyer to the seller. However, the clearinghouse merely acts as a conduit and what it takes with one hand it passes out with the other and it never takes or receives for itself any part of the commodity if it is delivered nor does it retain any of the funds if the transaction is offset. It merely makes a service charge of so much per car, which does not vary, and it never receives any profit nor sustains any loss, regardless of the market. When the transaction is offset, it collects from the person against whom the market has gone and pays to the person on the other side who is entitled to the profit. When a delivery is made, the delivery notice is tendered to the clearinghouse but the clearinghouse promptly passes the delivery notice to the buyer or buyers entitled to receive the delivery and the delivery is made between the seller and the buyer themselves.

The most important economic function of a futures market is to provide facilities for hedging. "Hedging," as used in futures markets, means price insurance or protection of inventories against price change. It derives from the English term "hedge" which is a thick growth of shrubs around a house to protect it.

The ownership of commodities involves a business risk because of constantly changing prices. In hedging, operations in both the cash and futures markets are carried on simultaneously and in opposite manners. When one buys a cash commodity, he sells an equivalent amount in the futures market, and when he later sells the cash commodity he buys in his contract in the futures thereby "lifting the hedge." He has enjoyed price protection during the period of ownership of the cash or actual commodity. He has passed on the speculative risk to a professional speculator just as he passes on the risk of his house burning if he buys fire insurance from professional insurance companies.

The speculator performs an indispensable function in futures trading. He stands ready to buy or sell at any time and makes hedging possible. He bridges the price gap at all times between hedgers who wish to buy or sell and he helps maintain a free and open market at all times.

Chief Justice Holmes in a Supreme Court decision (198 U. S. 236), which still stands, stated:

In a modern market, contracts are not confined to sales for immediate delivery. People will endeavor to forecast the future and to make agreements according to their prophecy. Speculation of this kind by competent men is the self-adjustment of society to the probable. Its value is well known as a means of avoiding or mitigating catastrophes, equalizing prices and providing for periods of want.

SUMMARY AND CONCLUSIONS

In brief, my recommendations and suggestions are as follows:

1. Yes, agriculture can be adjusted through the price mechanism—and only through the price mechanism if farmers are to retain any appreciable degree of freedom from controls.
2. Farm policy, from an economic point of view, should rely on free market prices and treat the social problems and political problems arising out of farming from a social and political—not economic—viewpoint.

3. The return to free markets, long overdue, must be accompanied by appropriate measures to alleviate extreme hardship. Some such programs might involve:

(a) The Federal Government might well use a different soil-bank approach—might temporarily acquire large segments of land normally planted to crops now in burdensome surplus.

(b) Appropriate types of payments or benefits should be used to accelerate the already rapid exodus of people from farms to other fields.

(c) In the case of older farmers, special plans should be devised to lessen their hardships in shifting from farming.

(d) The need for more and better training, research, and other technological progress in farming is obvious.

4. The futures markets of America should be freed from Government interference in the form of Federal purchasing and selling of commodities so that they can more efficiently serve their proper purposes. These markets, of course, must be regulated as our security markets are regulated to protect the public interest and prevent manipulation.

5. Measures which were dreamed up during the depression to meet a freak situation and which have failed so miserably should be abandoned without delay. Some of these schemes which may have seemed sensible when we were in an unstable economy are certainly not necessary in our present stabilized, full-employment economy.

VII. PRICE AND INCOME STANDARDS FOR
FARM PROGRAMS

(PAPERS FOR PANEL G)

PRICE AND INCOME STANDARDS FOR FARM PROGRAMS

FARM POLICY OBJECTIVES: A SETTING FOR THE PARITY QUESTION

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Differences of opinion over national farm policy are common. These differences are of two main kinds: First, people differ over the objectives which policy should pursue and, secondly, they hold different views on the best ways of achieving these objectives. Differences of the first kind are the most difficult to resolve. Nevertheless, general agreement on a meaningful set of objectives is an essential first step in the development of a rational policy for agriculture. Before effective and efficient programs can be designed, objectives must be identified and evaluated.

I

The objectives of policy describe the characteristics of an ideal or preferred situation. To be most useful, they should take account of all the important elements in the actual situation which are considered unsatisfactory. Only then can efficient programs be developed to move the actual situation into line with the preferred situation.

Policy objectives are intermediate ends in a vast and complex network of means-end relationships. Although they are ends for the purpose of policymaking, they also are means for achieving more ultimate ends. For example, efficient use of resources in agriculture might be an objective of farm policy. But in no real sense is this an ultimate end. It is not desired for its own sake. It is wanted because it contributes to higher income per capita. And this, in turn, makes for a fuller satisfaction of people's wants and achievement of more ends.

Some objectives may be at an all or none kind. They have only a single-level of attainment. More typically, however, policy objectives will have a number of possible levels of attainment. The contribution of a particular objective to national welfare will depend on the level of attainment and its value. In most cases, the level of attainment of one objective will not be independent of other objectives.

The relationships may be either complementary or competitive. If there is a complementary relationship between two objectives, achieving more of one adds to the attainment of the other. If there are only two objectives and if they are complementary over a certain range, the level of attainment should be pushed at least to the point where complementarity disappears. As long as both objectives are desired

and more of both can be achieved, any level of attainment less than this would be inconsistent with maximizing welfare.

In some cases, the range of complementarity will be limited. Beyond a certain level of attainment, the objectives will become competitive. Even when there is a complementary relationship between two objectives, there may be a competitive relationship with a third objective. When objectives are competitive, a choice problem arises because more of one can be attained only with some sacrifice of another. This may be illustrated.

Suppose A and B are two competitive objectives. Then the level of attainment of B will be reduced when that of A is increased. A choice needs to be made between two situations, one with more A and less B and the other with more B and less A. To make such a choice, values have to be attached to the increase in A and the decrease in B. If the additional A is worth more than the decrease in B, the situation with more A and less B will be preferred. Conversely, if the decrease in B is worth more than the increase in A, the situation with more B and less A will be preferred.

This is the reason policy objectives need to be evaluated. If maximizing choices are to be made, some scaling of the social-welfare importance of each objective is necessary. Ideally, a value should be attached to all possible levels of attainment of each objective. This would permit a comparison of relative values and relative costs, making rational social choices possible.

Such a system of values would have ethical content. The subjective propositions on which it would be based could not be verified or rejected by the rules of evidence. This in no way makes it any less important for rational choice making. But it does mean that the task of putting together such a system of values is made more difficult.

Because of different conceptions of what is good and desirable, individual valuations of policy objectives differ. There appears to be no simple way of adding these up to give a consistent set of social valuations. In our society, we depend on democratic political institutions to solve this aggregation problem.

It would be desirable if all policy objectives could be given quantitative meaning. Then levels of attainment could be measured, and program effects could be more readily appraised. Some objectives, however, are not subject to quantification. Others have some elements that are measurable and some that are not. This complicates the problem of formulating a meaningful set of objectives. It also means that program designs will be less efficient and satisfactory.

II

Over the years, a large number of farm policy objectives have been proposed by political leaders, farmers and their representatives, labor leaders, economists, businessmen, and educators. Although there is a wide range in emphasis, most of these objectives can be classified in one of the following categories: (1) farm income, (2) farm prices, (3) agricultural resource use and production efficiency, (4) agricultural organization and farm population, and (5) individual freedom and government intervention.

Space does not permit an examination of all these objectives. We have selected 1 or 2 from each category. This selection has been made

solely for the purpose of analyzing relationships and clarifying the nature of the choice problem. It is not offered as a desirable set of farm-policy objectives.

In this section, we will describe briefly the objectives selected, presenting some of the arguments advanced in their support. The following section will analyze some of the relationships among these objectives.

Farm income

Farm-income objectives have usually been stated in terms of rewards for labor and capital in farming, total farm income, income per person on farms or minimum income standards. Definitions of income have varied.

A number of difficult problems are encountered in the definition and measurement of income. In a very real sense, income refers to a flow of satisfactions. They derive partly from goods and services purchased or obtained directly, and partly from amenities and perquisites connected with specific employments for resources. Satisfactions as such are not directly measurable. Largely because of measurement problems, the definition of income is usually limited to the goods and services that can be valued in money. This is not entirely satisfactory. One reason is that people do take account of nonmonetary advantages when they decide how to employ their resources.

One of the more frequently mentioned income objectives is that of comparable rewards for labor and capital in farming. Strictly speaking, this implies that, at the margin, human effort and capital in farm employments would earn the same monetary returns as similar resources earn in nonfarm employments, after adjustment for any differences in risk and nonmonetary advantages.

In some statements of this objective, no explicit recognition is given to risk and nonmonetary advantages. Although the measurement problems are difficult, some allowance for these factors, even though rough, is necessary for comparability. How this might be done, is too large a problem to consider here. It might be pointed out, however, that the only true test of comparability of rewards is to observe the choices people make when they have full knowledge of alternatives and their implications.

One of the arguments offered in favor of this goal is based on the idea of equal income earning opportunities for all occupational groups. It also has been supported on grounds that it is consistent with an efficient use of resources and maximum national income.

It needs to be recognized that achieving this objective does not imply that all farm families would earn incomes in excess of some minimum welfare standard. It simply would mean that the terms on which income is earned in farming would be the same as in other industries. Although this would give a solution to a large part of the income problem in agriculture, it is likely that a significant residual problem would remain. This, however, would not be related to the fact that people were earning their living in farming. Instead, it would be associated with severe limitations on family resources. Income opportunities would be as good in agriculture as in other industries. But all industries would have some poor people because all

industries have some people whose resources are too few or too poor in quality to earn satisfactory incomes. This objective implies a distribution of income directly proportional to the effective quantity of resources owned by each family.

Another income objective that has been suggested is equalizing income per person on farms and income per person not on farms. If the same items of income were taken into account, and if the average person on farms owned the same effective quantity of resources as the average person not on farms, the objective of comparable rewards would equalize income per person on farms and income per person not on farms.

Since 1935, the USDA estimate of income from all sources per person on farms has varied from 35 to 63 percent of the estimated income per person not on farms. Although these estimates probably are as good as available information will permit, they do not include all items of income and some of the items that are included cannot be estimated very accurately. This is especially true of income per person on farms. Undoubtedly, an important part of the measured difference is real. Another part, however, is probably fictitious. More research is needed to determine the importance of each.

Increasing income per person on farms does not necessarily imply an increase in total income from farm and nonfarm sources. Since income per person is the result of dividing total income by the number of people, it could mean a reduction in the number of people on farms. It could even mean a lower total income if the number of people declined more than in proportion to the decline in total income.

This objective says nothing specifically about the distribution of income within agriculture. A large number of different distributions are consistent with the objective. The methods or programs designed to achieve the goal would determine, in part, the distribution of income.

Farm prices

Interest in price objectives stems largely from the relation between price and income. Because price is one of the factors determining income, high prices tend to be associated with high income and low prices with low income. Also, there is the belief that the best way to achieve satisfactory incomes for farm people is to raise the prices of farm products.

Typically, price objectives have been stated in terms of parity. Official parity computations have been made since the early 1930's. The parity ratio—ratio of prices received to prices paid—measures the current terms of trade or exchange value of farm products in relation to the base period 1910-14. Parity computations for individual farm products have been based on three different formulas. Since 1933, comparatively few modifications have been made in the parity ratio computations. Important changes, however, have been introduced in the computations for individual commodities.

Some people have suggested a price objective of full parity. Others have proposed 90 percent of parity. In the Agricultural Adjustment Act of 1933, Congress recognized the full parity objective. A parity ratio of 100 was to be approached as rapidly as feasible.

During the 1930's, specific price-support levels seldom were set above 70 percent of parity. A large number of commodities were supported at 90 percent of parity during the war and early postwar period.

Basic commodities continued to be supported at this level until 1955. Only in rare instances have supports been set above 90 percent of parity.

It has been argued that parity is supposed to define a set of appropriate exchange value prices. If it does this, then prices should be supported at full parity, nothing less. If it does not, then parity should be revised.

There is a certain logic in this argument supported by the fact that seldom have price supports for any commodity been set at full parity, as defined by law. This also is evidence that parity prices have not been considered appropriate prices for policymaking purposes.

The real question, of course, is what constitutes a set of appropriate exchange value prices. When the farm economy is seriously out of balance, like at the present time, the prices that may be appropriate from an income point of view are not the same prices that may be appropriate for getting farm products channeled into trade and consumption and for adjusting production and resource use. Persistent unfavorable prices are symptomatic of a maladjustment in the allocation of resources. Unless this is corrected, satisfactory prices can be achieved only with continuous production control and/or public expenditures.

One of the striking facts about American agriculture is the wide variation in the size and efficiency of farm units. Even in the best farming areas the present level of output is being produced at substantially higher resource cost than the best technology and resource organization would permit. As a result, a level of farm prices that will give satisfactory returns on the best organized farms will not provide similar returns on the poorer organized units. If prices were raised enough to give satisfactory returns on poorly organized farms, returns on the best organized units would exceed comparable levels in other industries.

Production efficiency and resource use

Economists frequently have suggested the objective of an efficient allocation and use of agricultural resources. An efficient farm industry would have three main characteristics:

(1) The output of each farm product would be produced at minimum cost. This would mean that all producers would be using the best practices and the lowest cost combinations of land, labor, and capital.

(2) The composition of farm output—the relative amount of each product—would be geared to the pattern of demand for agricultural commodities. This implies that the rewards for resources would be similar in all farm enterprises.

(3) The total output of farm products would be adjusted to the total demand to give a level of prices that would enable efficient producers to earn comparable rewards for their resources.

Achieving a more efficient agriculture has been justified as a policy objective on grounds that it would improve income opportunities in farming and raise the national income. Also, it would mean a fuller realization of the gains from improvements in farm technology.

As agriculture is now organized, there are two important opportunities to save resources. The current level of farm output is being produced at a resource cost considerably higher than the feasible

minimum. For the most part, this reflects the fact that the potential gains from past advances in farm technology have not been fully realized. Additional labor and probably some capital could be released to the nonfarm economy by producing the current level of output at minimum cost. In addition, the current level of output is too large in relation to full employment market demand. A further saving in labor and capital could be achieved by reducing farm production to a more optimum level. In large measure, this mirrors the fact that too much of the gains from past advances in technology are being taken in the form of farm output; not enough are being taken in the form of nonfarm output through the release of labor and capital from agriculture.

Achieving an efficient agriculture would mean a substantial additional decline in farm employment and farm population. Undoubtedly, the drop in farm employment would be proportionally greater than the decrease in farm population. It also would mean a marked increase in the average size farm and a big decline in the number of farms.

Organization of agriculture and farm population

The United States long has had a policy of encouraging the family farm. Farms on which the family supplies management and the bulk of the labor have dominated American agriculture since its beginning.

The philosophical basis for family farming in the United States was developed largely by Thomas Jefferson. His concept of an ideal society emphasized an agriculture made up of small, owner-operated, family farms. Much of the justification offered in support of this objective has been based on its contribution to democratic institutions. Some of the early proponents of family farming argued that the American form of government required a large farm population settled on small family farms.

Improvements in farm technology, especially since World War I, have been increasing the amount of land and capital that can be efficiently combined with family management and labor. As a result, family farms have been growing larger in terms of acres, capital, and output. In some types of farming, technological developments have encouraged an increase in the number of farms employing mostly nonfamily labor. For most types of farming, however, the family farm remains in a strong competitive position.

Some people have proposed that the number of farms and the size of the farm population be maintained or increased. Many of the arguments offered in favor of this objective are similar to those favoring family farming. In addition, it has been argued that overcrowding in urban areas has contributed to crime, family disruptions, and other social problems. Achieving a larger farm population has been suggested as the best way of minimizing these problems.

From 1920 to 1956, farm population fell by 9.7 million, a drop of 30 percent. The number of farms declined by 1.6 million, or 24 percent. These adjustments have been mainly the result of a low-income elasticity of demand for farm products, a rapid advance in output-increasing technology, an increase in the productivity of capital relative to labor associated with improved production methods, and a rise in the price of labor relative to capital. The last two factors have encouraged the substitution of machinery for labor on

American farms. At the same time, expanding income opportunities in the nonfarm economy have exerted a strong pull on farm people, particularly the younger ones.

Individual freedom and Government intervention

Freedom of the farmer to make production and marketing decisions has been suggested as a farm-policy objective. Frequently, this has been associated with the broader objective of achieving a minimum of Government intervention in economic affairs.

Among the arguments that have been advanced in support of these objectives are the following: (1) Freedom to decide the use of one's resources, within broad limits set by considerations of public health, safety, etc., is a basic value essential to the fullest development of the individual. (2) Over the long run, production efficiency will be greater and farm incomes will be higher if farmers are free to work out their own production decisions. (3) Government intervention in the farm economy involves a cost to taxpayers and usually an inconvenience or expense to farmers. Other things being equal, these costs should be minimized.

III

With this brief discussion of some of the possible objectives of farm policy, we now wish to examine some of their relationships. Suppose that each of these objectives has a positive social value. In other words, the attainment of any one, other things being equal, would add something to social welfare. What is the likelihood that the entire set could be achieved?

It is clear that the chance is practically nil. The reason is that some of these objectives are highly competitive. Achieving an efficient allocation and use of resources in agriculture almost certainly would mean a further decline in farm numbers and in farm population. This would conflict with the objective of maintaining or increasing the number of farms and the size of the farm population. Also, it is likely to clash with the objective of minimizing Government intervention and expenditures for farm programs. It is most probable that an efficient use of resources cannot be achieved by simply reestablishing a free-market economy in agriculture. Positive farm programs are likely to be needed to encourage adjustments in production and resource use consistent with economic efficiency. These programs probably would cost taxpayers substantially less than current programs. Even so, they are likely to involve some significant outlays.

There also is some conflict between economic efficiency and the objective of family farming, although it is probably small in terms of the number of farms. In some types of farming, an organization of resources involving relatively large amounts of hired labor appears to be more efficient than one largely dependent on operator and family labor. In such cases, there is a real conflict. But in most types of farming, technological and other conditions seem to favor the family farm. In Corn Belt agriculture, an efficient organization of resources probably would mean a large increase in land and capital and a much smaller increase in labor per farm. Total labor and capital, however, probably would decline. Although it is likely

that the increase in labor input per farm would be hired, operator and family labor still would bulk very large in the total.

Economic efficiency also clashes with the price objective of full parity. It is reasonably clear that a level of prices equal to full parity, as this is now computed, would be substantially higher than the level existing in a well-balanced farm economy. It is likely that full parity prices would make for rewards to labor and capital on well-managed farms appreciably higher than comparable resources earn in most other industries. If these prices were to be achieved by production control, one of two things would happen. Some resources in agriculture would go unemployed or the amount of labor and capital employed in farming would be too small to give an efficient allocation of resources.

On the other hand, the goal of economic efficiency is complementary with the income objective of comparable rewards for resources in farming. Improving economic efficiency would involve encouraging labor and capital to shift from low-return employments to high-return employments. Insofar as this were accomplished, rewards for labor and capital in farming would rise and approach the objective of comparable rewards. Farm people who shifted their labor and capital to nonfarm employments in this process also would experience an increase in income.

The objective of increasing the number of farms and the size of the farm population is competitive not only with economic efficiency but also with the objectives relating to individual freedom and Government intervention. To achieve this objective, farm employment would have to be made more attractive than nonfarm employment. Under present conditions, this could be accomplished only by large Government expenditures and/or by a system of tight controls which would induce a big reduction in output.

This objective also is inconsistent with public efforts to improve agricultural technology. These efforts increase the level of output that can be produced with a given input of resources. The gains from better farm technology can be taken in the form of more farm output or in the form of more nonfarm output through the release of resources from agriculture. If the level of farm output is already too large, as at present, the only way these gains can be fully realized is by releasing resources from agriculture to produce nonfarm output. Increasing the number of farms and the size of the farm population would be a move in the opposite direction.

Achieving full parity prices is competitive with the objective of comparable rewards for labor and capital in farming. On the best organized farms, these prices probably would give returns for labor and capital appreciably higher than what similar resources would be earning in other parts of the economy. On the other hand, these prices would not be high enough to pay comparable returns on poorly organized units using outdated technology and too little land and capital in relation to labor. And there are many of these farms in the agricultural economy.

IV

Because of these competitive relationships, policymakers face a difficult choice problem in formulating a meaningful set of farm-policy objectives. The key to the solution of this problem is the set of values to be used in determining the relative importance of different goals. These values cannot be obtained from the financial page of any newspaper. There is no market in which they are established by bids and offers. In a democratic society, they must emerge from the political processes of representative government.

PARITY PRICES AND PARITY INCOME FORMULAS, 1933-57

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The first purpose of this statement is to summarize the parity price and parity income formulas contained in agricultural legislation from 1933 through 1957, indicating not only the basic calculations but also comparing actual and parity prices or incomes at various points within or over the period. In addition, the characteristics of several alternatives which are, on occasion, suggested for the current parity price formula are summarized (based on the discussion in the report of the Secretary of Agriculture on Possible Methods of Improving the Parity Formula, S. Doc. 18, 85th Cong., 1st sess.).

PARITY PRICE FORMULAS

The current parity price formula is based on a commodity purchasing-power concept which compares prices received by farmers with prices paid by farmers (including also allowances for interest and taxes per acre of farm real estate and wage rates for hired farm labor).

Specifically, parity indicates those prices which would give farm products generally the same per unit purchasing power in terms of goods and services used in farm production and in farm-family living as that which prevailed in the base period 1910-14. This was the central idea of parity price when first enacted in 1933, and has continued so to date. In addition, the Agricultural Act of 1948 provided that the parity prices for particular farm commodities shall be so adjusted or modernized as to maintain the same intercommodity relationships as prevailed during the most recent 10-year period. Thus, for determining parity prices in 1957, the relative price experience for a particular commodity in the 10-year period, 1947-56, is applicable.

Before the provisions of the 1948 act were made effective, the parity price for most farm products was determined by multiplying the average price for the individual commodity received by farmers in the pre-World War I period by an index of prices paid by farmers, expressed as a percentage of 1910-14. Thus, the parity price of a commodity changed over time to the same extent that prices farmers had to pay for items used in farm production and farm living changed as compared with the 1910-14 period. For several commodities, price data for the earlier period were not available, or that base period was considered inappropriate and more recent base periods were used.

Since January 1, 1950, when the provisions of the Agricultural Act of 1948 went into effect, parity prices under the new formula have been computed by dividing the average price for a commodity in the

latest 10-year period by the average index of prices received by farmers in the same period on a 1910-14 base. This provides an adjusted base price for the commodity for the 1910-14 period. This adjusted base price is the average price that would have prevailed for the commodity if the price trend for the commodity from the 1910-14 period to the most recent 10-year period had been the same as the average for all commodities in the index. The adjusted base price is multiplied by the current parity index (index of prices paid, including interest, taxes, and wage rates) which reflects the change in prices paid by farmers since 1910-14.

It should be noted that the general level of prices received by farmers which would be equivalent to parity is essentially the same under both the old and the new formula. However, parity prices for individual commodities under the new formula may be quite different—either higher or lower—than those calculated under the old.

Chart 1 (farmers' prices) shows the trends in the indexes of prices received and paid by farmers back to 1910, the beginning of the parity base period. Except for the 1910-14 base period, prices received as a whole have averaged parity or better only in the years 1916-19 and the years 1942-52. These were notably war years or years affected by the inflationary aftermath of a war. The trend was downward from 1951 to 1955 when the parity ratio reached 80 in December 1955, the low point of the postwar period. Since then there has been some improvement with the September 15, 1957, ratio at 83. The parity ratio for farm prices generally from 1910 into 1957, as well as the specific parity ratios for several of the more important commodities from 1933 into 1957, are shown in table 1.

CHART 1

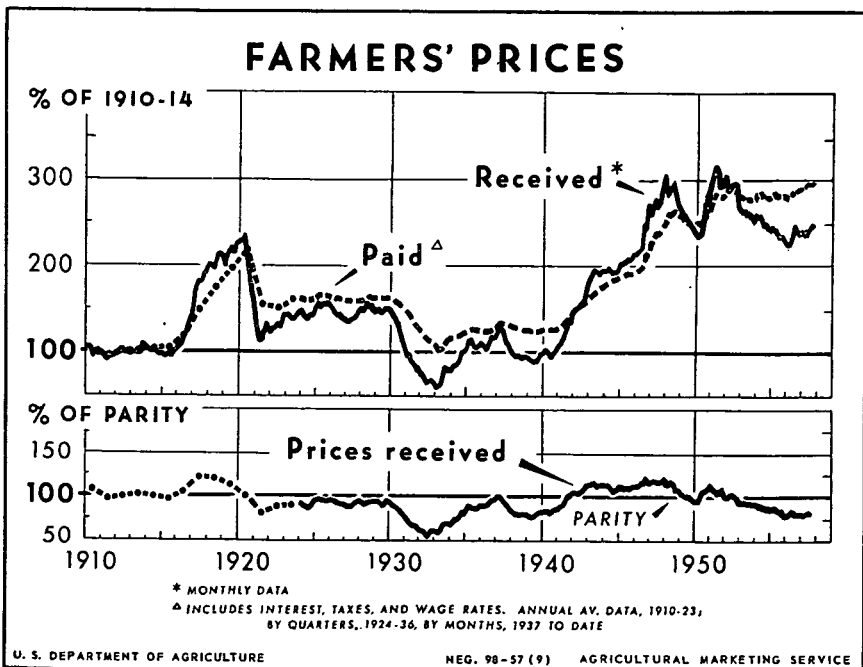


TABLE 1.—Annual average of the index of prices received by farmers, index of prices paid by farmers, interest, taxes, and wage rates, and the parity ratio United States, 1910-57, and average of prices received by farmers as percentage of the parity price for specified commodities, annually 1933-57

Year	Index 1910-14=100			Average price as percentage of parity price ¹						
	Prices received by farmers	Parity index ²	Parity ratio	Cattle ³	Hogs	Milk, wholesale ⁴	Eggs	Cotton ⁵	Wheat	Corn
1910	104	97	107							
1911	94	98	96							
1912	99	101	98							
1913	102	101	101							
1914	101	103	98							
1915	99	105	94							
1916	119	116	103							
1917	178	148	120							
1918	206	173	119							
1919	217	197	110							
1920	211	214	99							
1921	124	155	80							
1922	131	151	87							
1923	142	159	89							
1924	143	160	89							
1925	156	164	95							
1926	145	160	91							
1927	140	159	88							
1928	148	162	91							
1929	148	160	92							
1130	125	151	83							
1931	87	130	67							
9932	65	112	58							
1933	70	109	64	64	45	77	67	61	61	53
1934	90	120	75	58	48	80	71	80	75	79
1935	109	124	88	87	94	85	88	73	76	94
1936	114	124	92	86	101	94	84	75	86	94
1937	122	131	93	98	101	95	76	68	91	112
1938	97	124	78	96	85	87	79	53	60	61
1939	95	123	77	107	71	87	70	58	58	60
1940	100	124	81	111	60	93	72	64	67	74
1941	124	133	93	122	95	105	88	81	72	76
1942	159	152	105	130	120	108	98	99	77	82
1943	193	171	113	137	118	124	112	99	89	100
1944	197	182	108	121	107	138	94	97	96	105
1945	207	190	109	131	112	135	105	99	97	99
1946	236	208	113	139	124	142	95	118	102	115
1947	276	240	115	148	144	118	93	113	115	126
1948	287	260	110	165	128	122	89	104	97	118
1949	250	251	100	151	103	103	86	96	89	75
1950	258	256	101	133	94	89	68	107	88	82
1951	302	282	107	145	95	97	81	117	88	92
1952	288	287	100	118	84	101	70	105	85	91
1953	258	279	92	79	106	93	79	92	81	81
1954	249	281	89	76	106	85	78	93	83	81
1955	236	281	84	74	73	87	84	92	81	71
1956	235	286	82	69	68	89	83	90	78	70
1957 ⁶	242	295	82	76	84	87	72	86	75	63

¹ The percentages are the ratios of the simple average of the 12 monthly prices for individual commodities to their annual parity prices computed by multiplying the 1910-14 base price or the adjusted base price by the annual average of the applicable prices paid index. Parity prices for each year are computed as provided by legislation in effect for that year, except that interest and taxes were included for the whole of 1935 whereas in fact, they were added in July of 1935. More particularly the unrevised prices paid index was used for 1933 and 1934 and the prices paid index including interest and taxes was used from 1935 until the date the effective parity price for an individual commodity shifted to the new formula parity, at which date the use of the index of prices paid, interest, taxes, and wage rates was started. Effective parity prices shifted to the new formula in January 1950 for cattle, hogs, and wholesale milk; January 1954 for eggs and January 1956 for American upland cotton. Effective parity prices for wheat and corn are still on the transitional basis.

² Prices paid, interest, taxes, and wage rates.

³ Includes subsidy payments July 1945-June 1946.

⁴ Includes subsidy payments October 1943-June 1946.

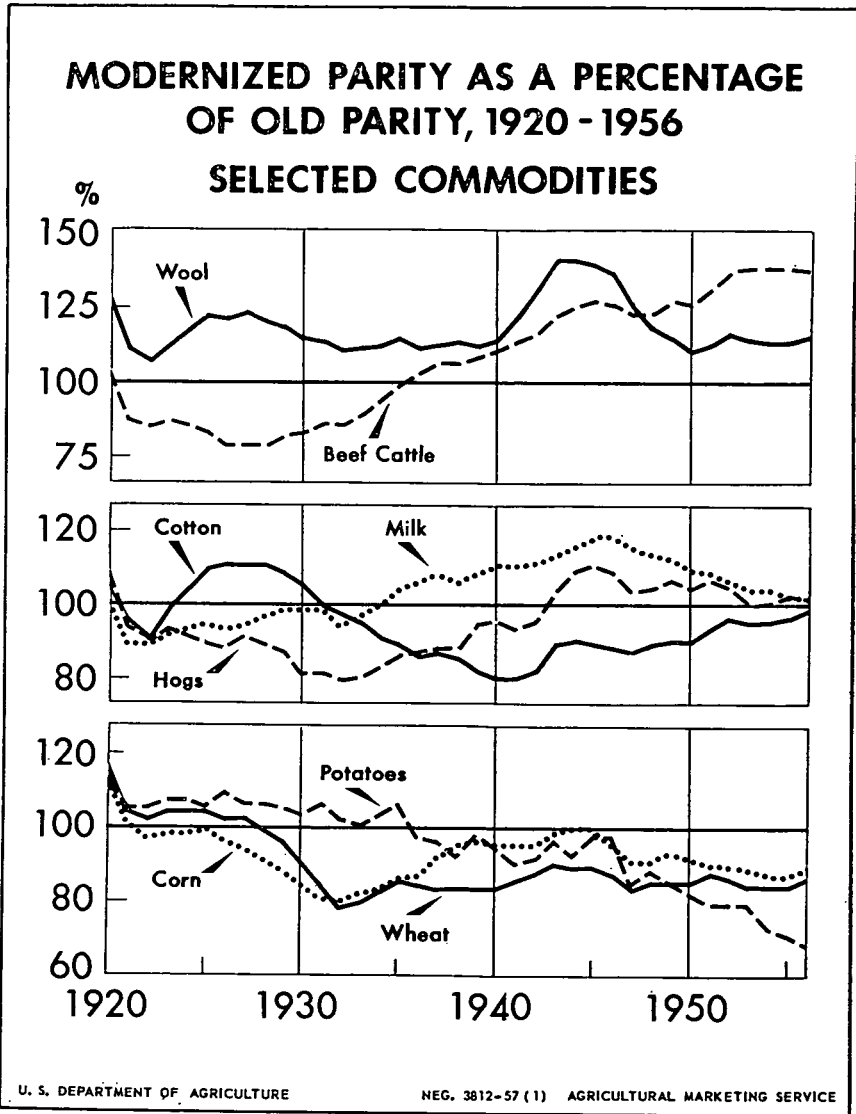
⁵ All cotton 1933-41; American upland cotton 1942-57.

⁶ January-September average.

As noted previously, the overall parity level is unaffected by the modernizing feature which gives weight to relative prices over the most recent 10-year period in determining the parity prices for particular commodities. What is gained by one commodity is offset by

declines in others. Chart 2 shows the new or modernized parity for a number of major farm products as a percentage of the old parity from 1920 through 1956.

CHART 2



Thus, the new parities are lower than the old for products such as potatoes and wheat, which have not experienced a rising demand over the years, and higher for such products as beef cattle for which demand grows more rapidly. The new or modernized parity gradually adjusts the relative parity price for specific commodities for persistent or continuing market trends. Under these conditions, changes in parity prices computed by the new formula should come

closer to actual price movements than parity prices computed under the old formula (charts 3 and 4).

CHART 3

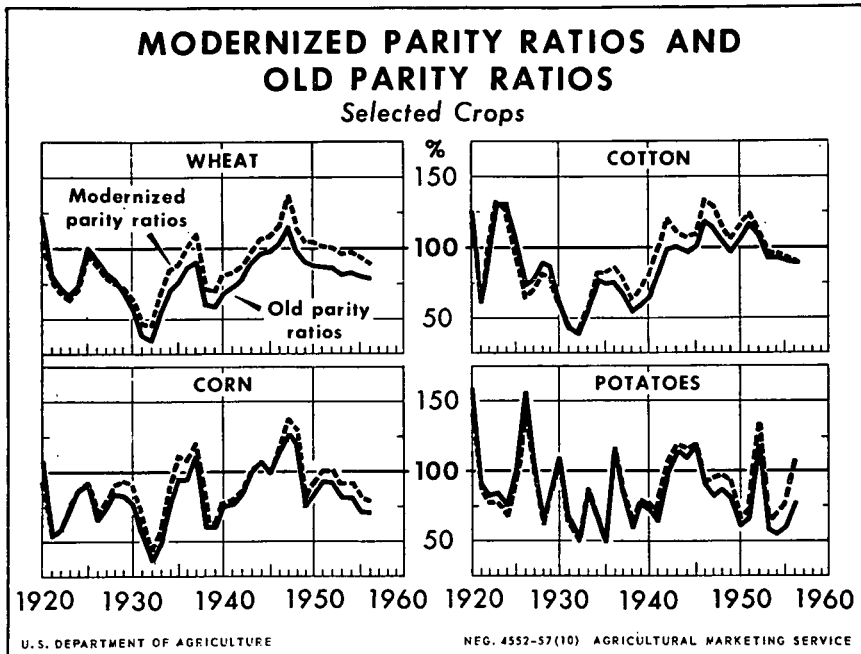
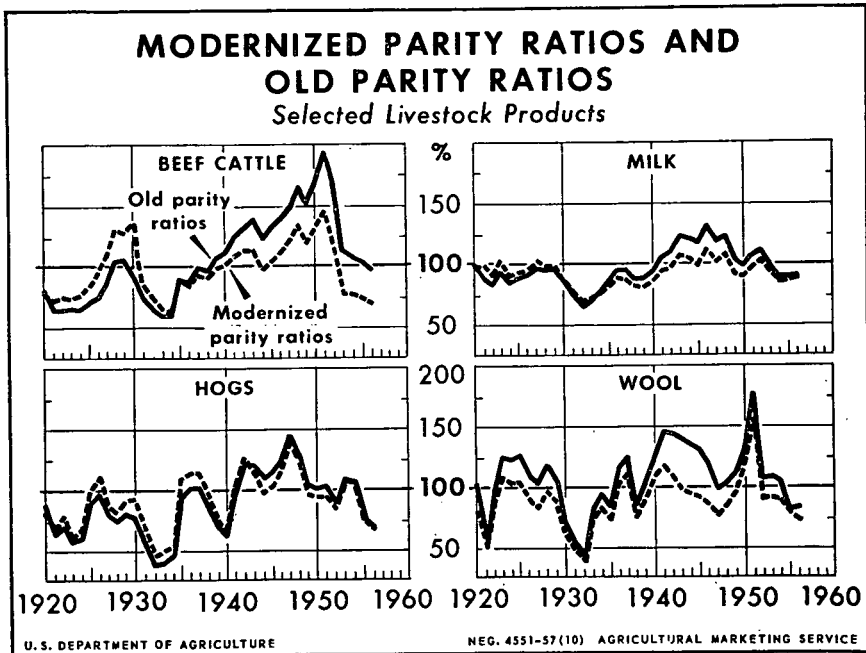


CHART 4



Where the old parity price for a commodity was higher than the new parity, legislation provided for a gradual reduction in the old parity until the new or modernized parity level is reached. At that point, the old parity is permanently discarded. In the meantime, the transitional parity is the effective parity. Parity for most commodities is now determined by the new formula. However, 10 commodities are still in the transitional stage. For the basic commodities still on transitional parity—wheat, corn, peanuts, and Puerto Rico filler tobacco—the transition to new parity could well be finished within the next 1 to 3 years. For some of the nonbasic commodities—grapefruit, oranges, avocados, dates, filberts, and walnuts—a longer period is involved. (See table 2.)

TABLE 2.—Indicated parity prices, old, transitional, and new, and effective parity prices for commodities still on the transitional basis, based on data for September 1957, United States

Commodity	Unit	Old formula	Transitional parity prices ¹	New formula	Effective parity prices based on data for September 1957	Estimated date of effective parity going to new formula basis ²
Basic commodities:						
Wheat.....	Bushel.....	\$2.64	\$2.51	\$2.34	\$2.51	January 1959.
Corn.....	do.....	1.92	1.82	1.72	1.82	Do.
Peanuts.....	Pound.....	.144	.137	.123	.137	Do.
Tobacco:						
Puerto Rican filler, type 46.	do.....	.380	.361	.308	.361	January 1960.
Nonbasic commodities:						
Grapefruit.....	Box.....	2.35	1.41	.858	1.41	January 1962.
Oranges.....	do.....	4.31	2.59	1.72	2.59	Do.
Avocados.....	Ton.....	1,040.00	624.00	337.00	624.00	January 1963.
Dates.....	do.....	601.00	361.00	130.00	361.00	January 1965.
Filberts.....	do.....	682.00	409.00	373.00	409.00	January 1958.
Walnuts.....	do.....	798.00	479.00	465.00	479.00	Do.

¹ For basic commodities 95 percent, and for nonbasic commodities 60 percent of the old formula parity.

² These estimated dates are based upon the September 1957 difference between transitional parity and new formula parity, and the magnitude of 5 percent of old parity. They assume that the current relationship between the revised and unrevised parity indexes remain unchanged. Consideration has been given also to prices thus far in 1957 and to their probable effect upon adjusted base period prices as of January 1958. For example, for peanuts, the difference between transitional and new parity was 1.4 cents per pound as of Sept. 15, 1957. Since 5 percent of old parity is 0.72 cents per pound, transitional parity during 1958 should be about 0.72 cents lower than during 1957, and about 1.44 cents lower after Jan. 1 1959, at which time the new parity would be above transitional parity, and therefore would be the effective parity price. Prices so far in 1957 indicate that the adjusted base price for peanuts in 1958 will be slightly higher than in 1957, thus supporting the expectation that the new parity will be above transitional parity as of January 1959. It is not very probable that this will occur January 1958.

The indexes of prices received and prices paid (including allowances for interest and taxes per acre of farm real estate and wages paid hired farm labor) and the comparisons they make possible are among the most important statistics in the field of agriculture. These indexes would still be calculated and used as the basis for comparisons even if they were not essential components of a legally defined parity standard. Similar indexes are widely used in the analysis of changes in the level of wages, profits, and business investment. For example, when the current level of wages is compared with the wages of some years back, it is important to take into account not only the change in hourly wages but the change in consumer prices. The parity index and the parity price computations provide a similar measure for agriculture.

It should be noted that divergence between prices received for a commodity and prices paid by producers will indicate that there have been shifts in the complex economic forces governing production,

prices and consumption. But parity comparisons only call attention to and assist in measuring the changes which are occurring. By themselves such comparisons do not indicate why a change has occurred nor what should be done about it.

SOME ALTERNATIVE PARITY PRICE PROPOSALS

For the convenience of the subcommittee and discussants, this section summarizes the several alternative suggestions for revising or amending the parity price formula considered in the recent USDA report on "Possible Methods of Improving the Parity Formula."

Perhaps this discussion should begin recalling that the recommendations regarding parity which the Secretary of Agriculture advanced in this report were (1):

The Department concludes that the use of the current general commodity purchasing-power concept should be continued—

and (2):

The modernized parity formula now contained in the Agricultural Adjustment Act of 1938, as amended, be continued except that the base period January 1910 to December 1914, inclusive, should be changed to January 1947 to December 1956, inclusive.

The various alternatives to parity prices discussed in the report were:

(a) *Moving the base period forward.*—For almost a quarter of a century the parity price system has been based on the 1910–14 period. There has been increasing criticism that this base should be modernized. From a technological viewpoint, farming today is much different from farming in the 1910–14 period. Farm production is now almost twice as large. But that production requires one-third fewer man-hours of farm work. Output per man-hour has tripled. Three-fourths of this increase in farm productivity per man-hour over the past half century has taken place since 1940. Technology has not been limited to farm production. Farm family living standards have also substantially improved.

In the search for the most suitable base period for the appropriate indexes, certain basic criteria should be considered. The base period should reflect a fairly stable economic situation unaffected by wars and depressions (the chief causes of sudden changes or shifts in price relationships). At the same time, the base period should be fairly representative of the kind of agriculture that is likely to prevail for some years ahead. Otherwise the relevance of the parity comparisons is reduced. It should also be a long enough period to smooth out any short-run cyclical relationships. Finally, the indexes should be as accurate as possible.

Several of these criteria indicate an advantage in moving to a fairly recent base period.

There have been suggestions that the base period be a moving average encompassing either the most recent 5 or 10 years. This would have the effect of continually moving the base period forward in time. There are some disadvantages. Chiefly, it is difficult to characterize any recent period as "normal." For example, the most recent 5-year

moving base would reflect an extended period of price declines and surplus accumulation. Faced with a somewhat similar problem, the Congress, in providing for the current "modernized" parity, approved the use of a 10-year moving average for measuring commodity interrelationships, chiefly because it gives a slower moving, more stable measure than a shorter-term average would.

The effects of moving to a different base period than the 1910-14 period on the average level of parity are shown in the following table:

TABLE 3.—*Indexes of prices received and paid by farmers and the parity ratio, selected periods, 1910-56*

Period	1910-14=100			Percent change in average parity level
	Index of prices received	Index of prices paid	Parity ratio	
1910-14.....	100	100	100	0
1925-29.....	147	161	91	-9
1935-39.....	107	125	86	-14
1947-51.....	275	258	107	+7
1952-56.....	253	283	89	-11
1947-56.....	264	270	98	-2

(b) *Separate parity indexes for individual commodities.*—The present parity index is a broad measure of the change in prices paid by farmers for commodities and services used in farm production and farm family living. It is representative of all farmers in the United States taken as a group, and its weighting system reflects the average purchase pattern of some 5 million farm operators producing a wide variety of farm products under a wide range of conditions. There have been suggestions that separate indexes should be established which would give due weight to differences in the kind and quantities of items associated with the production of individual farm commodities. Thus the purchasing power of an individual farm product would be determined from an index of the particular cost factors related directly to the particular commodity, probably without any allowances for the farm family living component of the present prices paid or parity index.

While detailed data on particular cost factors are not available, the index of prices paid for commodities used in production for 27 types of farms in several major farming areas, shown in table 4, is indicative of the problems that would be faced if individual parity indexes were to be used. These data approximate the variation of price trends for production items that might be expected among farms producing different commodities and also the variation among areas producing the same commodities. The table, for example, indicates that the changes in the special prices paid indexes between 1947-49 and 1956 for all the types of farms shown ranged from a 4-percent decline for sheep ranches in the Southwest to an increase of 26 percent for wheat-pea farms in Washington-Idaho. The overall index of prices paid by farmers, covering the United States as a whole, rose 14 percent.

TABLE 4.—Indexes of prices paid for commodities used in production, United States, and types of farming areas

[1947-49=100]

	1937-41	1947-49	1952	1953	1954	1955	1956
United States ¹	50	100	117	112	112	112	114
Dairy farms:							
Central Northeast ²	50	100	115	110	109	107	108
Eastern Wisconsin ²	51	100	³ 115	114	114	³ 115	115
Western Wisconsin ²	51	100	115	114	114	³ 115	116
Hog-dairy farms, Corn Belt ²	³ 50	100	116	114	113	113	114
Hog-beef raising farms, Corn Belt ²	53	100	117	116	114	³ 111	114
Hog-beef fattening farms, Corn Belt ²	45	100	112	102	105	³ 102	100
Cash grain farms, Corn Belt ²	55	100	119	120	121	123	124
Tobacco-livestock farms, Kentucky bluegrass ²	45	100	118	118	121	118	120
Tobacco-cotton farms, coastal plains, North Carolina ²	(⁴)	100	114	116	118	119	123
Tobacco farms (small), coastal plains, North Carolina ²	(⁴)	100	113	115	117	117	117
Tobacco-cotton farms (large), coastal plains, North Carolina ²	(⁴)	100	109	110	117	118	123
Cotton farms:							
Southern Piedmont ²	48	100	115	112	108	³ 117	112
Black prairie, Texas ²	46	100	³ 111	³ 106	³ 105	³ 103	106
Nonirrigated, high plains, Texas ²	47	100	112	119	104	³ 110	112
Irrigated, high plains, Texas ²	(⁴)	100	108	104	99	³ 102	101
Small, delta ²	(⁴)	100	113	110	109	³ 107	107
Large scale, delta ²	(⁴)	100	116	107	110	108	107
Wheat, small grain, livestock farms, Northern Great Plains ²	49	100	³ 114	³ 114	³ 115	³ 107	111
Wheat, corn, livestock farms, Northern Great Plains ²	³ 61	100	117	³ 117	117	³ 116	116
Wheat, roughage, livestock farms, Northern Great Plains ²	51	100	117	115	113	³ 113	112
Winter wheat farms, Southern Plains ²	52	100	118	119	117	³ 118	121
Wheat, pea farms, Washington and Idaho ²	51	100	121	122	120	³ 122	126
Sheep ranches:							
Northern Great Plains livestock area ²	47	100	133	119	117	116	115
Southwest ²	(⁴)	100	123	103	97	103	96
Cattle ranches:							
Northern Great Plains livestock area ²	50	100	126	121	119	121	125
Intermountain region ²	³ 54	100	³ 122	120	³ 116	³ 120	123
Southwest ²	(⁴)	100	128	108	110	104	109

¹ Prices paid for production items, interest, taxes, and wages as published in monthly Agricultural Prices.² Prices paid, including taxes (but not interest), and wages to hired labor as published in Farm Costs and Returns, Agriculture Information Bulletin No. 176, ARS, USDA.³ Revised.⁴ Not available.

Meanwhile, there is almost as much variation in some instances in the cost-rate indexes for typical farms producing the same commodities in different areas as there is among different commodities. For example, increases in the specialized price indexes for cattle ranches range from 9 percent in the Southwest to 25 percent in the northern Great Plains area. For cotton farms, the increases range from 1 percent for irrigated operations in the high plains of Texas to 12 percent for nonirrigated operations in the same area. Such data are available for only a few farm areas, even for recent years, and deriving satisfactory national indexes would involve a major undertaking, considering the 160 farm products for which parity prices are now computed.

It should also be noted that the use of separate parity or cost-rate indexes for individual commodities, or even related groups of commodities, would mean a considerable shift away from the general purchasing-power or price-level concept on which the current parity price formula is based toward a cost-of-production concept. This in turn would certainly lead to many requests for different base periods,

different methods of calculation, and consideration of or allowances for special situations in addition to data problems already mentioned.

(c) *Efficiency modifier for parity prices.*—The suggestion has been made that the parity price formula, which measures the purchasing power of farm products on a per unit basis, should be adjusted to reflect the fact that it takes fewer resources to produce farm commodities today than in earlier years. Preliminary calculations indicate that farmers are now using about one-fourth fewer inputs per unit of total farm production than in 1940. This is as far back as adequate data are presently available although we of course know that farm efficiency was gradually increasing prior to 1940. But if only the efficiency increases since 1940 were given full weight as an adjustive factor, the current level of parity prices for all farm products would have been reduced almost a fourth.

In considering such a change or revision, attention should also be given to the way in which efficiency gains in the nonfarm economy are reflected in prices or returns. Nonfarm productive efficiency has also been increasing, and we know that economic gains resulting from improved efficiency can be distributed in a number of ways—that is, through increased returns to capital, higher wages for labor, improved quality of products, lower prices to consumers, or some combination of these. In the nonfarm economy, it is evident that gains in efficiency are often not directly or immediately translated into price reductions. Since the end of World War II especially, the tendency has been for industrial prices to hold steady or gradually increase. If all nonfarm efficiency gains were passed forward to consumers, prices paid by farmers would be lowered. This would mean that parity prices as now calculated would also automatically be lowered or adjusted by an equal amount.

We should also keep in mind that gains in efficiency do not proceed smoothly and in all segments of agriculture at the same time. Questions would surely be raised as to whether the marked efficiencies stemming from a few products should appropriately be used to lower parity prices for others as well.

(d) *Modernized parity modified for price stabilization costs.*—For some time now Government support or stabilization programs have maintained prices of some products higher than would have been realized otherwise. This has been reflected favorably in the parity prices for those commodities, while parity prices for other commodities have absorbed an offsetting adjustment. Suggestions have been made that the influence of Government programs should be eliminated from the parity calculations, provided some satisfactory statistical method for so doing could be found.

A preliminary calculation has been made using certain realized cost data relating to the major price-support and export programs for the 10-year period, July 1946 to June 1956. For farm products as a whole, deductions on a realized-cost basis would reduce the index of prices received by farmers during that 10-year period (1947–56) from 265 to 261. Parity prices of corn, cotton, wheat, and so forth, would be reduced while parity prices for commodities for which there were small realized program losses or costs would be increased about 2 percent. The realized program-cost concept, however, does not ade-

quately measure the full price effect of such programs on particular commodities, while this concept would also certainly be questioned as working in the opposite direction from the declared purpose of the Congress in those cases where commodity parities were lowered.

PARITY INCOME FORMULAS

The idea of parity income centers on the relationship between incomes of farm people and incomes of nonfarm people. Generally, there have been two basic approaches to the problem of determining parity income. One involves the maintenance of historical income ratios which would provide for farmers' incomes and standards of living to grow at the same rate as others. Examples of the historical income-ratio approach include the original definitions of income parity in the Soil Conservation and Domestic Allotment Act of 1936 and the Agricultural Adjustment Act of 1938. The alternative approach calls for equal incomes or levels of living as between farmers and others as provided for in the Agricultural Act of 1948. While parity income definitions have existed alongside parity price definitions, Congress has not indicated or directed that the parity-income concept should be substituted for parity prices as an actual operating standard.

The parity-income ratio of the 1936 legislation involved the ratio between the total net income (from all sources) per person on farms to income per person not on farms, while the ratio of the 1938 legislation related to the per capita income of persons on farms from farming operations as against per capita net incomes of persons not on farms. Apparently, the 1938 definition was a revision of the 1936 definition tailored to fit the then available statistics. Neither the 1936 nor the 1938 parity-income definitions provided a formula for deriving a set of commodity prices or returns compatible with the income standard.

Chart 5 shows the comparative ratios of income of persons on farms to incomes of persons not on farms consistent with the historical income ratios in the legislation of 1936 and 1938. The annual data are shown in table 5.

It should be noted that the estimates for the base period 1910-14 are fairly rough. The data for 1956 indicate that the ratios of farm to nonfarm per capita income were much the same as in the base period 1910-14, ranging from 4 percent below for the 1938 definition to 9 percent above for the 1936 definition. Both ratios are likely to run somewhat higher for 1957 than in 1956. Over the long term, incomes of farm people have tended to move much the same as incomes of nonfarm people, although at a lower level. If, however, the last 10 years were used as a base, the ratio of income per person on farms from all sources to income per person not on farms for 1957 may run as much as 10 percent lower than the base period.

Meanwhile, the Department so far has not been in a position to bring statistical meaning to the definition of parity income in the Agricultural Act of 1948:

“Parity,” as applied to income, shall be that gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful occupation. “Parity” as applied to income from any agricultural commodity for any year, shall be that gross income which bears the same relationship to parity income from agriculture for such year as the average gross income from such commodity for the preceding 10 calendar years bears to the average gross income from agriculture for such 10 calendar years.

The determination of equivalent standards of living involves much more than equivalent dollar incomes. A family's well-being depends not only on income but also on other factors such as the accumulation of assets and consumer goods over the years, the availability of adequate health and educational facilities, and such intangible factors as are involved in evaluating country versus city life. It is noteworthy that our indexes of levels of living of farm operator families indicate a persistent improvement in family levels of living from 1951 into 1956 despite declines in farm income during that period.

Similar questions relate to the direct income comparison of persons on farms with persons not on farms. In 1956, for example, the average per capita income of persons on farms was about \$900 as compared with about \$2,000 for the nonfarm person. Even after a number of statistical adjustments for differences in costs of living as between farm and nonfarm families, some of which are subject to considerable question, a remaining gap of perhaps \$700 per person is indicated.

It is sometimes suggested that a considerable part of the farm population is either underemployed or not closely connected with commercial agriculture and therefore should be eliminated from the income comparison. For example, the comparison might be restricted to the 2 million or so commercial farms which produce about 90 percent of the farm products sold. But a major question arises as to the appropriate nonfarm group with which incomes to such a farm group should be compared. Commercial farmers have considerable capital investments and skills not readily comparable with nonfarm occupations and their returns would, in any equity argument, have to

be compared with returns or net incomes to a comparable nonfarm group.

There are also suggestions that farmers should receive the same return per hour as industrial workers. For 1956, it is estimated that the average return per hour to farm labor was slightly under 75 cents (necessarily a rough estimate) as compared with almost \$2 in manufacturing (excluding any allowance for fringe benefits in the case of manufacturing labor and assuming farmers also realized interest or profits on their net capital investment equal to the average interest rate for loans held by principal farm lenders, about 4.75 percent).

Whatever net aggregate measure a parity income definition starts with, whether it is related to a historical ratio, to equal living standards, or to returns per hour of labor, some difficult problems are raised when it comes to translating the overall aggregate into returns or prices for particular commodities or returns or income standards for particular farms or classes of farms.

As indicated earlier, the 1948 parity-income definition does outline a device for deriving a set of related gross commodity incomes. Starting with the net aggregate income necessary to give farm operators living standards equal to those afforded persons dependent upon other gainful occupations, the first step would be to subtract the estimated net income derived from nonagricultural sources. Then parity as applied to any agricultural commodity for any year would be—

that gross income which bears the same relationship to parity income from agriculture for such year as the average gross income from such commodity for the preceding 10 calendar years bears to the average gross income from agriculture for such 10 calendar years.

This means that the estimated net income which would have to come from agriculture would have added to it estimated farm production expenses for the year to arrive at the necessary gross parity return. This gross parity return to all agriculture would then be broken down among the various commodities on the basis of actual relative gross values during the preceding 10 calendar years, giving the desired total value for the particular commodity for the particular year. Presumably this could then be translated into a price standard by using a combination of desirable or estimated acreages and average or estimated yields for the particular commodity involved.

Finally, it should be emphasized that neither price nor income parities have the same significance for those farm operators who have little to sell as they do for commercial farmers. Data from the 1954 Census of Agriculture show that close to 2 million farmers, or 40 percent of all farmers, sold less than \$1,200 worth of farm products during the year. For this group, parity prices for farm products would still not mean an adequate level of income or of living although increased returns from the sale of farm products would of course mean some improvement. Thus the realization even of income parity through parity prices would not solve the problem of inadequate incomes and low living levels for many farmers who are presently in that situation. The prospects of such farmers improving

their economic situation depend much more on other factors, such as opportunities to acquire adequate land, sufficient capital, improved skills, or suitable nonfarm employment.

The following supplements set forth the leading statutory definitions of both parity prices and parity income from 1933 to date.

STATUTORY DEFINITIONS OF PARITY PRICES, 1933-1957

The first definition of parity was contained in the Agricultural Adjustment Act of 1933 which stated that it was the policy of Congress among other things to—

(1) * * * reestablish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles that farmers buy, equivalent to the purchasing power of agricultural commodities in the base period. The base period in the case of all agricultural commodities except tobacco shall be the prewar period, August 1909 to July 1914. In the case of tobacco, the base period shall be the postwar period, August 1919 to July 1929.

(2) To approach such equality of purchasing power by gradual correction of the present inequalities therein at as rapid a rate as is deemed feasible in view of the current consumptive demand in domestic and foreign markets.

There were several amendments to this first definition providing among other things that for the purposes of marketing agreements or orders where the purchasing power of a commodity could not be—

satisfactorily determined from available statistics of the Department of Agriculture, the base period, for the purposes of such marketing agreement or order, shall be the postwar period, August 1919 to July 1929, or all that portion thereof for which the Secretary finds and proclaims that the purchasing power of such commodity can be satisfactorily determined from available statistics of the Department of Agriculture.

Provision was also made for the calculation of parity prices in such a manner as would—

give to the commodity a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of such commodity in the base period; and, in the case of all commodities for which the base period is the period August 1909 to July 1914, which will also reflect current interest payments per acre on farm indebtedness secured by real estate, tax payments per acre on farm real estate, and freight rates, as contrasted with such interest payments, tax payments, and freight rates during the base period.

The current definition is contained in section 301 of the Agricultural Adjustment Act of 1938, as amended, which provides:

SEC. 301. (a) GENERAL DEFINITIONS.—For the purposes of this title and the declaration of policy—

(1) (A) The “parity price” for any agricultural commodity, as of any date, shall be determined by multiplying the adjusted base price of such commodity as of such date by the parity index as of such date.

(B) The “adjusted base price” of any agricultural commodity, as of any date, shall be (i) the average of the prices received by farmers for such commodity, at such times as the Secretary may select during each year of the 10-year period ending on the 31st of December last before such date, or during each marketing season beginning in such period if the Secretary determines use of a calendar year basis to be impracticable, divided by (ii) the ratio of the general level of prices received by farmers for agricultural commodities during such period to the general level of prices received by farmers for agricultural commodities during the period January 1910 to December 1914, inclusive. As used in this subparagraph, the term “prices” shall include wartime subsidy payments made to producers under programs designed to maintain maximum prices established under the Emergency Price Control Act of 1942.

(C) The “parity index,” as of any date, shall be the ratio of (i) the general level of prices for articles and services that farmers buy, wages paid hired farm labor, interest on farm indebtedness secured by farm real estate, and taxes on farm real estate, for the calendar month ending last before such date to (ii) the general level of such prices, wages, rates, and taxes during the period January 1910 to December 1914, inclusive.

(D) The prices and indexes provided for herein, and the data used in computing them, shall be determined by the Secretary, whose determination shall be final.

(E) Notwithstanding the provisions of subparagraph (A), the transitional parity price for any agricultural commodity, computed as provided in this subparagraph, shall be used as the parity price for such commodity until such date after January 1, 1950, as such transitional parity price may be lower than the parity price, computed as provided in subparagraph (A), for such commodity. The transitional parity price for any agricultural commodity as of any date shall be—

(i) its parity price determined in the manner used prior to the effective date of the Agricultural Act of 1948, less

(ii) 5 percentum of the parity price so determined multiplied by the number of full calendar years (not counting 1956 in the case of basic agricultural commodities) which, as of such date, have elapsed after January 1, 1949, in the case of nonbasic agricultural commodities,

and after January 1, 1955, in the case of the basic agricultural commodities. The Secretary shall make a thorough study of possible methods of improving the parity formula and report thereon, with specific recommendations, including drafts of necessary legislation to carry out such recommendations, to Congress not later than January 31, 1957.

(F) Notwithstanding the provisions of subparagraphs (A) and (E), if the parity price for any agricultural commodity, computed as provided in subparagraphs (A) and (E) appears to be seriously out of line with the parity prices of other agricultural commodities, the Secretary may, and upon the request of a substantial number of interested producers shall, hold public hearings to determine the proper relationship between the parity price of such commodity and the parity prices of other agricultural commodities. Within 60 days after commencing such hearing the Secretary shall complete such hearing, proclaim his findings as to whether the facts require a revision of the method of computing the parity price of such commodity, and put into effect any revision so found to be required.

(G) Notwithstanding the foregoing provisions of this section, the parity price for any basic agricultural commodity, as of any date during the 6-year period beginning January 1, 1950, shall not be less than its parity price computed in the manner used prior to the enactment of the Agricultural Act of 1949.

STATUTORY DEFINITIONS OF PARITY INCOME, 1936-57

Parity income was first defined in the Soil Conservation and Domestic Allotment Act of 1936 which declared that the purpose of the act was the—

reestablishment, at as rapid a rate as the Secretary of Agriculture determines to be practicable and in the general public interest, of the ratio between the purchasing power of the net income per person on farms and that of the income per person not on farms that prevailed during the 5-year period August 1909–July 1914, inclusive, as determined from statistics available in the United States Department of Agriculture, and the maintenance of such ratio.

The 1936 definition was revised in the Agricultural Adjustment Act of 1938 which provided that—

“Parity,” as applied to income, shall be that per capita net income of individuals on farms for farming operations that bears to the per capita net income of individuals not on farms, the same relation as prevailed during the period from August 1909 to July 1914.

Both of these definitions related to income ratios that existed in the same time period as the base period established for determining parity prices, the 5 years 1910–14.

These definitions were replaced in the Agricultural Act of 1948 which defined parity income, effective January 1, 1950, as

“Parity,” as applied to income, shall be that gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful occupation. “Parity,” as applied to income from any agricultural commodity for any year, shall be that gross income which bears the same relationship to parity income from agriculture for such year as the average gross income from such commodity for the preceding 10 calendar years bears to the average gross income from agriculture for such 10 calendar years.

ALTERNATIVE PARITY FORMULAS FOR AGRICULTURE

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The present parity price formula provides the parity ratio—that is, the ratio between the prices received and the prices paid by farmers; it also provides parity prices for individual farm products.

The parity ratio—the ratio between the prices received and the prices paid by farmers—is widely used to measure the economic status of agriculture.¹ When the parity ratio is 84, for example, that ratio is regarded as indicating that the prices received by farmers are too low; some regard a parity ratio of 84 as indicating that the prices of farm products are 16 percent too low.

The same sort of opinion is held concerning parity prices for individual farm products. When the prices received by farmers for corn are only 68 percent of the parity price of corn, this is generally believed to indicate that corn prices are too low; some believe that it indicates that corn prices are 32 percent too low.

The parity prices for some individual farm products (actually, certain percentages of parity prices) are used as bases for the price support operations of the CCC for those products.

How accurate a measure of farmers' economic status does the parity price ratio and the different parity prices provide? The answer to this question should throw some light on a second question—how well do parity prices serve as bases for price supports?

THE PRESENT PARITY PRICE FORMULA AS A MEASURE OF FARMERS' ECONOMIC STATUS

The present parity price formula is designed to measure parity purchasing power per unit of farm product compared with its purchasing power back in 1910–14. But this does not provide a very exact standard by which to measure farmers' economic status today. There are several reasons for this.

1. The 1910–14 base period is out of date

The 1910–14 base period, more than 40 years in the past, is getting less and less representative of present-day conditions, in view of all the changes in technology and other influences on the supply and demand for farm products that have taken place since 1910–14.

The modernized formula in the Agricultural Act of 1949 recognized that the old parity formula perpetuated the relations among the prices of different farm products that existed in 1910–14, through all the changes in supply and demand that had taken place since 1910–14. The modernized formula in the 1948 and 1949 acts shifted the base for

¹ For example: "The drop in prices * * * caused the parity ratio—index of relative farm prosperity—to fall one point * * *" (Des Moines Register, July 23, 1956).

computing the parity prices of individual farm products from 1910-14 to the most recent 10-year moving average. But it still retained the 1910-14 base for the prices of farm products as a whole. A more recent base should more accurately reflect present conditions in agriculture than the old 1910-14 base.

The average parity ratio over the most recent 10 years, 1947-56, on the 1910-14 base, figures out at 98.2. This is not far from 100, that is, not far from the 1910-14 ratio. This most recent 10 years includes 1947, when the parity ratio reached its all-time high, 115; it also includes more recent years when the ratio was close to its lowest level since the 1930's. The USDA recommends shifting to the 1947-56 base.

2. The parity index is the same for all farm products.

The present parity index is a single index for the whole United States. It is based upon the prices of about 350 goods and 3 services (interest, taxes, and wages). The index shows the prices of goods and services for the average farmer in the United States.

But most actual farmers differ widely from average farmers. Some of them are cotton farmers, using cotton machinery, fertilizer, and labor; some are Corn Belt farmers, using corn planters, pickers, and so forth; some are wheat farmers, using "one-ways" and combines; some are truck farmers, ranchers, fruitgrowers, and so forth, each with his own list of goods and services purchased, differing in kind and quantity from that of the others. The parity index—an average index for the whole United States—does not accurately fit any of them.

The prices paid for different items in the parity index have risen at markedly different rates since before World War II. Hired labor wages have risen to an index of well over 400 (1935-39=100). Machinery prices have doubled. But fertilizer prices have risen only 50 percent. The combination of resources used in the production of different farm products has changed in different ways in different areas. The use of machinery on Southern Piedmont cotton farms exactly doubled from 1935 to 1953, but on Central Northeast dairy farms it rose only 36 percent. The use of labor declined at different rates among the different farm areas. Yet the same weights for all types of farms are used in the parity index. The prices of the different factors of production change at different rates, so the use of the same quantity weights for all farm areas, when in fact the quantity weights change at different rates, means that the single parity index for the United States as a whole is not an accurate index of the prices paid in each of the different farming areas. Parity prices for individual farm products would more accurately reflect the parity purchasing power of those products if the parity index were computed separately for each product.

The two changes outlined above would involve no fundamental change in the parity price formula. They would merely change the data put into the formula. The formula would still be a prices-received and prices-paid formula.

Three additional features of the parity formula now need to be considered. Changing these features would involve making changes in the formula itself.

3. *The parity formula includes the prices received by farmers, but it does not include the quantities produced*

Prices are only one of the elements that determine farmers' economic status. The other important element is the quantities of the products concerned. A farmer's economic status would be very low if he got a high price for his corn, for example, but had only a few bushels to sell. Economic status is more accurately measured by prices multiplied by quantities sold than by prices or quantities alone, much as the area of a tract of land is much more accurately measured by its length multiplied by its width than by either length or width alone.

Production per farmer now is more than twice as high as it was in 1910-14, so parity prices now would bring in more than twice parity gross income per farmer compared with income in 1910-14. If production per farmer had declined since 1910-14, parity prices now would bring less than parity gross income per farmer.

The parity formula, therefore, would more accurately reflect farmers' gross income status if it included quantities produced per farmer as well as prices received.

4. *The parity index reflects prices per unit purchased, not costs*

But gross income is only one step closer to a measure of economic status than prices received. A second step is needed—to deduct costs from gross income, in order to measure net income.

The present parity index measures only one element in the costs incurred by farmers; the index is only an index of prices per unit paid by farmers, not an index of costs (i. e., prices times quantities of inputs) incurred by farmers. The index of the prices of things farmers buy might stand at 100; but, if farmers now buy twice as much machinery, fertilizer, etc., as they did in 1909-14, they would be paying out an amount that should be represented by 200, not 100. The index shows only the prices, not the costs (prices times quantities) of things that farmers buy.

The nature of the anomalies that result from ignoring changes in quantities purchased is illustrated by the increase that has taken place in the use of fertilizer. The quantity of fertilizer used in the United States more than tripled from 1940 to 1956. If fertilizer prices had remained constant, the parity price index would have shown no change; but farmers in 1953 actually would have paid out more than three times as much hard cash for fertilizer as they paid in 1940; per farm, they would have paid out more than four times as much.

The data showing changes in production costs in different types of farming show directly how these changes in costs differ among themselves. The diversity of these changes shows up clearly, even over so short a period of time as 1947-49 to 1955. On cotton farms in the southern Piedmont, production costs per unit of production from 1947-49 to 1955 declined 4 percent; the corresponding changes in other types of farming ranged all the way up to an increase of 49 percent for winter wheat farms in the southern Plains. The data for these and other types of farming are shown in table 1.

TABLE 1.—*Changes in production cost per farm on typical farms, 1947-49 to 1955*

Type of farm :	Percent change
Cotton farms, southern Piedmont.....	-4
Dairy farms, Central Northeast.....	-4
Hog-beef fattening farms, Corn Belt.....	+12
Tobacco-cotton farms, North Carolina.....	+15
Cattle ranches, northern Plains.....	+20
Winter wheat farms, southern Plains.....	+49

Source of table: Agricultural Outlook Charts, 1957, USDA, November 1956, pp. 18-19.

The present parity price index could be converted into a parity cost index by multiplying the price data each year by the quantity data per farm for the same year. The parity index would then be an index of costs, not merely an index of prices.

5. Parity income base

The present parity price formula is a prices-received and prices-paid formula, in which the prices received by farmers in the base period are multiplied by the current index of prices paid by farmers. The changes outlined above would convert this formula into an income-cost formula, in which the gross income received per farm operator in the base period would be multiplied by the current index of costs incurred.

But what farmers are really interested in is parity income, not with their costs in an earlier base period, but with incomes in other occupations now. Measuring this sort of parity would require that the parity income formula relate net income per farm operator to current incomes in other occupations.

In the next section, we will consider whether a parity income formula of this kind could be constructed, and whether data are available to put into it.

CAN A FARM PARITY INCOME FORMULA BE DEVELOPED?

The first step is to set up as clear cut a definition of parity income as possible.

"Parity farm income" is defined in the Agricultural Act of 1948 in these words:

Parity, as applied to income, shall be that gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful occupations.

It is very difficult to measure equivalence of standards of living on and off farms, and there is some question whether average farm and average nonfarm standards of living would be expected to be equivalent when both groups are so different and diverse.

The field could be brought into sharper focus by the use of a more specific definition. To this end, "parity income" could be defined as "that income which yields returns to resources employed in agriculture equivalent to the returns received by comparable resources engaged in nonagricultural production."

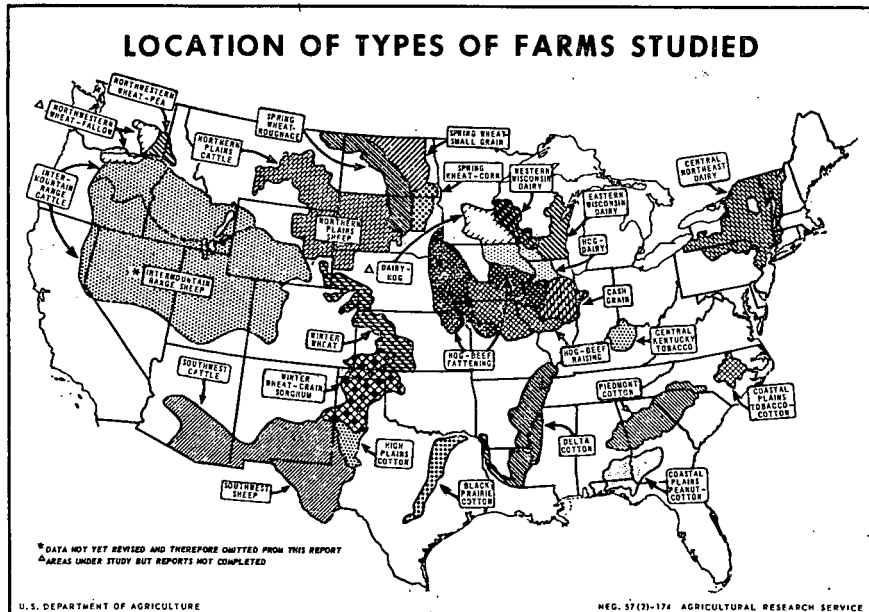
In order to compute parity returns under this definition it is necessary to obtain detailed farm input and output (cost and income) data.

The USDA compiles and publishes excellent farm cost and income data. These data, however, are for all farms as defined by the census. In the 1954 census, 30.4 percent of these farms were not commercial farms at all; they were part-time, residential, and abnormal farms (institutional, etc.) with an average gross farm income (value of farm products sold) of only \$347. The corresponding figure for the commercial farms was \$7,305. Lumping these two subaverages together, weighted in each case by the number of farms in the class, results in an overall average gross income for all farms of \$5,188. This is 29 percent lower than the average gross income of the real farms, the commercial farms.

Furthermore, the USDA data are published by States and regions (groups of States) and for the United States as a whole, not by relatively homogeneous economic type of farming areas.

What is needed is data drawn from commercial farms, grouped by economic type of farming areas, to enable parity income per farm operator to be computed separately by types of farming areas. Data of this sort, for commercial farms, by type of farming areas, are compiled in the ARS, USDA, under the direction of Wylie Goodsell, who kindly made the basic detailed tables available to us. These data are taken from representative samples of commercial farms in the different areas shown in figure 1.

FIGURE 1



These data show the actual quantities and prices of inputs (costs) and the actual quantities and prices of outputs (income). They show the quantities and prices of the expense items (fertilizer, etc.) directly. They also show the quantities of capital and labor used. The real problem in determining parity income arises in the valuation of these quantities of capital and labor.

RETURNS TO WORKING CAPITAL AND LAND

Under the definition of "parity income" given above, parity returns to the capital resources used in agriculture would be equivalent to the returns received by comparable capital used in nonagricultural production.

It is difficult to determine comparable farm and nonfarm capital situations with respect to risk, stability, etc. Capital is fairly mobile, however, between the farm and nonfarm sector. Comparable returns to farm working capital, therefore, could be approximated by use of the interest rates for short-term farm loans. These rates are given in the Goodsell data by years and by areas.

The valuation of the services of land is also troublesome. Farmland has few alternative uses, and the prices of farm products are one of the primary determinants of land values.

One might attempt to value the services of land on the basis of share rents. However, share rents are used only in certain areas. Although one could obtain the share of the product received by the land, there are often additional arrangements between the landlord and tenant. For instance, the landlord may furnish part of the gasoline, seed, or fertilizer. These arrangements make it difficult to determine the actual rent paid for the use of land.

Farmland has few alternative uses, but its ownership is not restricted to farmers. The current value of land represents what the owner could obtain if he chose to sell it. Accordingly, this value, multiplied by the corresponding farm mortgage interest rate, can be used to approximate parity returns to land.

Return to labor

The monetary return to farm labor² can be computed as a residual, by subtracting the operating costs and return to working capital and land from the gross farm income.

But determining what the parity returns to farm labor would be presents a difficult problem. If it were possible to select occupations in the nonfarm segment which were closely comparable to farming, parity returns to farm labor and management could be defined as equal to wages in these occupations. Parity farm income thus could be computed directly.

But the value of the nonmonetary items also needs to be taken into account. Farmers consume considerable quantities of home-produced food, and also occupy a dwelling which may be of different value

² No distinction is made here between the management and labor inputs of the farm operator. Labor return, as used, is the return to the operator for his personal services.

than that occupied by persons in the rest of the economy. In addition, there are other reasons why equal monetary incomes could not be considered equivalent. The city worker may have to drive considerable distances to work, his occupation may require different outlays for working clothing, and he may receive more fringe benefits (the city worker may be protected in case of accident or receive other indirect benefits). Even if these items could be correctly evaluated, the problem of evaluating the intangibles associated with different occupations remains. These range from the freedom of action and work in the open associated with farming, to the nearness of theaters, museums, and bars, and the presence of crowds and excitement associated with urban employment.

It is difficult to evaluate these items directly. Their value can be approximated indirectly, however, by observing the actual differences between the monetary returns to labor in farm and nonfarm occupations during a representative base period, and using the ratio between the two as indicating the value placed upon the intangible and unmeasurable items.

This ratio provides only an approximation. It reflects not only the values placed upon the intangible items, but also the obstacles that impede free movement off farms—human inertia, lack of full knowledge, cost of moving, lack of training for nonfarm jobs, etc. In this respect, the parity-income formula is similar to the parity-price formula; both of them reflect the obstacles that impeded the attainment of actual parity during the base period. Both provide a standard to measure only how much the relation between farm and nonfarm incomes (or prices received and paid) have changed from the relation that existed during the based period.

The nonfarm series selected to use in this comparison should be a series showing only labor and management returns, exclusive of returns from capital resources. It should be a series of wage rates for work which requires skills similar to those required of farmers, and which represents opportunities available to those leaving farming. No series available exactly meets these criteria. Since the farm-labor return is computed by the use of a ratio, however, all that is needed is a series that moves in the same manner as a series that would meet the criteria. The series Yearly Earnings of Employed Workers in Manufacturing³ can be used for this purpose.

Once a base period has been selected, the parity farm labor returns in any individual year can be computed by multiplying the current nonfarm wage rate by the ratio that existed between the two in the base period. This is analogous to the current price parity formula computations, where the prices received by farmers in a base period are multiplied by the current index of prices paid by farmers.

The parity farm-labor return established in this manner is not an absolute measure of equivalence. It is simply the labor return which bears the same relation to nonfarm incomes as existed during the base period. Hence, parity returns established by use of a base period relationship merely measure economic status relative to the status which existed during the base period.

³ U. S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, U. S. Government Printing Office, 1931-55.

APPRAISAL OF INCOME PARITY FORMULA EXPLORATION

Our purpose in this report has been to explore, on an experimental basis, concepts and methods which could be used for attacking the problems involved in measuring parity farm income.⁴

It is evident that we are still a long way short of our goal of measuring farm parity income accurately. The basic idea, that income is a more accurate measure of economic status than prices alone, seems sound. The application, however, is complex and difficult. At several stages, approximations have to be used. We have not been able to develop procedures to measure parity farm income directly. We can only measure how much the relation between farm and nonfarm incomes have changed from the relation that existed during an earlier base period, as the parity-price formula does with respect to prices. Farm income from nonfarm sources is not included, and the range of farm incomes covered by the term "farm income" is still wide, even though the farmers whose incomes are considered are limited to commercial farmers and separated into different producing areas.

The formula outlined so far, therefore, is only an early experimental model. It is still in the laboratory stage. It would only provide approximations. The procedures are too complicated, and involve too much judgment, to be put to practical use at this early stage. Even the experts disagree in some of these matters of judgment. Further discussion and experimentation will need to be conducted over a considerable period of time before simple, objective, and generally acceptable procedures can be worked out.

We are far short of the goal of our explorations, but we believe that we are exploring in the right direction. We are proceeding to try out the procedures for several different types of farming areas, to see how they work out. Our goal is to obtain results eventually which would be accurate enough to use as bases for farm policy. We are working with farm income, because we believe that the level of farm income is a more fundamental problem than farm prices alone, and that programs are needed to deal more directly with farm incomes. The first step in dealing with a problem is to establish as accurate measures of the variables involved as possible. That is why it seems important to us to try to develop as accurate measures of farm incomes as possible, and determine how far these farm incomes are out of line with the goals of farm policy.

⁴ The definitions and procedures outlined above arise from some research which we have been conducting at Iowa State College as part of an interregional agricultural policy project, IRM-1. The conclusions are those of the authors.

VIII. PROGRAMS TO EXPAND DOMESTIC DEMAND OR
TO UTILIZE FOREIGN OUTLETS FOR
FARM PRODUCTS

(PAPERS FOR PANEL H)

PROGRAMS TO EXPAND DOMESTIC DEMAND OR TO UTILIZE FOREIGN OUTLETS FOR FARM PRODUCTS

FOOD CONSUMPTION SUBSIDIES FOR LOW-INCOME FAMILIES

Vernon L. Sorenson, Michigan State University

INTRODUCTION

Income and consumption programs in one form or another have been a part of the policy framework for commercial agriculture since the early 1930's. To many analysts, the expansion of demand for farm products represents an obvious and important part of the solution to the farm problem. Others tend to minimize the potential value of expanding food utilization and concentrate attention on the problem of output adjustment. These divergent viewpoints do not appear to arise from differences of opinion as to what is good or what is bad public policy but, rather, from the more pragmatic consideration of what will and what will not work to relieve the farm price and income problem. This paper will not attempt to adjudicate these differences. It will be limited to evaluation of food subsidies for low-income families in the hope that this will contribute to a clearer understanding of the place which this form of demand expansion can have in the public-policy framework.

I will accept two assertions at the outset. It seems reasonable to assume (1) that consumer-subsidy programs can increase the use of food,¹ and (2) that, if these programs are undertaken independent of production control, agricultural output will increase sufficiently to largely eliminate the price effect of the increase in demand.

With these overall assertions in mind, this discussion will concentrate on the questions of (1) the objective or objectives which can be used in establishing consumer-subsidy programs, (2) the kinds of adjustments which will occur as income is improved at lower levels, and (3) the kinds of programs that can be used to improve consumption and the problems that will be encountered in their use.

A BRIEF BACKGROUND

Though no attempt will be made to comprehensively evaluate the background and development of present attitudes toward Federal food subsidies, a few points need to be emphasized. Historically,

¹ Some analytical basis is provided for this assumption in *The Challenge of Underconsumption*, address by Milo Perkins, then president of FSCC, at the Fourth Annual National Farm Institute, Des Moines, Iowa, February 24, 1940, and *An Analysis of Food Stamp Plans*, USDA supplemental report transmitted to the President of the Senate and the Speaker of the House of Representatives, January 3, 1957.

food-consumption programs received their major stimulus from the coexistence of agricultural surpluses and millions of unemployed and undernourished consumers during the 1930's. Though some of the first efforts by the Federal Government to distribute food arose entirely from a concern with farm surpluses, there was an early mating of humanitarian concern for millions of unemployed, low-income people who were unable to buy adequate food, and the problem of finding outlets for surplus farm products.

A survey by the Bureau of Labor Statistics and the Bureau of Home Economics in collaboration with the National Resources Committee showed that in 1935-36 the lowest income class amongst American consumers, with an average family income of only \$328 per year, spent only slightly more than \$1 per person per week for food. No less than one-third of the population had diets which were classified as inadequate. In these circumstances, the need for action seemed acute. The problem had passed beyond the ability of local governments and some kind of Federal aid was needed.

In addition to food contributions through welfare and relief agencies, two major programs were introduced. These were the school-lunch program inaugurated in 1933 and greatly expanded in 1939, and the food-stamp plan which went into effect on May 16, 1939. Each of these programs initially had the dual objective of improving nutrition and reducing farm surpluses. Federal contributions to the school-lunch program came entirely from surplus stocks. Stamps which were used to buy food over and above predetermined normal family expenditures could be used only to purchase commodities designated as surplus by the Secretary of Agriculture.²

The situation which presents itself today is vastly different from that which existed when these programs were initiated. Unemployment is not widespread or persistent. Estimates based on the 1955 survey of household food consumption indicate that not over 10 percent of the population have diets which are poor by standards used in the 1935-36 survey.³

Though the major reason for this difference is the generally improved real-income position of consumers, part of the reason for better diets is that Federal programs are still in existence as an outgrowth of the activity in the 1930's. During the fiscal year 1956, commodities valued at \$91 million were made available to needy persons through the United States Department of Agriculture's family-distribution program. During the largest month of operation, 3.5 million individuals in 38 States received surplus food. This program supplements relief and welfare work by local and State agencies. The combined effect of all direct welfare programs on food consumption is difficult to determine, but is of considerable importance at very low income levels.

The school-lunch program has expanded rapidly during recent years, and currently benefits approximately 27 percent of the pupils enrolled in elementary and secondary schools (table 1).

² The school-lunch program has since been released from the initial emphasis on surplus disposal and food subsidies to the very poor. Free funds are available, and lunches are served to all students regardless of family-income position.

³ Dietary Levels of Households in the United States, Household Food Consumption Survey, 1955, Rept. No. 6, p. 1.

TABLE 1.—National school-lunch program, total expenditures by sources, 1947-57, and proportion of eligible students participating

[In millions of dollars]

Fiscal year	Children's payments	State and local contributions	Federal contributions	Percent of eligible students participating ¹
1947.....	112.5	38.2	\$0.4	16.9
1950.....	177.3	70.5	119.8	21.1
1953.....	275.9	103.5	133.7	25.2
1956.....	377.2	137.8	181.9	27.5
1957.....	415.0	147.0	230.5	27.4

¹ Excludes number of children participating in the type C meal, milk only.

Source: The National School Lunch Program, A Statistical Review of Progress, 1947-57, USDA AMS, August 1957.

Federal contributions now exceed \$230 million annually. However, since lunches are available to all children regardless of family income this program is not strictly a subsidy program for low-income families.

NUTRITION AND FOOD SUBSIDIES

The emphasis on the relation between income levels and nutrition in development of past programs raises the question of what potential exists at the present time for increasing food consumption based on nutritional considerations. It must be recognized that the level of nutritional sufficiency obtained by consumers is not necessarily directly associated with income. A recent study undertaken at Michigan State University based on consumer panel data indicates that some consumers at all income levels use less than the recommended amounts of some nutrients.⁵ This same conclusion is evident from the 1955 survey of household food consumption. Table 2 includes data from this study which shows the proportion of families at different income levels where the quantity of food brought into the home for family consumption during a week in April-June 1955 did not equal recommended dietary allowances. Adequacy is established by comparing the amount of food brought into the home for consumption, with the standards or recommended dietary allowances established by the Food and Nutrition Board of the National Research Council.

TABLE 2.—Percentage of households using food at home in week of April-June 1955, that did not furnish recommended amounts of 8 nutrients, housekeeping households of 1 or more persons, by income, all consumers¹

Income class	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Niacin	Ascorbic acid
\$0 to \$999.....	23	37	15	36	17	32	17	51
\$1,000 to \$1,999.....	15	41	16	30	19	30	13	41
\$2,000 to \$2,999.....	10	34	10	18	16	25	9	30
\$3,000 to \$3,999.....	6	31	9	18	16	17	6	26
\$4,000 to \$4,999.....	3	25	7	12	13	15	4	21
\$5,000 to \$5,999.....	3	23	6	11	16	12	4	19
\$6,000 to \$7,999.....	4	23	9	11	17	14	5	16
\$8,000 to \$9,999.....	4	26	7	10	18	15	3	13
\$10,000 and over.....	1	17	6	5	14	12	2	8

¹ Percentages are computed on a nutrition unit basis thereby allowing for differences in family composition.

Source: Dietary Levels of Households in the United States, Household Food Consumption Survey Report No. 6, table 12.

⁵ Margaret A. Ohlson, Louise Kelley, and G. G. Quackenbush, The Nutritional Value of Food Purchased in 1953 by 146 Urban Families, Michigan State University Technical Bulletin 258, July 1956.

The fact that food intake does not measure up to these standards does not prove that families are poorly fed or suffering from malnutrition. The recommended allowances are subject to a considerable margin of error when applied to individuals and also provide a substantial margin of safety over the minimum needs of an "average" person. What the figures in table 2 do show is that when measured by nutritional standards the problem of food consumption cannot be easily dealt with by assuming that poor nutrition occurs only where income levels do not permit adequate food purchases. This does not mean that there are no families or individuals eating nutritiously poor diets because their income is too low to buy better food, but only that nutrition by itself is an inadequate basis for developing a subsidy program. Subsidies will not improve the diets of those people where poor nutrition is due to preference, ignorance, custom, or some other reason.

A recent USDA estimate indicates the possible magnitude of a subsidy program which combines poor nutrition and income as a guide in establishing eligibility for participation. If a program is restricted to persons and families who now receive some form of Federal, State, or local welfare assistance it is estimated that 6 million persons could be included. The total potential cost of direct food supplements to these persons through a food stamp plan would approximate \$600 million.⁶ This is an expenditure equal to no more than two-thirds of 1 percent of present retail food sales.

Since it is only in this very low income group that insufficient buying power prevents the purchase of "adequate" diets one conclusion seems to stand out clearly. Compared with the 1930's, the potential for increasing food consumption through a program designed to relieve nutritional inadequacies caused by income restrictions is limited. A broad-scale Federal program with this objective could be effective in moving substantial quantities of food into consumption only if a large number of people were unemployed and could not purchase adequate diets. This implies a period of general economic depression, a condition which very few forecasters foresee at the present time. Under present circumstances a nutrition program for the poor will not move many surplus commodities.

A WELFARE CRITERION

What then does provide a basis for expanding domestic food consumption? I would suggest that any program to be successful must be formulated within the broader framework of the total welfare of consumers as related to diets. This idea rests basically on the hypothesis that what people want when making food buying decisions is not commodities but satisfying eating experiences. Food, though fulfilling the basic need of nutrition, also serves an aesthetic value which strongly influences buying decisions. The American consumer likes a varied and satisfying diet and it is the prospect of more completely fulfilling the desire for variety and aesthetic satisfaction that presents the only realistic possibility for expanding the overall demand for farm products.

⁶ Op. cit., *An Analysis of Food Stamp Plans*.

If this objective is accepted, it follows that consumers must be free to make their own decisions as to which foods they will consume. Restrictive programs which attempt to force materially greater consumption of specific kinds of food than would otherwise be used would not be compatible with the welfare goal, nor effective for any extended period of time.

Though income by no means provides a complete explanation of consumption patterns, it is an important restricting factor on dietary adequacy when diets are measured in terms of quality as well as quantity. In general as incomes increase American consumers use larger quantities of animal products and fruits and vegetables. Consumption of grain products and sweets and sugars declines while consumption of fats and oils tends to remain relatively constant at all income levels.

The questions which arise are what significance do these changes have in terms of total food expenditures and how is the utilization of different classes of foods affected by income changes? The data in tables 3 and 4 provide some insight into these questions.

Table 3 shows the change in purchases of major classes of food if the consumption level of lower income groups is raised to successively higher minimum levels. Column 1 shows, for example, that if the consumption of all persons and families with incomes below \$1,000 is raised to the level attained by persons and families in the income class \$1,000 to \$1,999, total United States purchases of bakery products and milk will increase 2.1 percent, purchases of flour and cereal products on the other hand will decrease by 4.5 percent. Column 4 shows what changes will occur in the purchases of these and other commodity groups if the consumption level of all persons and families with incomes from 0 to \$3,999 is raised to the levels attained in the income class \$4,000 to \$4,999.

TABLE 3.—Potential percentage changes in purchases of major food commodities if minimum consumption is raised to successively higher level—All consumers, 1955¹

Food groups	Income groups subsidized (in dollars)—			
	Under 1,000 to 1,000- 1,999 level	Under 2,000 to 2,000- 2,999 level	Under 3,000 to 3,000- 3,999 level	Under 4,000 to 4,000- 4,999 level
Bakery products.....	2.1	5.0	10.0	29.8
Milk.....	2.1	7.0	11.8	18.0
Fruits and vegetables (fresh, frozen, canned juices).....	2.1	5.4	6.7	11.7
Meat, poultry, fish and eggs.....	2.3	5.6	7.4	11.3
Fats and oils.....	.3	1.0	1.6	1.0
Sugars and sweets.....	.3	-1.4	-2.1	-5.7
Flour and cereal products.....	-4.6	-10.0	-18.7	-25.7
Dried fruits and vegetables.....	-1.5	-5.2	-19.9	-29.4

¹ These are preliminary estimates computed from the 1955 survey of household food consumption as part of a research project underway at the University of Minnesota entitled, "An Economic Analysis of Demand Expansion Programs and Policies for Food in the United States." This is a subproject of an interregional project-IRM-1. These data were made available in advance by Mr. John M. Wetmore and Prof. Willard W. Cochrane but are soon to be published in Minnesota Farm Business Notes.

Table 4 provides estimates of the number of consumers who would be involved and the aggregate value of additional food expenditures that would be required if minimum consumption levels were raised to

successively higher planes. Also shown is an estimate of the income supplements which would be required to raise minimum incomes to successively higher levels.

TABLE 4.—*Estimated free income supplements and value of food purchases required to raise minimum income and consumption to successively higher levels, 1955*

Income category representing minimum level of consumption	Number of consumers whose consumption would be supplemented	Additional value of food consumption ¹	Free income supplement
	<i>Millions</i>	<i>Millions of dollars</i>	<i>Millions of dollars</i>
\$1,000-\$1,999.....	10.76	386	3,637
\$2,000-\$2,999.....	28.73	1,447	11,143
\$3,000-\$3,999.....	45.31	2,625	22,119
\$4,000-\$4,999.....	68.28	4,862	41,701

¹ The data on additional retail value of food consumption have a very slight upward bias because nonfarm consumption rates are applied to the total population. However, since the urban and rural nonfarm components predominate so heavily and because consumption patterns on farms do not differ drastically this bias would appear to be negligible.

Source: Computed from data in the 1955 survey of household food consumption and U. S. Department of Commerce current population reports, 1955.

The potentials shown in these tables should not be viewed as realistic program goals. They are useful largely for their value in disclosing relative magnitudes as they relate to adjustments between commodities and to provide an idea of the overall limitations of subsidy programs on total food consumption.

The estimates of additional food expenditures shown in table 4 are based on prices which prevailed during the period of April-June of 1955. If these potentials could be obtained, the total retail value of additional food purchased for domestic consumption would be about 0.8, 2.5, 5.3, and 9.7 percent, respectively.

Because of the complication of quantity conversion factors between the retail and farm levels and the changing composition of diets which would occur, these retail value increases cannot easily be converted directly into increased income to different classes of producers. A rough estimate, however, would indicate that the total transfer to farmers would range from about \$150 million with a minimum program to nearly \$2 billion if food expenditures of all lower income groups is raised to the level enjoyed by families in the income range of \$4,000 to \$4,999. If the increased consumption were obtained without major or permanent shifts in the relative price levels of different food groups a redistribution in the returns which farmers receive from the market would occur roughly in accordance with the increases and decreases shown in table 1. Substantial benefits would go to livestock producers, dairy farmers, fruit and vegetable growers, and poultry producers. Since the decline in consumption of flour, and cereal products more than offsets the quantity of grain used in bakery products the return to food-grain producers would tend to decline.⁷ Secondary benefits would accrue to feed-grain producers because of the generally expanded use of livestock products.

⁷ This conclusion is true, of course, only to the extent that price supports permit flexibility in the market.

Two general qualifications which must be added to this picture at the outset are: (1) the effect which changes in product prices will have, and (2) the effect of differentials in the share of the consumer's dollar received by different classes of producers. The share of the consumer's food dollar received by farmers for different commodities varies as widely as from above two-thirds to a low of 12 to 15 percent. These increasing commodities from which farmers receive a high proportion of the consumer's dollar are poultry products, dairy products, and meats. Low-return commodities where expanded consumption would result, include most fruits and vegetables and bakery products. These differences will to an extent distort the apparent distribution of benefits to farmers shown in table 1.

Price changes will influence both the overall quantity of food taken and cause shifts in the relative amounts taken of different commodities.

Even in the absence of production controls these changes would be of some importance since temporary price rises would likely occur particularly for some commodities. However, with recent normal annual increases of 2 to 3 percent in total farm output this effect would probably be short lived. Given time and freedom to adjust it is a near certainty that output expansion would force prices to a level at or below 1955 levels (assuming that general price levels remain constant). Farm prices in 1955 were, of course, maintained in part by price-support activity.

The more interesting question which arises is that of the effect consumer subsidy programs will have if production controls are used to permanently maintain a higher general level for farm prices or to change the relationship between prices for specific farm commodities. If this were done, the magnitudes shown in tables 3 and 4 may have little relevance. Increased prices would affect the additional amount of food that low-income consumers could obtain with any given income supplement and would influence the buying decisions of those consumers not participating in the program. Estimates of the variation in total food consumption with independent shifts in food prices range widely from those which conclude that a 10-percent change in prices will result in a 2- to 3-percent opposite change in the quantity taken to those which show that a 10-percent change in price will result in upward of a 6-percent shift in consumption.⁸ These measurements are made at the retail level. It is probable that the lower values more closely apply to upper income groups and that higher values more closely apply at lower income levels. Persons with low incomes probably will increase or decrease purchases more in response to price changes than those with higher incomes.

This price effect would differ between commodities. The change in consumption of all meat, for example, is normally rather great. Most estimates indicate that a change in price of 10 percent will result in a 6- to 10-percent or even larger opposite change in the quantity consumed. The change is even greater for all manufactured dairy products. Estimates indicate approximately a 15- to 20-percent change in consumption with each 10-percent change in price. For milk alone, on the other hand, the relative change in consumption is much less.

⁸ Of 15 retail price elasticities for all food summarized in *Price Elasticities of Demand for Nondurable Goods, With Emphasis on Food*, by Richard J. Foote, AMS-96, 5 are between $-.2$ and $-.3$; 8 are between $-.3$ and $-.4$; 1 is $-.41$; 3 are between $-.50$ and $-.60$; and 3 are above $-.60$.

Estimates on most other commodities are either limited or not available at all. In general, it can be assumed, however, that changes in consumption relative to price changes will be greatest for those foods which represent a substantial portion of the housewife's budget and are considered luxury items in the diet.

If production controls are used in conjunction with subsidy programs in an effort to increase farm price levels, the problem of projecting the changes that will occur in consumption of specific commodities becomes greatly compounded. The net impact on consumption will depend on the combined effect which subsidies provided to lower income groups have on their food buying decisions and the extent to which price changes influence the buying decisions of both subsidized and nonsubsidized consumers.

CAN PROGRAMS BE DEVISED

The most frequently suggested procedure for providing food subsidies is one which will require individuals participating in the program to exchange a certain proportion of their income for stamps with value in a grocery store equivalent to a given diet. The proportion of the family income required to obtain the stamps would be graduated to insure that at some level the money required to pay for stamps would equal the value of food which the stamps would purchase. To my knowledge, only one specific estimate has been made which attempts to separate out the actual number of participants who might qualify for an extensive program of this type. This is provided by the USDA for a program designed to supplement the food-purchasing power of all families and individuals unable to buy the USDA low-cost basic food allotment with 40 percent of their income.⁹ Using the distribution of money incomes in 1955, it was estimated that potential participation could total up to 25 million persons and that such a program (allowing for certain leakages) would cost approximately \$2.5 billion. An important restrictive feature encompassed in this estimate is that participation is based on the low-cost diet developed by the Department of Agriculture. If this restriction is released to permit even further upgrading of diets, larger numbers of consumers could be included in the program.

Table 4 above shows the number of consumers in different income categories during 1955. After adjusting for the number of 1-member families the per capita income of about 68 million people was below \$1,000 during that year. The number probably has not changed materially since then. The potential participation in a program designed to cover these income levels is, however, something less than this number. Not all individuals in these lower-income groups would be eligible to participate in a subsidy program. The ability of some persons to enjoy high-level diets from liquidation of assets even though actual income is low has not been recognized. Further the administrative problem of attempting to reach all consumers who are eligible and willing to accept subsidies is too great to expect full participation.

Whatever the potential magnitude of a program after factors of the kind enumerated above have been allowed for another important

⁹ Op. cit., *An Analysis of Food Stamp Plans*.

element prevents developing a direct statement of the amount of additional food consumption which would result from any projected program. Even if a program were adopted which permitted free selection of food, the problem associated with free choice by consumers in reaching consumption decisions is not completely solved.

Adequacy of food or improvement of diets is not given full priority over other wants even at low-income levels. What people seek is a balanced consumption pattern. Though the food component tends to be relatively higher at low incomes and relatively lower at higher incomes, the competition of wants for housing, clothing, entertainment, and other things is keenly felt by all groups. As incomes increase the adequacy of diets tends to increase. So also does adequacy of housing, clothing, entertainment, and other wants. There is a question as to the success which can be attained with a program for low-income people where emphasis is entirely on one segment of the budget. There are probably few, if any, families where the total amount of even a small subsidy would be spent for food provided complete freedom of choice is permitted in spending.

Even where freedom of choice is not intended—as where food stamps are distributed—subsidized consumers will seek ways of diverting part of the subsidy to purchases other than food. Consumers' wants probably are well enough defined to result in some leakage of this kind in a program which attempts to force the use a disproportionate share of total income on food regardless of the form in which income is supplemented.¹⁰

Though I am aware of no estimates which will permit pinpointing the relationship for specific lower-income classes, estimates for the average of all consumers tend to indicate that for each 10 percent increase in income about a 3-percent increase will take place in expenditures for food.¹¹ Any effort to change this pattern will at best be only partially successful.

This means that in order to get any projected increase in expenditure on food, Government subsidies and hence the taxes required to provide them would have to exceed the additional value of food consumed. The importance of this kind of leakage would depend on the policy which is chosen and the success of administrators in carrying out the objectives of the program. At one extreme free-income supplements can avoid the problems of enforced compliance, but would involve large Government outlays to attain a small increase in food consumption. At the other extreme direct physical distribution of food could probably be accomplished with the least diversion of Government outlays. Between these two extremes the distribution of stamps or coupons would provide consumers with purchasing power which probably would be used in part to satisfy nonfood wants. The extent to which such diversion could be prevented through regulation cannot be easily evaluated in advance. At best it would be a problem of major importance.¹²

¹⁰ Even direct food allotments could be converted into cash and used for other purposes.

¹¹ See Foote, Richard J., *op. cit.* Of 12 retail level income elasticities for all foods presented in this publication, 10 fell within a range of 0.24 to 0.37. If elasticities were computed at different income levels rather than as averages of all income levels, it is probable that elasticities would be greater at lower incomes and less at higher incomes.

¹² The diversion problem arose even during the limited operation of the food-stamp plan from 1939 to 1942. See the address of Perkins, *op. cit.*

SUMMARY AND CONCLUSIONS

Returning now to the assertions which were stated at the outset of this discussion, I think it can be accepted that food subsidy programs, if vigorously pursued, can succeed in increasing food consumption. However, considering leakages which would occur, large numbers of individuals would have to be included and substantial outlays of funds would be required to attain an adjustment of even 5 percent. But since recent increases in food requirements, due largely to population growth, have been, roughly, 2 to 3 percent per year, this could not be viewed as a spectacular change.

Though some upward pressure would be exerted on farm prices during the expansion phases, it must be accepted that consumer subsidy programs by themselves can have only a short-run impact on the farm price problem. American agriculture has shown an ability to expand output at a rate in excess of increase in food needs, except under unusual conditions such as those which occurred during and immediately following World War II. Rapid increases in output have occurred whenever price incentives have been adequate.

One important immediate effect of subsidy programs, if undertaken on the welfare basis suggested here, would be to cause a substantial consumption adjustment between commodities. Because of the effect this would have on relative price levels at the farm, some adjustment would occur in the use of agricultural resources. More resources would be allocated to production of animal products and fruits and vegetables and fewer to food grains. The benefits to farmers would be distributed unequally. Higher-level food consumption means reduced income to some groups, although the total return to agriculture will increase.

A major question which must be raised is: What specific program will provide the greatest benefit at the least cost to taxpayers. Consumers generally will resist using an excessively high proportion of their budget on food. It is likely, therefore, that the increase in value of food consumed under any program will be less than the amount of funds committed to the program.

If subsidies are valid in their own right from the viewpoint of consumer welfare, they can assist in expanding the demand and consumption of farm products. This does not, however, mean that programs to adjust agricultural production will no longer be needed. The problem of explaining and adjusting the growth of agricultural output will be temporarily mitigated but not resolved. The major task in farm policy will continue to be finding ways of adjusting output to a level and rate of increase which will provide farmers with a satisfactory return from the market.

THE RELATIVE MERITS OF DOMESTIC PARITY AND OTHER PROGRAMS TO EXPAND MARKETS AND STABILIZE FARM INCOME

Joseph Parker, The National Grange

The National Grange commends the Subcommittee on Agricultural Policy of the Joint Economic Committee for its efforts toward bringing about a better understanding of the present farm muddle and of the alternatives available for dealing with it.

We seem to be able to develop the technical ability to build atom bombs and intercontinental missiles, devices which stagger man's imagination, but apparently we have not had the economic and political ability to develop farm programs which will give to farm products a substantial part of the price stability and bargaining power enjoyed by other products and services in our economy.

Everything of importance which has been undertaken during the past several years to stabilize farm income at some reasonable level seems to consist of emergency patchwork type of legislation or temporary administrative action. No agreement has been reached on new long-run policies adapted to the fundamental problems of a given commodity. There is, however, an increasing recognition of the fact that the flexible price-support policies adopted in 1954 are not adequate to meet the problems of our principal export crops. The production control features of the Soil Bank Act involve tremendous cost, are only temporary measures, and are not bringing about the reduction which was hoped for.

Throughout the period since the close of World War II, the National Grange has urged adoption of the domestic-parity concept as the foundation upon which to build long-run agricultural programs for our basic export crops. This concept applicable to rice was incorporated into law as a part of the Agricultural Act of 1956, but it is discretionary with the Secretary of Agriculture whether it shall be put into action. A domestic-parity plan for wheat, similar to that for rice, except that the plan would have gone into operation on a favorable vote of the producers of wheat, was included in the 1956 agricultural bill which was vetoed by the President.

Although there is increasingly greater agreement among Members of Congress, farm leaders, agricultural economists, and farmers that the present price-support programs are inadequate to meet the current need of our export crops, agreement ends there. More and more attention, however, is being focused upon a commodity-by-commodity and domestic-parity approach recommended by the National Grange.

The Grange, therefore, welcomes the opportunity to participate in this panel study.

In order to keep our consideration of the Grange position reasonably specific, I shall discuss the domestic-parity concept, often, but inaccurately, referred to as the two-price or multiple-price plan, as it applies to wheat. To understand fully the advantages of the domestic-parity program, one needs but to compare it with the present support program or other alternatives which are currently being proposed.

PRESENT WHEAT PROGRAM INEFFECTIVE

There can no longer be any reasonable doubt of the failure of the present program to meet the needs of wheatgrowers. It is ineffective, wasteful, and detrimental to wheat producers. It adversely affects producers of corn and livestock as well as agriculture as a whole. It restricts market opportunities, and it is incompatible with an agricultural policy aimed at greater freedom from Government controls and increased reliance on individual initiative and private enterprise.

The so-called high rigid level of support is directed toward the objective of reducing supplies to a level at which they can be moved into consumption at 90 percent of parity. Such a program completely ignores and fails to recognize that potential market outlets for wheat at this price level are limited to domestic uses for food. When this level of support is applied to total production, it immediately prices American wheat out of all other markets, including the world market. It would result in a complete loss of our export market if heavy export subsidies were not made available by the Congress.

The flexible support program under the Agricultural Act of 1954, which establishes price support within a range of 75 to 90 percent of parity depending upon the level of supply, is predicated on the validity of the proposition that needed adjustments in supplies can best be effectuated through price adjustments rather than through production adjustment programs. This theory may have applicability to crops where demand is responsive to price, but price support level adjustments can not be relied upon for all agricultural crops to bring about needed adjustments between supplies and markets.

Wheat is a notable example. Consumption of wheat is practically unaffected by price, except at price levels where it can be fed to livestock or sold into the export markets. Under present legislation which limits flexibility of support levels to a range from 90 percent down to 75 percent of parity, wheat producers have no access to the markets in which consumption can be increased through lower prices. Thus, the application of flexible price supports to wheat means nothing but reduced income to wheat farmers. Consumption will not be increased. New markets will not be established. Wheat producers will continue to be denied the right to compete in the export trade, which, instead, will continue to be carried on by a Government operated, subsidized, two-price system at the expense of the general taxpayer. Surpluses over and above domestic food requirements and subsidized export outlets will be unloaded upon the Government for indefinite storage, spoilage, or eventual disposal into wasteful uses.

Programs operated under present legislation must be unqualifiedly rejected upon the grounds that they aggravate rather than alleviate the problems of declining prices and declining income facing wheat producers, now and in the years to come. Instead of correcting the

imbalance between wheat supplies and markets and the resulting hardships to wheat producers, the continued operation of the present flexible price support program will only serve to further reduce prices and income to wheat producers on top of the losses which they have already suffered from the drastic curtailment in volume of production and the progressive lowering of support levels.

Despite the stringent acreage and marketing controls imposed upon wheat producers since 1954, reducing wheat acreage 23 million acres or about 30 percent, wheat supplies have continued to pile up. Strenuous efforts through temporary programs under the Agricultural Trade Development and Assistance Act, the Mutual Security Act, and the Soil Bank Act, with a big assist from the drought, managed to cut carryover of wheat as of July 1, 1957, only 130 million bushels, to about 905 million bushels from 1,033 million bushels a year earlier. Unless there is a major crop failure little further reduction is expected in the year ahead, because less participation is expected in the soil-bank program since payments per farm have been limited and prospects for crop production were better at seeding time.

Perhaps the clearest evidence of the failure of the flexible support program under the Agricultural Act of 1954 is the proposal that the Secretary of Agriculture have authority to set price supports on wheat (and other commodities) at any level between 0 and 90 percent of parity which in his discretion would encourage all current production to move into use through private marketing channels.

If price supports were lowered to such levels as to permit all current production to move through commercial markets, net farm income, it is estimated, would decline about 20 to 25 percent from current levels. There is little doubt that if wheat price supports were lowered to such a level, wheat prices would fall to about domestic feed grain price levels. A report of the Department of Agriculture to the Senate Committee on Agriculture during the last session of Congress indicates that feed grain supports would have to be lowered to 60 percent of parity to prevent further accumulation and achieve some reduction in stocks. This would indicate a need to lower wheat price supports to about 50 percent of parity to obviate the need for Government export subsidies and to eliminate the danger of accumulation of surpluses in the hands of the Government. A drop in the support price to this level without an increase in acreage allotments would result in a decline in the farm value of the wheat crop to about \$1,200 million. This is only one-half the value of the crop in recent years and only about one-third of its 1947 value.

Such a reduction in farm values would surely spell disaster not only to farmers but to our national economy.

So long as we pursue the policy of fixing prices as we do under the present wheat support program, we will be caught on the horns of a dilemma. We will either have to fix prices so high as to price wheat out of many of its natural markets and make the Government itself the principal market, or we will have to fix prices low enough to permit entry of wheat into the feed and export markets of the world. If the first course is followed, massive subsidization of exports will have to remain a permanent feature of the program. This will also require extensive involvement of Government into the business of buying, storing, and merchandising of wheat in competition and inter-

ference with the marketing functions of the private trade. This involvement has already reached such great proportions as to challenge the very principle of freedom of private enterprise. If the latter course is followed, wheat farmers will be compelled to sacrifice a fair return on that portion of the crop which is used domestically for food in order that they might have access to the world markets.

The Soil Bank Act, which is designed to deal with the problem of accumulated surpluses and to reduce surplus stocks by making payments to farmers for reducing the acreage below the allotments established and liquidating surplus stocks by the equivalent of the production reduction so effected, has undoubtedly helped to hold crop production in 1957 a little below what it was in 1956. But, even if the plan should be effective over a period of years in reducing surpluses to more normal proportions, it would contribute nothing toward the solution of the problem of shrinking markets, declining prices, and declining income to wheat producers unless the payments made to producers assumed such magnitude as virtually to amount to large scale compensation of wheat farmers for relinquishing their basic right to produce—a course of action not acceptable to wheat farmers—a course of action not likely to be long tolerated by the public—and a course of action clearly incapable in assisting to raise farm income.

Although no one should attempt to minimize the problem of surpluses, neither should we permit the surplus problem to stand in the way of the adoption of new and improved programs which will attack the problem at its source. It should also, we believe, be stated and restated that the Government itself rather than the farmer is largely responsible for the surpluses that have been amassed. Producers, especially wheat producers, have no voice in developing production and price policies which are solely determined by the Government. If the Government, as it did, tells wheat farmers for 3 successive years that the market outlook for wheat is such that the requirements of law to impose acreage allotments and, if necessary, marketing quotas can be dispensed with and high level rigid price support can be had for unlimited production, then farmers cannot be blamed for responding to such Government guidance and for the disastrous consequences of such action. The soil-bank program is recognition in part of the fact that farmers cannot justly be called upon to bear the full burden of correcting the surplus problem.

DOMESTIC PARITY PLAN

The problems and difficulties that attend programs of supporting wheat prices without sacrificing the basic income protection or without sacrificing markets can be resolved by a method of price support which gives producers access to the markets where demand responds to price while limiting the parity-price objective to the market in which consumption cannot be increased through price incentives. The only effective means that we know of to accomplish that objective is the domestic parity plan.

The essentials of the domestic parity plan are:

First: At the beginning of each marketing year, the Secretary of Agriculture would determine the portion of the wheat crop which would go into consumption for human food. This amount, which

for years has been a little less than 500 million bushels, would be the domestic food quota. This amount would then be allotted among wheat farmers of the Nation substantially on the same basis as acreage allotments are now made, except that in this case the acreage would be translated into bushels and the share of each farm would be in bushels.

Second: Each farmer would receive a certificate stating in bushels his share of the estimated domestic consumption of wheat for food.

Third: This certificate would have a value in dollars and cents representing the difference between the average market price of wheat (as estimated in advance by the Secretary of Agriculture) and 100 percent of parity.

The marketing certificates would be negotiable drafts on the Commodity Credit Corporation. They could be issued to farmers ahead of harvesting time, thereby helping them to finance farm operations during the high-expense season. The certificates could also serve to some extent as insurance against low crop yields.

Fourth: The domestic parity plan is self-financing. Each miller or processor of wheat into human food would have to purchase (from growers or from the Government) certificates covering the total amount of wheat processed for domestic consumption as human food. It would not be necessary for farmers to deal directly with millers because the Commodity Credit Corporation would act as the clearing-house.

Fifth: The value of the certificate plus the price received in market place will return to growers the equivalent of full parity on that portion of the crop consumed domestically as food. For the portion of the crop used for feed or export, growers would receive whatever the wheat sold for in the market place.

Under such a program, free market prices would be established with the function of price supports, to the extent that their continued use might be necessary, relegated to a floor under the market. Wheat producers would be able to compete in export trade on a quality basis, without the need for Government subsidization. They would have the opportunity to regain their historical share in the domestic feed market instead of selling the surpluses produced over and above domestic food requirements to the Government. There would be unrestricted movement of wheat under free competitive conditions at all stages of marketing from the farm level to the eventual processor or exporter without Government interference. The marketing functions which the Government now performs in its large-scale wheat buying, storing, and two-price merchandising activities would be restored to the private trade.

The functions of the Government would be limited to assisting producers to operate a domestic marketing program which would restrict the parity price objective of present legislation to the portion of the United States wheat production which is used domestically as food. To enable producers to obtain parity in the market place instead of deriving it from the Federal Treasury, processors of wheat for the domestic food market would be required through the purchase of certificates to pay a price for wheat processed for domestic consumption as food which would provide growers with a return equal to parity.

The domestic parity plan has frequently been referred to as the 2-price plan or multiple-price plan. It has also been referred to as a 3-price plan. None of these terms is accurate and reference to the plan in such a manner has actually been the cause of some misunderstanding and confusion. It does not accurately describe the domestic parity plan, because under it there are not two prices. All wheat will be sold freely in the market place on the basis of supply and demand and the prices will be established freely by competition and not by Government edict. The domestic parity plan actually is nothing but a system of marketing which is designed to give producers a method of obtaining a return equal to full parity for that portion of the crop which is consumed domestically for human food, and only the going free-market price for the portion used for feed or export.

A loan program would be continued at a level which would prevent any possibility of wheat supplies depressing feed grain or world wheat prices. Acreage allotments would also be continued as long as acreage allotments are continued on corn and other feed grains. However, if feed grain price supports are lowered and acreage allotments eliminated as has been suggested, there would be no need for continuing wheat acreage allotments. Under the domestic parity program, even though a loan level was established as low as 50 percent of parity, producers by receiving a return equivalent to full parity on the wheat used domestically for food would receive a total income equivalent to the current program with supports at 75 percent of parity. But controls would be eliminated, Government costs greatly reduced, wheat marketing would be returned to private trade channels, and markets would be expanded.

OBJECTIONS TO DOMESTIC PARITY NOT VALID

During the many months of analysis and discussion, a number of objections have been put forth against the domestic parity plan. In our opinion, these objections are either a result of misunderstanding or can be creditably answered by pertinent facts and analysis. A few are perhaps among the imponderables, which can rightly be ascertained only with trial and experience, but they should not be an obstacle to its adoption.

Domestic price of bread

Those who have opposed the domestic parity plan have contended that the system of marketing involved in this plan represents in effect a bread tax imposed upon our domestic consumers for the benefit of another group in our economy, that is, wheat producers.

Such contentions are entirely without foundation in fact and reflect, to say the least, a misconception of all Government price-support programs for agriculture. Regardless of whether wheat prices are supported at various levels for the entire crop as under present programs, or at parity for the domestic food portion of the crop, as under the domestic parity plan, the domestic consumers pay producers a higher price than they would have to pay under a system of completely free market prices. Under present programs, however, the consumer does not only pay the higher price resulting from produc-

tion adjustment and the price-support program—but as a taxpayer he also pays the subsidy required to move wheat into export channels.

The cost to the miller of the wheat equivalent of a loaf of bread is so small that the price of wheat is practically no factor in the price of bread. Historical analysis of variations in the price of wheat and the retail price of bread does not reveal any positive correlation. The Department of Agriculture, upon conducting a study of marketing margins and costs for white bread, arrived at the conclusion that “whatever lies ahead for wheat prices will have little effect on bread prices” (Marketing and Transportation Situation, February 17, 1954).

Fairness of domestic parity

The Department of Agriculture in a report to the Senate Committee on Agriculture and Forestry made the comment that wheat producers who had been growing high quality milling wheat would likely consider as inequitable the apportionment of certificates to producers based on total production irrespective of the market outlet into which the wheat is moved. Such disapproval largely stems from a misunderstanding of the provisions of the plan and the effect which its operation would have on prices received by producers for the different classes and qualities of wheat.

Although producers of all wheat and in all areas of production would receive the same proportional allotment of marketing certificates relative to their normal production, the per-bushel value of the certificate is based on the average seasonal United States price received by producers for all wheat. Therefore, producers of quality wheat who are now receiving a premium in the market would be receiving certificates, the monetary value of which would be greater than the difference between the actual market prices for such premium wheat and the parity price. Thus, producers of premium quality wheat would benefit by market premiums on all such wheat sold and not just on the amount covered by certificates.

On the other hand, the classes and qualities of wheat which are in surplus and for which adequate commercial outlets cannot be found would be selling at varying discounts under average market prices. Producers of such wheat, instead of being able to avail themselves, as under present programs, of price support at a level which is above market values by delivering their wheat to the Government in default of nonrecourse loans, would under the domestic parity plan have to rely on export and feed market prices for their production.

Although these facts clearly illustrate the misconception inherent in comments coming from high official sources and others that the method of allotment of marketing certificates would be unfair to those wheat farmers who produce wheat primarily for the domestic food market, it is difficult to see how present acreage allotment and price-support programs could be considered by such persons as being equitable to such producers. Under the present method of apportioning acreage allotments and determining price supports the needs and preferences of the market are almost completely ignored and producers of low-quality wheat fare as well as producers of high-quality wheat. The programs now in effect, therefore, not only encourage the production of classes and qualities of wheat unwanted by

mills and exporters, but operate to the disadvantage of producers of high-quality wheat. Whereas, under domestic parity the advantages accruing to wheat farmers would be in direct proportion to the quality of the wheat produced and the contribution toward meeting the needs and preferences of domestic flour mills instead of being determined by Government edict. Export prices and the amount of wheat to be exported would be determined by the forces of supply and demand. In comparison with present procedures, the domestic parity plan would seem simon pure and the dumping argument sheer misunderstanding.

Domestic parity would terminate export dumping

There are no valid reasons for believing that a wheat program which restores to United States wheat producers freedom to compete with other exporting countries in the world wheat market would invite export policies which could be construed by other countries as export dumping and result in retaliatory measures and unfavorable international trade relations. On the contrary, there would be greater incentives to cooperate with other countries in sharing, under international agreements or otherwise, the world markets for wheat than exist under the operations of the present programs. Under our present Government-subsidized, two-price marketing system, the extent of subsidization of export sales is entirely a matter of administrative policy, with producers deriving the greatest benefits from the lowest export prices established by the Government. Wheat producers suffer no losses from a program of export dumping under which public funds are appropriated for the purpose of making United States wheat competitive in export trade, a policy to which, however undesirable, our Government must, under the operation of the present support program, inevitably resort to an increasing scale.

Under the operation of the domestic parity plan, export dumping would be eliminated, since no public funds would be used for subsidizing exports. Producers, instead of deriving the greatest benefit from the lowest export prices, as under present programs, would suffer the greatest losses under such conditions.

Wheat domestic parity program will benefit feed grains

Perhaps the principal voice raised against domestic parity for wheat has come from corn spokesmen. It is a feedbin argument or fear that the Corn Belt and other feed producers will be hard hit by feed wheat. Such fears do not seem well founded, because all evidence points to the fact that increased acreages of wheat would reduce rather than increase the total supply of feed grains. This is because an acre of wheatland in the principal wheat-producing areas produces less feed when it is planted to wheat than it does when it is planted to corn, barely, oats, or grain sorghums. The present corn and feed-grain problem has in fact, been aggravated by acreages which were formerly seeded to wheat being diverted to feed grains as wheat acreages have been reduced under the control program, with the result that more feed is being produced from such acreages than would be if such acreage were seeded to wheat, even if all such wheat went into feed uses.

Further protection to corn and feed-grain producers is afforded by the authority which would be given to the Secretary to establish a support-price plan on wheat in line with price supports on corn and feed

grains, thus preventing any possibility of a price disparity which would adversely affect corn or other feed grains.

SUMMARY

In summary, the domestic parity plan would result in the following advantages to wheat farmers, other agricultural producers, the private grain trade, the Government, and the general public:

(1) Wheat farmers would regain their historic right to compete fairly and on a quality basis in the markets of the world without being compelled to sacrifice their income protection in the domestic market; they would be relieved of the unavoidable pressure for future curtailment of acreage production and, at the same time, the declining trend of their incomes would be halted; they would no longer have to rely upon appropriations of public funds for subsidizing exports, whether under international agreements or otherwise; abolishment of marketing quotas would restore greater freedom and initiative in the planning of farm operations in accordance with changing production and market conditions and the dictates of their own judgment; there would be greater rewards for quality production than under present programs, and the resulting incentives toward raising the overall quality of the United States wheat crop would put the United States back in international wheat trade as a historic competitor on a quality basis.

(2) Other agricultural producers would be relieved of the pressure of acreage diversions of wheatland to other crops for which price supports are available for unlimited production, thereby tending to reduce feed-grain production and imparting greater stability to all segments of agriculture.

(3) The grain trade would directly benefit from the large-scale withdrawal of the Government from the marketing functions it now performs in buying, warehousing, and merchandising an increasing portion of the wheat crop in direct competition and interference with private enterprise, and the reestablishment of competitive market prices and the unrestricted movement of all wheat in all stages of marketing, domestic and export, would restore to the grain trade its traditional marketing function on a free, competitive basis.

(4) The Government would be relieved of appropriating large public funds for operating a two-price marketing system under Government auspices under which the entire wheat crop is supported domestically at prices substantially above export prices with supplies in excess of domestic requirements subsidized into export channels or placed in storage; marketing quotas could be dispensed with, thus obviating the need for large sums of money to administer such quotas or to enforce special legislation exempting from marketing quotas producers who feed the entire wheat crop on the farm where produced.

(5) The general public would be relieved of the burden of the cost of wheat-export subsidies, and of the cost of aimless, excessive, and wasteful storage operations amounting to several hundred million dollars a year.

WHEAT UNDER MULTIPLE PRICING: A CASE STUDY

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Of our leading commercial crops, none is in a more unbalanced demand-supply position than wheat. For this reason, and because I have studied world wheat problems for many years, I shall discuss the effects of current and currently proposed pricing programs for American wheat.

I. SIZE AND ORIGIN OF THE WHEAT SURPLUS

Never before in history has the world had to cope with such enormous surplus stocks of wheat as have existed during the past 4 years, mostly piled up in the 4 major exporting countries. The unwanted surplus of old-crop wheat must have exceeded a billion bushels in July 1957. This huge surplus would have been larger still if North American wheat production had not been curtailed over the past 4 years by Government acreage and marketing restrictions and if the United States had not pursued aggressive and expensive surplus-disposal programs.

Table I shows that the burdensome wheat surpluses of recent years have been due to sharply increased production in the non-Soviet world, not to increased exports from the Soviet bloc, nor to decline of world wheat consumption. Indeed, Soviet-bloc exports have been smaller and world wheat consumption considerably larger over the past 5 years than in any similar interwar period. Only in a few countries, primarily the United States and France, has wheat consumption sharply contracted.

TABLE I.—Wheat supplies and utilization in the non-Soviet world, averages for specified periods, 1922-57 and annually 1952-57

[Million bushels]

Period or year ¹	Supplies				Total utilization
	Production	Old-crop stocks ²	In-shippments from Soviet ³	Total	
1922-23	3,132	250	48	3,429	2,994
1923-34	3,431	562	84	4,077	3,456
1934-38	3,188	442	90	3,720	3,375
1938-40	3,848	469	100	4,416	3,710
1945-48	3,455	460	4	3,919	3,544
1948-52	3,856	644	37	4,537	3,871
1952-57	4,408	1,482	9	5,899	4,154
Crop year:					
1952-53	4,659	568	41	5,268	4,050
1953-54	4,595	1,218	24	5,837	3,994
1954-55	4,153	1,343	(8)	5,988	4,105
1955-56	4,332	1,883	(38)	6,177	4,279
1956-57	4,303	1,898	25	6,226	4,338
1957-58		1,888			

¹ Typically beginning about Aug. 1 and ending July 31.² Carryovers of the 4 major exporters as estimated for July 1 or 31 (official data for the United States and Canada; estimates of the Food Research Institute for Argentina and Australia).³ Net exports from the Soviet Union and the group of countries in eastern Europe now under Soviet domination. Net imports are shown in parentheses.

Sources: Data from files of the Food Research Institute, based mainly on official estimates, but including some adjustments and approximations by the U. S. Department of Agriculture, the FAO, and the Food Research Institute.

Chart I indicates that the wheat crops of most countries and regions have averaged somewhat higher in the past 5 years than in the inter-war period; but the only really big increases have come in the United States and (in lesser degree) Canada, Turkey, and France-French North Africa. The spectacular postwar expansion of American wheat production, far greater than that of any other country, accounted for considerably more than a third of the increased postwar wheat production of the free world. Starting with needed acreage expansion in the early postwar period of critical world food shortage, American wheat production remained at an inflated level even after overseas countries had recovered their prewar production capacities and no longer wanted to buy so much high-priced import wheat.

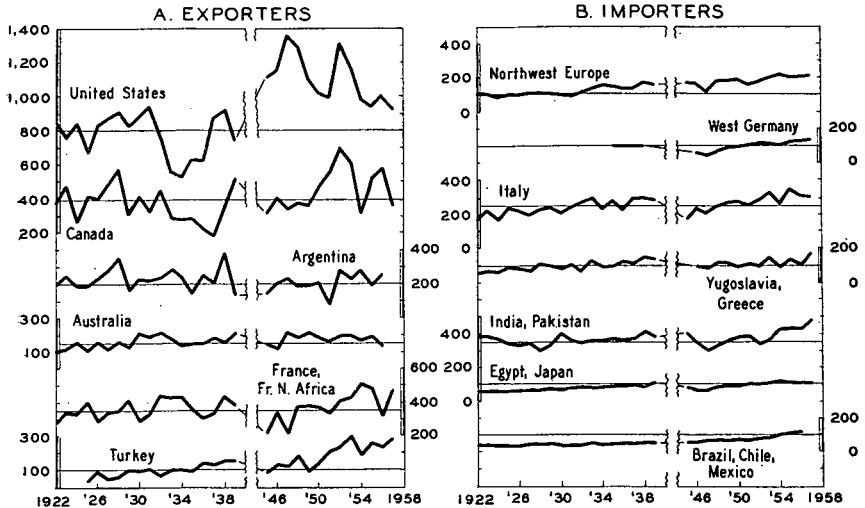


CHART I.—Wheat production in leading exporting and importing countries, 1922-57¹ (million bushels).

¹ Official production estimates, adjusted for some countries and years by the U. S. Department of Agriculture or the Food Research Institute. "Northwest Europe" includes the British Isles, Scandinavia, Benelux, and Switzerland. The German prewar average has been adjusted to postwar boundaries.

The failure of American wheat production to contract appropriately during 1949-57 was due primarily to three factors: (1) Continued high domestic wheat prices, supported by high Government loans; (2) the limited effectiveness of wheat-acreage allotments and the soil bank in restraining production; and (3) the great technological improvements introduced in American agriculture since 1940—improvements that raised wheat yields per acre and per man-hour, lowering production costs for wheat relative to the costs for many other agricultural products. In the United States, unlike Canada, abnormally favorable weather appears not to have been a very important contributing factor.

II. ADMINISTERED MULTIPLE PRICING UNDER THE PRESENT WHEAT PROGRAM

Various efforts have been made to correct the underlying imbalance in the American wheat economy. In the current national wheat program, the central features are: (1) High flexible price supports ranging from 75 to 90 percent of parity (82½ to 90 percent through 1957-58), with associated acreage allotments and marketing quotas; (2) export sales at prices below domestic market levels and also in exchange for soft foreign currencies and for bartered materials; and (3) voluntary diversion to the soil bank of part of the wheat acreage allotted for the crops of 1956-58, and presumably 1959.

The pertinent question is: How has this complex program affected the prices, production, trade, and consumption of wheat, nationally and internationally? No less pertinent is the associated broader question: Have these results promoted or hindered the expansion of multi-lateral trade and the development and more efficient use of the economic resources of the free world—long-time goals of great importance to the United States?

Effects of the program on the American wheat-price structure.—Basic to analysis of the production-trade effects of the current American wheat program is an understanding of how it has influenced the American wheat price structure. In essence, it has provided for Government price fixing of a typically monopolistic character that has shown up in a wide range of differential prices to different groups of consumers. This is evident in table 2, which gives a rough idea of the various net effective levels at which representative American wheats were sold during the past crop year.

TABLE 2.—Indicated multiple prices of representative American wheats, 1956-57 averages and approximations

[Dollars per bushel]

Form of price	No. 2 Hard Winter (Kansas City)	No. 2 Soft Red Winter (St. Louis)	No. 1 dk. Northern Spring (Minneapolis) ¹	No. 1 Soft White (Portland)
Terminal loan rate ²	2.30	2.30	2.34	2.21'
Domestic market price.....	2.28	2.23	2.31	2.41'
International Wheat Agreement export price ³ ..	4 1.56	4 1.50	4 1.45	4 1.59'
	5 1.34	5 1.35	5 1.44	5 1.54'
Barter basis ⁴	4 1.45	4 1.40	4 1.35	4 1.50'
Foreign currency net price:				
Sec. 402, Mutual Security ⁷	4 1.25	4 1.20	4 1.16	4 1.27'
Public Law 480, title I ⁵	4 64-1.06	4 61-1.02	4 60-1.00	4 65-1.08'
	5 55-0.91	5 55-0.92	5 60-0.99	5 63-1.05'

¹ Ordinary protein.

² Rate as announced by the Secretary of Agriculture. The corresponding effective crop-year average loan rate, adjusted for terminal storage costs borne by producers, was roughly 7-9 cents lower; This is the loan rate most nearly comparable with reported average market prices, though minor quality differences and seasonal timing differences may exist in any case.

³ Average domestic market price minus currently effective International Wheat Agreement export subsidy on wheat grain as follows: (1) On Hard Winter, the subsidy on hard wheat shipped from gulf ports to Europe; (2) on Hard Spring, the Atlantic coast subsidy on hard wheat; (3) on Soft Red Winter, the Atlantic coast subsidy on soft wheat; (4) on Soft White, the Pacific coast subsidy. Flour subsidy rates from the same ports have been converted to wheat-grain equivalent at an assumed 71.5-percent extraction. The International Wheat Agreement subsidies apply not only to wheat shipped under the International Wheat Agreement but also to non-International Wheat Agreement export wheat.

⁴ Wheat exported in the form of grain.

⁵ Wheat exported in the form of flour. Since little flour was exported under the barter and Mutual Security programs, the lower flour prices are not shown for these programs.

Source: Terminal loan rates from Wheat Situation (U. S. Department of Agriculture); market prices are unweighted averages of monthly average prices from U. S. Department of Agriculture, AMS, Grains: Weighted Average Price per Bushel of Reported Cash Sales, (mimeo.) except Minneapolis price from U. S. Department of Agriculture, AMS, Grain Market News; International Wheat Agreement prices are averages of monthly market prices minus corresponding averages of Government subsidies on exports under the International Wheat Agreement, with the subsidy averages based on the reported figures for 1 day a week taken from Grain Market News (U. S. Department of Agriculture); other export prices are rough approximations of the writer.

⁶ Rough approximations suggestive of the known fact that American wheat was made available on barter terms at prices moderately below International Wheat Agreement export wheat. Tending to reduce the net price on barter sales was the arrangement under which exporters could delay delivery of bartered materials to the CCC as long as 2 years after receiving the surplus wheat, without penalty or interest charges. Assuming that this credit privilege would mean a net saving of 4½ percent interest for 2 years (commercial loan rate minus the percentage charge for an irrevocable letter of credit required by the CCC), the possible total saving of interest for 2 years discounted to the date of purchase of the wheat would amount to about 13 cents per bushel.

⁷ Based on the presumably liberal assumption that something like 80 percent of the sec. 402 wheat purchases in 1956-57 resulted in counterpart funds that have been or will soon be used for defense and development projects believed to be closely associated with the security of the United States; and for which additional congressional appropriations would have been made in the absence of the sec. 402 counterpart funds.

⁸ Rough approximations of the discounted present value to the United States of anticipated foreign-currency payments, based mainly on the following facts and assumption: (1) Public Law 480, title I agreements signed during fiscal 1957 provide for average planned uses of foreign-currency payments as follows, in percentages of the total programed value (defined as "world" market value plus economic development borne by the CCC): 5.2 percent, grants to the purchasing countries; 61.6 percent, loans for economic development—typical 40-year loans, interest-free the 1st 3 years, and subsequent interest at 3 percent if repaid in dollars, 4 percent if repaid in domestic currency; 33.2 percent, available to the United States for various local expenditure purposes, with 7.1 percent earmarked for common-defense expenditures of special interest to the purchasing countries; (2) since ocean-transport costs borne by the CCC represented 13 percent of the reported total market value of the fiscal 1957 government sales, the basic programed price for wheat as grain is here approximated at the subsidized International Wheat Agreement price plus 13 percent; (3) the average commercial rate of interest at which 40-year loans, payable in dollars, might otherwise have been obtained by the purchasing countries is conservatively assumed to be 5 percent, providing the basis for approximating the present discounted value of the interest savings due to zero interest the 1st 3 years and the artificially low 3-percent rate applicable to the unpaid balance of the loan between the 4th and 40th years. Since the scheduled timing of repayment of principal differs for the different agreements, but apparently always falls between (a) equal annual installments over the 37 years between the 4th and 40th years, and (b) repayment in total at the end of the 40 years, the suggestive prices shown are based on an average of these 2 possible systems of repayment. (Information on the planned uses of foreign-currency payments and on the terms of associated loan agreements is based on: United States 85th Cong., 1st sess., House, Message from the President of the United States Transmitting the 6th Semiannual Report on Activities under Public Law 480, 83d Cong., as Amended * * * Doc. No. 212, July 22, 1957, p. 43; *ibid.*, Senate, Hearings Before the Committee on Foreign Relations * * * on the Mutual Security Program for Fiscal Year 1958, May 22, 23, 24, 27, 28, June 3, 4, and 5, 1957, pp. 548 ff; and the specific Loan Agreements for Spain, Dec. 6, 1955; Japan, Aug. 10, 1956; Yugoslavia, Dec. 3, 1956; Brazil, Dec. 31, 1956; India, June 28, 1957; Italy, June 28, 1957; Israel, July 16, 1957.)

The higher of each pair of prices shown is based on the essentially unrealistic assumption that the principal of the Public Law 480 loans will be fully repaid to the United States in convertible currencies or desired materials or services; the lower price of each pair involves the assumption that effectively transferred repayments will approximate 60 percent of the calculated net foreign-currency price of the wheat.

The "barter" and "soft-currency" prices in the table are "guesstimates," the basis for which is described in the footnotes. The Public Law 480 price approximations make liberal allowance for loan repayments in American dollars or useful goods and services over 40 years, and liberally assume that all other planned foreign-currency expenditures immediately return full dollar value to the United States. If, as many people anticipate, the soft-currency loans should eventually prove to be tantamount to grants, the effective average net price for American wheat sold under Public Law 480 title I last year would be only about 40 cents a bushel.

Table 2 shows that American domestic market prices of wheat (essentially determined by the high government "loan" rates and associated programs) stood close to the corresponding loan levels and 2 to 3 times as high as the lowest effective export prices. Indeed, the domestic market prices were some 50 percent above the subsidized International Wheat Agreement level, which is perhaps as close to a competitive "world" export price as now exists (the "competitors" being Government marketing monopolies).

Such a sharply differentiated commodity-price structure is found only in fields of monopoly pricing. Here, as in other monopoly operations, domestic consumers have been burdened with inflated prices, isolated from import competition; and surplus output has been "dumped" into foreign markets at prices below the marginal costs of production of efficient foreign competitors.

The crop year 1956-57 was not the only postwar year characterized by marked differentiation in the American wheat-price structure. Some degree of differentiation has been present ever since the war ended. But whereas most of the earlier postwar price differentiation reflected free grants and concessional sales for needed relief and for economic and military aid, supplemented during 1949-53 by subsidies required to meet International Wheat Agreement commitments, the wheat-price differentiation since 1953 has reflected increasingly aggressive export competition through Government subsidization.

Influence on domestic production and consumption.—The high American loan rates, originally introduced as a temporary wartime stimulant to agricultural production, continued to operate as a stimulant long after the need for expanded production was past. Indeed, American farmers, responding appropriately to the high domestic wheat prices, have been most ingenious in maintaining wheat production despite restrictive wheat-acreage and marketing controls, recently supplemented by soil bank incentives (chart I). Moreover, much of the acreage diverted from wheat went to increase the production of grain sorghums, oats, barley, and soybeans, thus augmenting the disturbing imbalance in the corn position and raising Government costs of feed-grain support programs.¹

On the demand side, too, the high domestic wheat prices have stimulated the expected response: Table 3 shows a substantial decline in American wheat utilization, primarily attributable to reduced feeding of wheat, though partly also to basic dietary and seed-use changes not specifically related to wheat prices. Competing exporters continually

¹ See USDA, Possible Methods of Improving the Feed-Grain Program: A Report on a Study Made in Response to S. Res. 125, 85th Cong., 1st sess. (mimeographed, transmitted to the Congress July 15, 1957).

ask why the United States does not divert at least part of the Nation's surplus wheat into domestic feed channels rather than "dumping" so much on foreign markets.

TABLE 3.—Wheat utilization and exports of 4 chief exporting countries, annually, 1953-57, with comparisons¹

[Million bushels except as specified]

Years	Domestic use	Net exports		Carry-over	Domestic use	Net exports		Carry-over
		Volume	Percent of world exports			Volume	Percent of world exports	
United States					Argentina			
Averages:								
1922-23 to 1930-31.....	638	165	21	174	79	150	19	77
1931-32 to 1938-39.....	692	46	7	228	99	128	20	94
1939-40 to 1947-48.....	844	161	26	321	125	96	15	166
July to June (August to July): ²								
1953-54.....	628	216	28	934	117	111	14	145
1954-55.....	608	274	30	1,036	125	138	15	165
1955-56.....	598	340	34	1,033	126	107	11	125
1956-57 preliminary.....	586	544	50	905	127	100	9	160
Canada					Australia			
Averages:								
1922-23 to 1930-31.....	111	290	37	76	47	93	11	38
1931-32 to 1938-39.....	109	191	30	133	54	116	18	55
1939-40 to 1947-48.....	155	258	41	295	74	62	10	101
August-July:								
1953-54.....	143	255	33	619	73	65	8	145
1954-55.....	162	252	27	537	73	96	10	145
1955-56.....	166	310	31	580	69	111	11	160
1956-57 preliminary.....	167	263	24	723	71	124	11	100

¹ Sources: Export data for all 4 countries and the domestic use estimates for the United States and Canada are official estimates; utilization estimates for Argentina and Australia and "world net exports" are approximations of the Food Research Institute. World exports are net exports of net exporting countries (exclusive of trade within the Soviet bloc).

² August-July for Argentina.

United States exports sharply expanded.—It is particularly noteworthy that American wheat exports have been sharply higher in postwar years, both in million bushels and as a percentage of the world wheat trade (table 3). During 1948-56, United States wheat exports, averaging 343 million bushels, were roughly twice those of the active 1920's and over 7 times those of the 1930's (limited by drought and depression).

In the crop year just past, American net exports of wheat rose to a new all-time record of 544 million bushels, approximately 50 percent of the world's net exports. This high figure stands far above the corresponding interwar peak of 31 percent, and was exceeded only during the first 4 postwar years of critical world food shortage and unprecedented American relief shipments. Never before did the United States supply such a large fraction of the world's wheat exports when other countries held heavy surplus stocks.

The recent wheat export achievements of the United States largely reflect the influence of what are widely referred to by other exporters as "American giveaway programs." The approximate distribution

of United States wheat exports over the past decade is shown in chart II according to the financing (subsidization) involved. In all post-war years except 1946-47, well over half (usually over three-fourths, and often all) of our wheat exports moved under Government grants and subsidies. In the early grain-shortage period, grants for postwar relief and economic recovery provided the needed financing. During 1949-53, the shift was to Mutual Security financing (partly associated with the Korean war) and to internationally approved subsidization of sales made under the International Wheat Agreement at the maximum agreement price. Finally, during 1953-57, virtually all American wheat was exported under some type of subsidy or concession associated with official efforts to keep domestic wheat prices at artificially high levels in the face of record heavy wheat stocks.

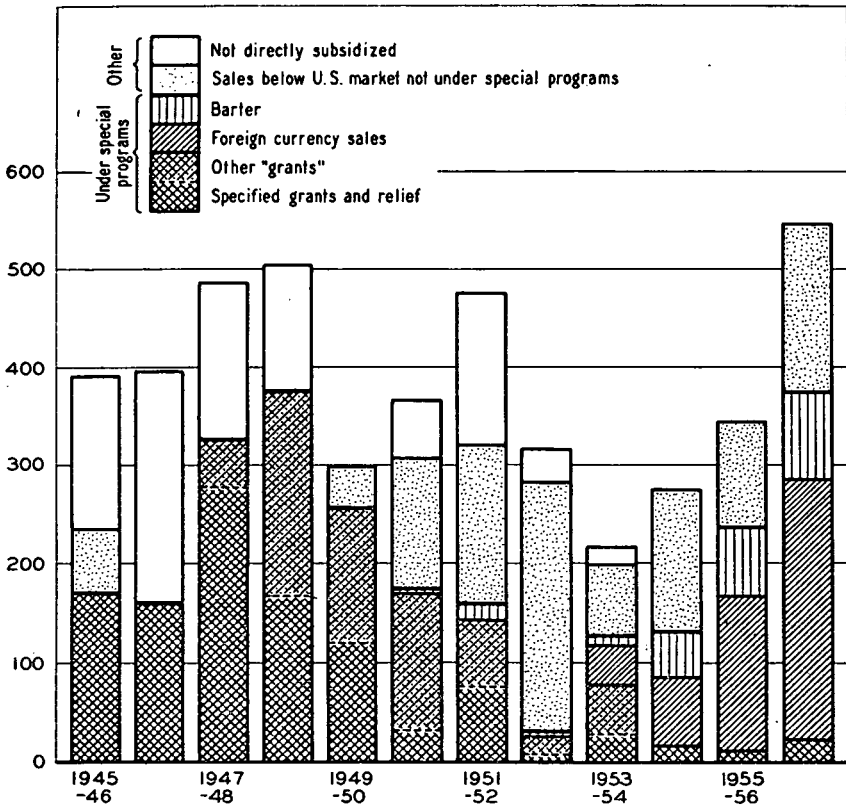


CHART II.—American wheat (including flour) exports, by type of financing, fiscal years 1946-57¹ (million bushels).

¹ Sources: Through fiscal 1956 based on figures (partially estimated) supplied directly by the U. S. Department of Agriculture, supplemented by approximations of the Food Research Institute. Data for 1956-57 are from Demand and Price Situation (U. S. Department of Agriculture), August 1957, p. 11. Basic classifications generally correspond with those for which value figures are given in U. S. Department of Agriculture, Foreign Agricultural Trade Statistical Handbook (Statistical Bull. No. 179), August 1956, pp. 1-2, except that an additional category is here added for the approximate quantities of IWA and other export wheat sold at prices below United States market levels and not additionally subsidized under any of the "special export programs."

Perhaps the most pertinent generalization that can be drawn from all this is that American wheat growing has shifted from a commercial industry to a Government-dependent industry, with its prices, volume of production, and exports all currently and heavily dependent on Government decisions and Treasury aid.

Surplus-disposal sales displace some "ordinary" export sales.—Chart II well emphasizes the dominance of special concessional sales in the expansion of American wheat exports to a new historic peak in 1956-57. The pertinent question is whether, and to what extent, these large "special" sales cut into markets that otherwise would have been open to nonconcessional exports from other exporting countries or to American wheat subsidized only at the current IWA-subsidy rate, averaging 81 cents per bushel over the year.

To judge by the statements and protests of leading representatives of competing wheat-exporting nations, the American surplus-disposal sales have seriously "interfered with normal trade patterns" and have represented "unfair trade competition" and "export dumping." Official protests have been made, not only privately to our own Government officials, but also publicly to such important international bodies as GATT, the United Nations Economic and Social Council, and the FAO.

Not all American grants and concessional sales of surplus commodities have been condemned. *There has been widespread international approval, even by competing exporters, of authentic American hunger-relief grants, and of grants and cutrate sales of wheat to underdeveloped countries financially unable to provide a substantial commercial outlet for foreign wheat exports.* Informed opposition to American "giveaway" programs has centered chiefly on (1) "barter" deals under Public Law 480, title III; (2) "triangular sales" under section 402 of recent Mutual Security acts; (3) concessional sales providing for "tied-in" regular sales of American wheat; and (4) large concessional sales (particularly under *long-term* Public Law 480, title I agreements) to countries that have usually bought a large fraction of their wheat imports from other exporters.

There is no question that many of the Government's "barter" and "triangular" transactions of the past few years have displaced ordinary sales of wheat both from this country and others, particularly Canada. Under these transactions, concessionally priced American wheat has been channeled mainly to industrialized western European countries, whose ordinary wheat imports have presumably been reduced almost correspondingly. Recognition of this fact has led American officials to make substantial modifications in the barter program and to plan for elimination of "triangular" transactions in 1957-58.² Whether or not the changes actually effected will ade-

² Revisions in the barter program (U. S. Department of Agriculture Press Release 1686-57, May 28, 1957) were designed "to assure that commodities exported under barter arrangements result in a net gain in the total volume of agricultural exports." (U. S. 85th Cong., House, Doc. No. 212, op. cit., p. 20.) Similarly, the ICA's plan to eliminate triangular transactions in fiscal year 1958 (with the associated proposal that the funds designated for sec. 402 purposes be cut to \$175 million from \$250 million in the preceding fiscal year) was officially attributed to the fact that the triangular transactions (a) "tend correspondingly to reduce regular commercial sales," (b) "involve a disproportionately heavy administrative workload," and (c) "are inconsistent with United States foreign trade policies." (Hearings before the Committee on Foreign Relations * * * on the mutual security program for fiscal year 1958, op. cit., p. 522.)

quately protect the trade interests of friendly exporting countries remains to be seen.

Even if the barter and section 402 programs are appropriately modified in fiscal 1958 to curtail "unfair" trade competition, there remain the serious problems of tied-in commercial sales (both specific and "generally understood") and of concessional sales contracts calling for large annual deliveries of wheat over several years to countries that normally import sizable quantities of grain. Such trade-agreement features threaten the very basis of multilateral, competitive trade, since they tie up in advance a significant share of the world import market—a principle often condemned in the past by American representatives referring to the bilateral trade agreements of other countries (even when no such huge governmental subsidies were involved).

If these remaining defects in the American surplus-disposal programs are not soon modified, we cannot expect other exporting countries to confine their activity to verbal protests. In the absence of early changes, retaliatory action in the form of restrictive regional "common markets" and bilateral trade agreements is likely increasingly to narrow the "commercial" markets open to United States agricultural exports. Short-time gains in American exports may well be at the expense of long-time losses.

Canadian exports adversely affected.—Political emphasis on the great wheat export achievements of the United States in 1956–57 and on the associated reduction of 130 million bushels in the United States carryover has tended to obscure some of the less cheerful underlying features. Of these, the most disturbing is the decline in Canadian wheat exports from 310 million bushels in the preceding year to a below-average (1949–56) figure of 263 million in 1956–57 (table 2). Associated with this contraction went an increase in the Canadian wheat carryover to an all-time record level of 723 million bushels. This meant that the *total North American stockpile of wheat actually expanded during the year of America's great "export achievement."* It pointed up the implication that a significant part of the record large United States exports had been won at the expense of Canadian shipments.

Since much of the expanded world wheat trade of 1956–57 reflected reduced crops in Western Europe (including France, a sizable exporter in recent years), Canada, with record wheat supplies on hand and a long-established stake in European markets, might have been expected to meet a significant portion of the increased European demand for overseas breadgrain. That she did not was presumably due primarily to the American wheat-export programs and the way they were administered. But a secondary factor was the pricing policy of the Canadian Wheat Board. That body, adopting a defeatist position about the American wheat-export policy,³ kept top-grade Cana-

³The Board members were apparently convinced that any reduction in the Canadian wheat price would immediately be followed by a corresponding increase in the American IWA subsidy, which was the initial discount applied to all American export wheat, bringing the basic American export price down from the inflated domestic market level to the so-called world level. Thus, if the American IWA subsidy were increased, not only the subsidized IWA price of American wheat would be lowered, but so, too, would be the prices under Public Law 480 and other concessional export contracts. Admittedly, the situation faced by the Canadians was a difficult one, particularly because most of the Public Law 480 contracts were written in terms of million dollars, thus involving still larger competitive bushel shipments of wheat at lower prices.

dian wheat rigidly priced at \$1.75 (U. S.)—a price many experienced market commentators regarded as unrealistically high and one that was 25 cents above the ineffective, internationally set IWA minimum. Critically commenting on this policy, experts argued that even though a 25-cent cut in the Board's wheat prices might increase Canadian exports by only 25 to 50 million bushels, the reduction would be advantageous because (1) the carryover would be cut correspondingly and (2) the lower "world" export prices would make wheat growing less attractive to all farmers whose prices are tied to the world price and would induce some foreign governments to reduce their inflated domestic price supports for wheat in view of the increased costs of subsidization.

The high Canadian prices together with the disappointing protein content of the 1956 Canadian crop made it relatively easy for United States exporters to sell increased quantities of our good hard wheats to British and other Western European importers on the attractive terms made possible by liberal American IWA subsidies and special barter contracts. Ironically, it was only because the Canadian Government and Wheat Board chose to hold a "price umbrella" over other wheat exporters, rather than to cut prices in a more competitive manner, that American officials could reasonably claim that their heavy surplus-disposal sales did not "disrupt" world wheat markets.

Whether or not the Canadian Government would have followed such a questionable price-maintenance policy for wheat in the absence of the American surplus-disposal programs is not clear. What is clear is that the huge Canadian wheat surplus now in existence holds important implications for the United States wheat economy. Since wheat is such an important and widely traded international commodity, the existence of large surplus stocks anywhere in the world is of the greatest concern to this country. Orderly liquidation of foreign surpluses is essentially as important to the United States as orderly reduction of our own huge stockpile, with moderate general price reductions presumably desirable as a marketing feature. If we want to restore the American wheat economy to a competitively healthy, unsubsidized, and unrestricted position, we cannot safely pursue narrowly nationalistic pricing and export policies that curtail the wheat exports of other major exporting countries, sharply raising the level of their surplus stocks, and leaving to the uncertain future the question of how those stocks will be liquidated. Hence, it is particularly unfortunate that Public Law 480 and recent Mutual Security Acts carry instructions "to safeguard usual marketings of the United States," rather than the broader instructions written into section 550 of the Mutual Security Act of 1953—instructions that covered also the "usual marketings" of friendly countries.

World wheat exports and consumption increased by surplus-disposal program.—To say that a substantial part of the United States surplus-disposal sales of wheat displaced "commercial" sales that otherwise would have been made by other exporting countries does not rule out the conclusion that the surplus-disposal program actually did (1) increase the volume of world wheat trade materially, (2) expand wheat consumption, and (3) thus contribute to a net reduction of the existing surplus wheat stocks.

No one can estimate confidently the magnitudes of these effects. I would hazard the guess that special American concessional sales of

wheat may have raised world wheat exports by 100 to 150 million bushels last year, as contrasted with the total exports that might have been recorded if all American wheat had been priced at the subsidized IWA level and if the same Mutual Security funds had been available without the specific obligation imposed by section 402.

If world wheat exports were thus raised by 100 to 150 million bushels, and if world wheat consumption was thus expanded by 75 to 125 million (the remainder of the imports going to build up importers' stocks), this represented a notable achievement. It implies that in the absence of such concessional sales, or their equivalent, the North American and world wheat carryovers would have risen to new record peaks in 1957, roughly 100 million bushels higher than now estimated.

Influence on economies of underdeveloped countries.—Further substantial benefits have been claimed for the American concessional export sales. Particular stress has been put on the contribution to economic development that may be made by the long-term loans typically associated with Public Law 480, title I sales. This particular aspect of our present multiple pricing system has been enthusiastically supported in various international bodies, and has gone far toward dampening the opposition of competing exporters to the American surplus-disposal program.

Even if, as seems probable, this enthusiasm does not sufficiently discount the shortcomings of soft-currency development loans—particularly loans planned and approved as a byproduct of agricultural surplus-disposal sales—and even if experience demonstrates that the inflation-controlling effects of such agricultural sales and loans have been greatly exaggerated, there remains a substantial economic gain from using existing wheat surpluses in this way in selected underdeveloped countries. The need for careful selection, however, deserves special emphasis, because insofar as subsidized concessional sales displace exports from other, financially weak exporting countries, the national economies of the latter will be adversely affected. Indiscriminate surplus-disposal sales of American wheat might thus retard economic development not only in Canada, Argentina, and Australia, but also in Burma, Thailand, and other rice-exporting countries.

Cost of the present multiple pricing of wheat.—A disturbing feature of the American wheat programs is their fantastically high aggregate cost. This cost is essentially incalculable. It includes not only the specific CCC price-support and export-subsidy programs for wheat, but also a large part of the huge soil bank expenditures, the storage facilities program costs, administrative expenses associated with these and related programs, and the additional price burden borne by domestic consumers as the result of the high wheat-support prices.

The incomplete, visible part of these costs paid by the Treasury and attributed to governmental programs "primarily for the stabilization of wheat prices and incomes" was \$530 million in the fiscal year 1956—almost a third of the total gross income farmers received from wheat marketings.⁴ If this incomplete Treasury sum had been paid directly to commercial farmers producing wheat, \$1,000 could have been given to each farmer in the officially designated "major wheat

⁴ U. S. Department of Agriculture. Need for Reappraisal of Farm Price Support and Production Control Programs (statement supplementing the letter from Secretary Benson to Senator Ellender, chairman of the Senate Committee on Agriculture and Forestry), Press Release 1376-57, May 2, 1957, p. 7.

regions" (Hard Red Winter, Hard Red Spring, Pacific White wheat regions) and over \$500 to each farmer in other areas.

In addition, domestic consumers paid at least \$350 million more for the wheat used for domestic food than they would have paid if United States market prices of wheat had been at the so-called world export levels. For 5-member families in the lowest income groups this meant an extra annual "food tax" of about \$12 (based on the reported average per capita consumption of this income class).⁵

Summary.—The recent experience of the United States with administered multiple pricing of wheat has thus been both bad and good.

On the one hand, this complex pricing system has tended to perpetuate overproduction of wheat, necessitating continuously restrictive and irksome farm controls; it has discouraged feeding of wheat, particularly in this country; it has imposed a heavy financial burden on American taxpayers and a regressive tax on domestic consumers; and it has restricted the foreign market outlets for friendly exporting countries (especially Canada), provoking protests against "unfair export competition" and "export dumping."

On the other hand, the concessional wheat sales have contributed to expanded world trade, to increased world wheat consumption, to a reduction (if only slight) in the combined wheat stock of the four major exporting countries, and presumably to some gain in the economic development of countries benefiting from Public Law 480 development loans.

It seems clear, then, that the pressing immediate problem is to determine how the current multiple pricing system for wheat can be modified so that its good features can be retained and its worst features eliminated. Since some proponents of a "marketing certificate" or "two price" system for wheat claim that that form of multiple pricing would go far toward reaching this basic goal, special consideration is here given to the economic effects likely to be associated with such a program.

III. MULTIPLE PRICING UNDER THE PROPOSED MARKETING CERTIFICATE ("DOMESTIC PARITY") PLAN

In no case is the form of a commodity pricing system the major determinant of its economic effects. Much more important are the specific price levels established and the administrative handling of stocks, exports, production controls, and so forth. It would be possible for the Congress to set up a marketing certificate program that would perpetuate or even accentuate the bad effects of the present multiple pricing system. Alternatively, the same type of program with different legislative provisions might represent a big first step toward better balance in the world wheat economy. Here attention will be centered chiefly on current legislative proposals.

The term "certificate program" is here used synonymously with "marketing certificate" plan, "two price" plan, and "domestic parity" program. The distinguishing feature of all such plans is their provision for two basic prices applicable to the marketings of each co-operating producer: (1) a "primary price" for wheat consumed domestically—a relatively high Government-fixed price for a limited

⁵ For consumption data see U. S. Department of Agriculture, *Wheat Situation*, April 19, 1957, p. 26.

quota of wheat marketings representing each producer's "share" of the domestic market, and (2) a lower Government-supported price or free-market price for all additional marketings. As currently understood, "two price" programs do not rule out the possibility of additional special prices to different groups of consumers (e. g., under the International Wheat Agreement or under special export sales of CCC stocks).

Major provisions of proposed certificate plan.—The certificate plan outlined in a number of bills now under consideration by congressional committees⁶ provides for:

(1) the issuance to cooperating producers by the Secretary of Agriculture of fixed-value marketing certificates that supplement current wheat support or market prices, thus raising to 100 percent of parity (approximately) the effective average price received by such producers on their respective "shares" of the amount of wheat consumed domestically for food;

(2) the required purchase of such marketing certificates by millers and importers of wheat products in amounts proportional to the wheat content of those products;

(3) the grant of broad authority to the Secretary of Agriculture to support or not to support market prices of wheat through Government loans, purchases, or other operations, but with the requirement that the level of any such support be determined after consideration of five specified factors; and

(4) the establishment by the Secretary of Agriculture of the conditions of eligibility of producers to receive marketing certificates and price support, with specific indication that such conditions may include compliance with acreage allotments, production goals, and marketing practices exclusive of marketing quotas.

The current bills envisage voluntary (through referendum vote) establishment of a certificate system for wheat within the framework of the Government's present agricultural support program. For purposes of analysis of this particular system, then, it seems reasonable to assume that all related and competing agricultural commodities now under governmental price support will continue to receive support on a single-price basis (with the possible exception of rice)⁷ and that the existing 75-percent legal minimum support rate for "basic commodities" will not soon be changed. However, since much evidence has accumulated to suggest the desirability of minimum supports well below 75 percent of parity, the present discussion gives passing consideration to the anticipated effects of somewhat lower minimum support rates.

Prospective effects of proposed certificate program.—The major problems and effects that might be expected to result from such a new pricing system for wheat are described briefly below.

(1) *A dangerous legislative fiction would be reemphasized.*—In these legislative proposals the underlying assumption is that the parity price of wheat is a "fair" and essentially appropriate economic price, despite the hundreds of millions of dollars worth of evidence

⁶ E. g., U. S. 85th Cong., 1st sess., House, H. R. 4637, H. R. 5308, H. R. 7815, H. R. 7939, H. R. 8059; *ibid.*, Senate, S. 774.

⁷ Many of the provisions of the proposed wheat plan are similar to the certificate program for rice written into the Agricultural Act of 1956 (Public Law 540, 84th Cong.) but not yet put into operation by the Secretary of Agriculture, whose discretion is final in this matter.

in CCC files to the contrary. Volumes have been written on the basic unsoundness of the parity price concept. But even if these be disregarded, we may note that the original 1909-14 parity level was unusually favorable for wheat, that the support prices of recent years have continued to reflect, though diminishingly, the influence of the original 5-year base period, that recent wheat-support levels have been sustained only through huge Government expenditures on stocks-holding, surplus-disposal sales at unrecorded low prices, and wheat-acreage diversion to the soil bank, and that technological changes introduced over the past 2 decades have favored wheat more than most other agricultural products.

In the absence of free-market prices in recent years, no one can possibly know what an economically appropriate or "fair" price of wheat is. But, operationally, the records of the CCC clearly indicate that 90 or 82 (or probably even 75) percent of parity is much too high today to restore balance to the American wheat economy or to be "fair" to American taxpayers or consumers, or to be "fair" to American feed-grain producers faced with surpluses as a result of diverted wheat acres, or to be "fair" to competing foreign wheat producers or American export industries, whose exports markets have been curtailed by various forms of subsidized American wheat exports with "tied-in" export sales.

The Congress itself has officially implied that the present definition of wheat parity as a "fair" price is fictional. In subscribing to the International Wheat Agreements of 1949, 1953, and 1956, the Congress approved much lower internationally established price ranges specifically stated to be "equitable." The approved "equitable" price range written into the current agreement is \$1.50 to \$2 per bushel, basis No. 1 Northern, in store at Fort William/Port Arthur. This implies an "equitable" national average farm price of wheat in this country of approximately \$1.20 to \$1.70, with the \$1.20 level supposedly "equitable" under conditions of abnormally heavy world wheat supplies (such as now exist) and the \$1.70 level "equitable" under conditions of temporary international shortage. Both prices are a long way from specified American parity prices for wheat—even the lower "modernized" parity of \$2.33. It would seem to be time to abandon, rather than to reemphasize, the fiction that the presently defined parity price of wheat is a "fair" price.

(2) *The American wheat-price structure would be even more complex, with lower market prices.*—The proposed certificate plan envisages two different prices to producers, neither of which seems likely to serve in the near future as a complete substitute for any of the existing differential export prices shown in table 2.

The dual wheat price to producers would include (1) a primary "quota" price of about 100 percent of parity to cooperating producers—a net farm price (including certificate value) of \$2.50, based on present "transitional" parity, or \$2.33, based on "modernized" parity (August 1957), equivalent to aggregate central market prices to domestic millers of roughly \$2.75 and \$2.55, respectively; and (2) an uncertain lower secondary price for all additional marketings.

Although current legislative proposals leave it to the Secretary of Agriculture to decide whether the secondary price should or should not receive Government support, the Secretary would probably feel pressure to establish a general market support price for wheat equal

to or somewhat above the prevailing dollar-per-bushel support price for corn.

With all dollar support prices calculated on the basis of "modernized parity" (both here and on the following pages, except as otherwise noted), the present 75-percent legal minimum support rate for corn implies a support price of \$1.29 per bushel; and the support rate for wheat yielding roughly the same dollar-per-bushel figure would be 55 percent. It seems doubtful that existing political pressures would permit the establishment of a wheat-support rate—even a secondary support—this low in the near future, though I should be glad to see this cynical hypothesis proved wrong.⁸ Here I shall assume that the Secretary of Agriculture would initially establish and maintain for several years a secondary support price for wheat of 60 percent of parity. The corresponding dollar-per-bushel support would be \$1.40, farm basis, implying average crop year central-market supports for basic wheat types and grades of about \$1.55 to \$1.65 (announced terminal support of \$1.60 to \$1.70).

At 60 percent of parity, the secondary support price of wheat would still be relatively high, 25 to 35 cents above the equivalent guaranteed wheat price to Canadian producers and something like 5 to 20 cents above the so-called world export prices of 1956-57 (represented in table 1 by the "IWA export prices"). Thus, the 60-percent secondary support would seem to imply frequent if not continuous use of Government export subsidies to promote competitive sales of American wheat under the IWA as well as to permit noncommercial surplus-disposal sales of existing CCC stocks at low concessional prices.

Aside from the dual price to producers, the only big changes that the proposed certificate plan would immediately bring to the American wheat-price structure would be: (1) a downward shift in central market prices of roughly 50 cents per bushel (from the present 82.5 percent of parity to the assumed 60 percent); and (2) an increase of roughly 40 cents in the effective net prices paid by millers for wheat for domestic food (an increase from the current 82.5-percent level to 100 percent of parity).

With the effective prices to millers raised and surplus-disposal export prices unaffected, the basic-price structure effect of the proposed certificate plan would be to widen the spread between the highest and lowest differential prices of American wheat and to add one more, still higher, differential price to the series shown in table 2.

Much of the market-price change might be sheer facelifting, since the reduced market prices would be effective only for the amounts of wheat commercially sold without subsidy for domestic feed or export—quantities that would probably be quite limited at a 60-percent-of-parity support level. At materially lower support rates, commercial sales at market prices would presumably be significantly increased, with the degree of increase heavily dependent on the associated export-price policies of Canada and other competing exporting countries. In any case, reduction of American market prices from their recent artificially inflated levels should contribute to

⁸ If political pressures should change sufficiently to be reflected in congressional substitution of a 60-percent-of-parity minimum support for "basic" commodities, in place of the present 75-percent minimum, and if the Secretary of Agriculture should feel really free to cut to 60 percent the support prices for such important "basics" as cotton and corn, then, of course, a 50-55-percent secondary support rate for wheat would presumably be politically acceptable.

greater realism in wheat pricing in various countries, perhaps inducing some foreign governments to reconsider their own wheat-support programs.

(3) *Wheat production would be more likely to increase than to decline with regional inequities magnified.*—It is not entirely clear what would happen to the Nation's wheat sowings—to say nothing of production—if the proposed certificate plan should be introduced for wheat with a secondary support price of 60 percent of parity. The indefiniteness is primarily due to: (1) uncertainty as to whether the Secretary would decide to impose wheat-acreage allotments or other controls, and, if so, on how restrictive a basis; (2) uncertainty as to whether farmers would cooperate with such controls in the absence of marketing quotas (prohibited under the proposed program); (3) uncertainty as to the future level and effectiveness of the price supports and possible acreage allotments (or similar controls) established for corn and other feed grains; (4) uncertainty as to the future of the soil bank; and (5) uncertainty as to how competitive the technologically improved American wheat industry would actually be if completely unfettered at central market prices of \$1.50 to \$1.75.

To simplify the discussion, it is here assumed that the acreage reserve of the soil bank would no longer be operative, and that all feed grains would continue to be supported at prices the same as or a little below those of 1957–58. To the extent that feed-grain supports should be substantially lower than this, or that feed-grain supports should prove seriously ineffective, increased pressure would develop to expand wheat production.

If, under the assumed conditions, the Secretary of Agriculture should decide against the establishment of wheat-production or marketing controls, farmers could be expected to increase their wheat sowings markedly, despite the reduced 60-percent support level applicable to additional marketings. This would not mean that wheat producers respond “perversely” to price reductions, but rather that other factors would be obscuring the classical price-production relationship. Of these, two deserve special attention. First, practically every eligible farmer would be anxious to insure future maintenance or increase of his assigned domestic food quota, and to establish his “right” to a larger wheat acreage or production allotment in the event that direct controls should later be reinstated. (This anticipated response rests on the observed tendency for fixed-period bases in American agricultural programs not to remain fixed, but to be updated on various occasions.) Second, many efficient wheat producers who have benefited from the numerous technological improvements introduced over the past 2 decades would presumably find it profitable to grow more wheat at prices approximating 60 percent of parity. For many such producers the direct controls of 1954–57 exerted a strong downward pressure on wheat plantings, though much less on production. Since the sown wheat area of the United States declined from 79 million acres in 1951–53 (when no controls existed) to 61 million in 1954–56 (when restrictive acreage allotments and marketing quotas were in force and wheat prices were only moderately lower), it would not be surprising to see this area again top 70 million acres despite a 50-cent price reduction if the straitjacket of acreage and marketing controls were removed and the soil-bank acreage reserve no longer existed. Even with realistic allowance for moderately lower average

yields per acre, such an expanded wheat area would undoubtedly add to our present troublesome wheat surplus problems.

On the other hand, the wheat-acreage response of farmers to the same price changes would be quite different if the Secretary of Agriculture should set up restrictive wheat-acreage and marketing controls as the basis of eligibility for the receipt of marketing certificates and price support. Since the wheat-marketing certificates would be valued at something like 90 to 95 cents per bushel under the conditions here outlined, and since each cooperating farmer would be eligible to receive marketing certificates equal in amount to roughly half of his average annual wheat production in the 3 preceding years, the economic incentive to "cooperate" in the new wheat program would be great. This would be especially true if, as in other recent years, farmers could count on planting their diverted or "slack" acres to Government-supported soybeans, oats, barley, grain sorghum, or flaxseed, for which no acreage or other controls exist.

Under these conditions, the level of wheat sowings would be primarily influenced by the announced level of wheat-acreage allotments (or equivalent controls). If the allotment level could be determined entirely by economic and foreign-policy considerations, it would probably be set initially somewhat below the existing legal minimum of 55 million acres; but if, as in the past, political forces should dominate, an increase, rather than a reduction, from the recent 55-million-acre base would seem the more probable. In any case, only a small percentage of the Nation's farmers would presumably find it advantageous to disregard their acreage allotments and thus sacrifice not only direct price support but also their share of the marketing certificates.

Economists, arguing on a theoretical plane, *ceteris paribus*, have pointed out that the two-price form of the certificate plan, with its prospective lower secondary price, should reduce wheat production more effectively than an intermediate single support price. This presumably would be true if all other factors could be kept the same—the overall net average wheat price to individual producers, direct production and marketing controls, etc. But it is pertinent to note that the two-price system is currently proposed as an easier, less expensive way for the Congress to raise wheat prices to producers, that marketing quota controls are specifically banned under current bills, and that there has been associated talk about relaxation of direct production controls. The implication is clearly that all factors would not and could be the same under the two systems. Moreover, the certificate plan, with its extremely high domestic quota price, would strengthen the existing stimulus to keep wheat plantings and production up to insure satisfactory future domestic quotas as well as wheat-acreage allotments. Finally, regional differences in wheat growing, in the types of wheat produced, in the opportunities to shift to other crops, etc., are so great in the United States that the very difference in form of the two systems would be bound to have different regional price and production effects.

Whether or not restrictive production controls were imposed as part of the certificate plan (but particularly if they were), producers in the spring-wheat region and also those in the Soft Red Winter Belt might be expected to protest vigorously against the "regional inequities" of the program. They would contend, quite properly: (1) that

proportionally more of their wheat production is normally consumed domestically than is true of other regional wheats, and (2) that the bulk of the existing surplus wheat stocks is Hard Red Winter wheat. These assertions are clearly supported by the following average percentage figures for the 3 fiscal years 1955-57.

[Percent]

Class of wheat	Production	Domestic utilization	Carryover
Hard Red Winter.....	46	40	68
Soft Red Winter.....	19	23	3
Hard Red Spring.....	17	25	18
Durum.....	2	2	1
White.....	16	10	10
United States total.....	100	100	100

In the light of this evidence, it seems possible that the proposed two-price plan might result in considerable political grief. On the one hand, the farmers in the Hard Red Spring and Soft Red Winter Wheat Belts would want the domestic quota and associated valuable marketing certificates distributed not on the basis of recent production levels, but on the basis of contribution to domestic wheat consumption. On the other hand, such a change in the basic plan would greatly reduce the incentive for farmers in the Hard Winter Wheat Belt to cooperate if production controls were established.

(4) *The demand for wheat for domestic food would be unaffected, but the regressive tax on flour and bread would be burdensome and perhaps inflationary.*—The proposed 100-percent-of-parity quota price to farmers would be reflected not only in a 25-33-percent increase in the price paid for wheat for domestic food, but also in lesser percentage increases in the prices of flour and bread. Even if this should add no more than 1 cent to the price of a pound loaf of bread, it would mean an additional expenditure on wheat products of roughly \$10 per year for every 5-member family in the lower income brackets whose per capita consumption is at the average level, and the total additional cost to such a family, as compared with wheat priced at recent world export levels (also artificially maintained), would exceed \$25.

In the United States, such low-income families are the heaviest consumers of cereal products, and, since these consumers could not readily find cheaper substitute foods, they would presumably continue to buy about the same amount of flour and bread despite the burdensome price increase attributable to the certificate plan. This increase is tantamount to a tax on bread—a tax so regressive that the Congress would never approve it for general fiscal purposes. Yet the certificate plan for wheat essentially proposes a substantial increase in this regressive tax to benefit less than a million commercial wheat farmers, whose net real incomes and investments are, typically, much higher.⁹

Moreover, in view of the current need to fight inflation, the implied flour and bread price increases would seem to warrant special scrutiny of the certificate plan. Although proponents argue that a 33-percent

⁹ U. S. Department of Commerce, Bureau of the Census, United States Census of Agriculture, 1954, vol. III, Special Reports: Part 9, Farmers and Farm Production in the United States, ch. I, Wheat Producers and Wheat Production (1956).

increase in the price of wheat to millers would be reflected in a virtually negligible increase in the price of bread, the same kind of argument can be used just as logically and speciously with respect to price increases for most other basic materials (including steel).

(5) *Domestic use of wheat for feed would probably be moderately increased.*—In the United States, the amount of wheat fed to animals depends almost wholly on the relationships between wheat prices and the price of feed grains, and between such grain prices and the prices of animal products.¹⁰ With the growth of the mixed-feed industry and increased knowledge of animal nutrition, such price relationships have become even more important than before. Hence, it would be unreasonable to assume that a wheat-price reduction of 50 cents a bushel would be automatically reflected in substantially increased feeding of wheat. Much would depend on (1) how far from a commercial feeding basis wheat prices had previously been, and (2) what simultaneous changes occurred in the prices of feed grains and of animal products.

Of these relationships, perhaps the most important is that between the price of wheat and the price of corn. Since corn is the premier American feed grain, its price tends to reflect the overall feed-grain position in the United States, and thus may be accepted as a satisfactory general index of American feed-grain prices. If, under a new certificate plan, the general market price of wheat should be effectively supported at 60 percent of parity and the price of corn effectively supported at the current 75-percent legal minimum support, wheat feeding would undoubtedly increase substantially from its recent notably low level. The indicated relationship would mean that a 56-pound bushel of corn would be priced at roughly 90 percent of a 60-pound bushel of wheat—the percentage level where the 2 grains are approximately equal in feeding value.¹¹ This 90-percent figure may be compared with actual support-price relationships of 75 and 68 percent, respectively, for the past and current crop years. If, on the other hand, the 60-percent wheat support should be effective market-wise and the 75-percent corn support should not be, permitting corn prices to decline to, say, the 60-percent-of-parity level, little, if any, stimulus to wheat feeding could be expected. Since past experience affords little basis for supposing that a 75-percent-of-parity corn

¹⁰ At lower feed-grain prices it becomes profitable to feed much more grain and a considerably larger total grain-hay ration to dairy cattle. The following data show the most profitable daily ration for typical dairy cows when milk is priced at \$4 per 100 pounds and hay at \$15 a ton (U. S. Department of Agriculture, Possible Methods of Improving the Feed-Grain Programs, op. cit., p. 37).

Price per 100 pounds of feed grain	Most profitable ration	
	Grain	Hay (or equivalent)
	Pounds	Pounds
\$4.50.....	2.4	26.1
\$4.00.....	4.0	25.0
\$3.20.....	5.7	23.8
\$2.40.....	7.7	22.5

¹¹ Since wheat has a reported average feeding value of 105 percent of that of corn on an equal weight basis (R. D. Jennings, Consumption of Feed by Livestock, 1909-47, U. S. Department of Agriculture, Circular 836, 1949, p. 53), equivalence in feeding value is reached when a bushel of corn sells for 89 percent of the price of a bushel of wheat.

support would be effective under present arrangements,¹² any hope for a large increase in wheat feeding under the proposed certificate plan with a 60-percent wheat-support level would seem to be doomed to disappointment.

Even if wheat prices should drop to about the same price per bushel as corn, the maximum increase in wheat feeding from recent restricted levels would be unlikely to exceed 100 million bushels. Moreover, part of this increase might be at the expense of the several feed grains, which are also in surplus supply (realized losses to the CCC on these grains having totaled almost \$650 million over the past 3 years.¹³ Nevertheless, there would presumably be a net gain (lesser loss) in the process. A diversion of an extra 100 million bushels of wheat to feed would substantially improve the national and international wheat position. And since the amount of grain used for feed in this country is so price-elastic and large (averaging 3,540 million 60-pound bushels over the past 3 years,¹⁴ the price pressure of an additional 100 million bushels of wheat on domestic feed-grain markets should not be greatly disturbing.

(6) *American wheat exports would still be largely (or wholly) subsidized and the volume determined by official decisions.*—At the assumed 60-percent-of-parity support level (\$1.55–\$1.65 crop-year average market basis), most types of American wheat would probably still be priced too high to permit sizable unsubsidized commercial exports under conditions of burdensome world surplus. Not only are these prices generally above recent export levels, but the grain export boards of other exporting countries would undoubtedly lower their export prices, if necessary, to maintain a satisfactory flow of wheat to export. In no case, of course, would unsubsidized commercial exports of American wheat be expected to approach the large average exports of the past 2 years, since a large part of those exports were concessionally priced at less than \$1 per bushel (table 2).

Whether or not export subsidies would be required to permit new American wheat marketings to compete effectively in IWA markets, American officials would still be faced with the problem of disposing of around 400 million bushels of surplus old-crop stocks (plus any subsequent additions to the CCC stockpile). For such stocks, the dependence of sales on official decisions and Government financing would remain much as in the past few years. However, there would be one fundamental difference: the minimum legal price at which these stocks could be moved into regular domestic channels would be considerably lower—some 60 cents per bushel lower if the support price should be put at 60 percent of modernized parity (as contrasted with recent supports at 82.5 percent of “transitional” parity.)¹⁵ Even so, the actual volume of CCC domestic sales, as also the volume of specially subsidized export sales, would be determined by the decisions of administrative officials operating under policy instructions laid down by the Congress and the President of the United States.

¹² During 1954–56, from 49 to 60 percent of the corn producers in the commercial corn area chose not to cooperate in the Government's corn program, thus contributing to a net overplanting of the total corn-acreage allotments by 12 to 27 percent (U. S. Department of Agriculture, *Possible Methods of Improving the Feed-Grain Program*, op. cit., p. 28.

¹³ U. S. Department of Agriculture, *Commodity Credit Corporation, Report of Financial Condition and Operations as of May 31, 1957*, schedule 8.

¹⁴ U. S. Department of Agriculture, *Feed Situation*, Sept. 19, 1957, p. 5.

¹⁵ Under the Agricultural Act of 1949, sec. 407, the minimum legal permissive price for such CCC sales is 105 percent of the current support price plus reasonable carrying charges.

Thus, the introduction of a certificate plan for wheat would not automatically maintain total export sales at the high levels of the past 2 years, no matter how low the support price might be put in relation to world export prices. If the support price were set below the effective world export level, commercial exports of American wheat would be automatically increased; but, on the other hand, CCC officials might operate so as to reduce correspondingly, or even more substantially, the volume of export sales under special Government programs. Much would depend on higher policy decisions with respect to surplus-stocks management and disposal, with foreign policy considerations presumably important.

(?) *Foreign protests against American export dumping would probably increase, though they might decline.*—Since the wheat-production and export-competition effects of the proposed certificate plan would depend so heavily on basic policy decisions and administrative moves, the governments of competing exporting countries might find such a pricing system either more or less objectionable than our present multiple-pricing system. However, a support level of 100 percent of parity for the domestic food half of American wheat marketings would itself increase foreign concern about our future export intentions. Wheat production developments in this country, domestic feed sales, and the level and pattern of American wheat exports—particularly commercial and other competitive exports—would be watched closely and suspiciously by the government officials of other exporting countries.

International bodies concerned with the promotion of fair, multi-lateral trade, though uniformly opposed in principle to two-price plans and direct or indirect export subsidization, have recently concentrated their attacks on the most disturbing international effects of such programs—particularly the tendency of countries using such pricing devices to expand their subsidized exports of specific primary commodities in volume larger than their equitable share of the world export trade in those individual products, thus curtailing the normal commercial trade of competing exporting countries, unduly disrupting world prices, and putting economically weaker exporting countries at a permanent disadvantage.¹⁶

An American domestic parity program for wheat of the type envisaged would obviously be vulnerable to international attacks of export dumping in a harmful manner. Yet much would depend on the level at which the secondary support price were set and on the effectiveness of associated production and marketing controls. If the proposed 100 percent domestic quota price were combined with a market support rate of 60 percent, foreign exporters would presumably not feel much increased immediate pressure from our commercial wheat exports, though the attractive dual rate, if unaccompanied by adequate production controls, might so increase wheat production and stocks in this country, that the threat of heavier future pressure would appear menacing.

¹⁶ GATT, General Agreement on Tariffs and Trade: Basic Instruments and Selected Documents, vol. 1 (revised), April 1955, art. VI, pp. 15-17, art. XVI, pp. 32-33 and annex H, pp. 67-68; *ibid.*, third supplement, June 1955, pp. 222-230; FAO, *The International Effects of National Grain Policies* (commodity policy studies No. 8), September 1955; FAO Report of the Expert Working Party on Agricultural Support Measures, *Monthly Bulletin of Agricultural Economics and Statistics*, March 1957, vol. VI, p. 7.

Much more likely to arouse strong protests from competing exporting nations would be a 100 percent domestic parity rate combined with a secondary support rate considerably below current world export prices. Such a secondary rate (say 50 percent of parity or below) would automatically open the door to sharply increased, commercial exports of American wheat that would compete directly with Canadian and other wheats, conceivably curtailing the normal commercial markets of competing exporting countries and/or putting severe pressure on world export prices.

(8) *Wheat prices and incomes to producers would probably be raised a little.*—Whether a certificate plan of the type proposed would raise or lower the average farm price to producers would depend entirely on the effective levels at which the primary and secondary prices might be established. The average farm price results to be expected from several different levels of price support are shown in table 4 (with all prices based on modernized parity and on the assumption that direct controls would keep national wheat marketings at roughly 870 million bushels).

TABLE 4.—Approximate support price to cooperators implied by different support rates and systems¹

[Dollars per bushel]

Specified price	Present 1-price system: support as percent of parity			2-price system: Support as percent of parity		
	82.5 percent	75 percent	60 percent	60 percent	55 percent	50 percent
Support price (farm basis).....	1.92	1.75	1.40	1.40	1.28	1.17
Certificate supplement if 100 percent parity (90 percent in parentheses) ²	0	0	0	.50 (.38)	.57 (.44)	.63 (.50)
Total farm price to cooperators.....	1.92	1.75	1.40	1.90 (1.78)	1.85 (1.72)	1.80 (1.67)
Equivalent average central-market price: A. For domestic food.....	2.17	2.00	1.65	2.15 (2.03)	2.10 (1.97)	2.05 (1.92)
B. For feed exports etc.....	2.17	2.00	1.65	1.65	1.53	1.42

¹ All support prices based on modernized parity as of August 1957.

² With parity at \$2.33 per bushel, marketing certificates would be valued at 93 cents per bushel (\$2.33 minus \$1.40), if the support rate were established at 60 percent of parity, at \$1.05 if the rate were 55 percent, and at \$1.16 if it were 50 percent. Since these certificates would be available on roughly 470,000,000 bushels out of total cash marketings of about 870,000,000, the overall average per-bushel supplements on all marketings combined would be 50, 57, and 63 cents, respectively. These calculations do not take account of changed incentives to wheat production under the different support arrangements and rates—changes hard to forecast.

At primary and secondary support levels of 100 and 60 percent of parity, respectively, the overall average wheat price received by cooperating producers would be some 15 cents per bushel higher than the single minimum 75-percent support now legally indicated for wheat surpluses of the present size. This modest gain would be reduced to only 5 cents if the Secretary of Agriculture were to set the secondary support price at 50 percent of parity. Or if the Congress were to put the primary support rate at 90 percent of parity (equivalent to that for rice under the Agricultural Act of 1956), a secondary support of either 55 or 60 percent would result in practically the same per-bushel return to producers as from a single 75-percent-support rate.

At best, then, any price gain to producers over the present 75 percent legal minimum level would seem to be much too small to compensate for the several major disadvantages associated with such a certificate system—disadvantages arising primarily from the excessive domestic quota support rate envisaged in current proposals. Nor could sharp relaxation of production and marketing controls be expected to occur under such a system, with the effect of raising farm incomes.

(9) *Treasury costs of the price supports for wheat farmers, though partly shifted to consumers, would remain heavy.*—As already noted, a wheat-certificate program with supports at 100 percent and 50 to 60 percent of parity, respectively, would: (1) result in sharply lower prices to domestic buyers of wheat for feed or other nonfood uses and perhaps in somewhat lower prices to foreign importers; (2) return to producers an average price a little higher than they would receive from the present single legal minimum support; and (3) tend to expand wheat production except as limited by direct production and marketing controls. Together, these three effects mean that an increased farm-aid burden would have to be borne jointly by American taxpayers and American consumers of bread and other wheat products. To the extent that drafts on the National Treasury would be reduced, American consumers would have to bear that additional burden as well as the entire increased net cost of the changed wheat program.

On wheat marketed after the proposed certificate program would become effective, the export-subsidy cost to the Treasury would obviously be reduced. To bridge the gap between a world price of, say, \$1.45 to \$1.60 and supported American market prices averaging \$1.55 to \$1.65 would cost much less than it formerly did to cover gaps based on American market prices of \$2.25 to \$2.40.

On the other hand, world export prices might well be pushed downward in response to the reduced American market prices; and, in any case, other Treasury costs associated with the revised wheat-support program would remain high. Among such "other costs" are to be counted. (1) large administrative expenses attributable to the distribution and use of the proposed marketing certificates, continued wheat-loan operations, continued production and marketing controls, and continued management and disposal of CCC stocks (including new-crop deliveries as well as huge old-crop stocks); (2) the many expenses associated with grain storage; (3) heavy financial losses on surplus wheat sold for foreign currencies or on other concessional terms; and (4) expenditures on such supplementary price-supporting programs as the soil-bank conservation reserve.

III. SUMMARY AND CONCLUSIONS

Postwar pricing developments in perspective.—During postwar years the world wheat economy has twice been seriously out of balance. The first time was immediately after the war, when a critical, famine-threatening shortage developed. Then the United States Congress, moving in line with current economic forces, permitted the high international wheat-scarcity prices to be reflected back to domestic producers, who promptly expanded production that went far toward relieving the temporary, war-induced shortage.

Since 1953 another, more persistent imbalance has existed—a condition of burdensome surplus. For this imbalance the United States was and has remained substantially responsible. By the time the earlier wheat-shortage period had ended many American farmers had come to regard the high scarcity prices as “normal” and “fair”; and this mistaken view was backed by the politically designed wheat-parity formula. Early development of the Korean war, with its price inflation and impetus to stocks-building, further obscured the basic picture. Thus misled, American Government representatives were unprepared to cope appropriately with the wheat-surplus problems of 1953–57.

Aiming to keep domestic wheat prices close to the illusory parity level that stood further and further above declining world export prices, the Congress took more and more drastic steps to resist the fundamental economic forces operating toward downward price adjustment. Although significant concessions were made toward lowering the wheat-support level (through “modernization” of the parity formula and shift from the rigid 90-percent-of-parity support base to a flexible 75- to 90-percent base), these changes, not yet fully effective, have proved seriously inadequate in the face of striking technological advances and increasing overabundance of supplies. To reduce the excessive supplies the Congress put major reliance on delayed and diluted acreage and marketing controls, soil-bank incentives, and aggressive export-promotion programs that increased the extent and degree of subsidization of American wheat exports.

Thus emerged the present wheat program with its multiple prices, restrictive direct controls, and special export contracts and agreements. Disappointment with the results of this expensive self-defeating program has turned attention to various new proposals, of which the most clearly defined and formalized is the marketing certificate plan (domestic parity or two-price plan) represented in a number of bills now in congressional committees.

Effects of present wheat program versus proposed certificate plan.—The central feature of both the present program and the proposed certificate plan is support of wheat prices to cooperating producers at levels well above recent or prospective export prices and even further above the price guaranties to producers in other major wheat-exporting nations. Partly as a result of two decades of remarkable technological progress, these support levels substantially exceed the prices required to bring forth the amount of wheat currently demanded at such prices, or, indeed, that demanded at even lower specially subsidized prices.

Because of the relatively high levels of support envisaged under both systems, and in spite of significant differences in form, both would continue to overstimulate wheat production and to contribute to excessive stocks. In each case, the degree of future overstimulation would depend on the level(s) of price support announced by Government officials and on the production restriction effectively imposed through direct acreage, production, and marketing controls.

At all price-support levels apparently regarded as politically feasible, direct farm controls would have to be continued under either price system, interfering with the basic farm-management decisions of millions of capable farmers and preventing efficient allocation of American farm resources. On the other hand, under either system it

would be economically possible to put the price-support level(s) low enough to permit the program to serve as disaster-prevention insurance rather than as a price-raising, production-stimulating, export dumping device. Under such conditions (given time for adjustments) acreage allotments and other production and marketing controls could be safely dropped.

The chief differences in economic results to be expected from these two systems arise from (1) the lower market-support price in prospect under the certificate plan, and (2) the supplementary certificate payments provided by that plan to bring price support to cooperators to 100 percent of parity on the amount of wheat used for domestic food.

The lower market price under the proposed certificate program, largely determined by the support rate set by the Secretary of Agriculture (or by free-market forces if they could push prices higher) would presumably be low enough to stimulate some recovery of domestic wheat feeding and small to moderate commercial export sales not directly subsidized. Yet domestic feed use of wheat would probably increase little so long as feed-grain surpluses remain large. And the foreign dollar demand for American wheat priced at 55 to 60 percent of parity would still be quite limited (as indeed, it has been in all other postwar years).

Thus, under either of the price-support systems here compared, administrative decisions and Government grants and concessional sales of surplus stocks would seem likely to determine the total volume of American exports for some years ahead. Nor can it be anticipated that the American wheat-export record of 1956-57 would, or should, soon be repeated under any system. Strong, legitimate, foreign-government protests against American export dumping of wheat last year have already prompted official modifications of some of the most objectionable competitive features of our export programs. These modifications should be pushed still further, not only in the economic interests of such friendly competing exporters as Canada, Australia, and Argentina, but also in the long-run interest of the United States, which can best be promoted by the expansion of freer, unsubsidized, multilateral world trade.

Domestic wheat producers might receive a somewhat higher net average price for their wheat under the certificate plan; but the average gain would probably be modest. Moreover, producers in the Hard Red Spring and Soft Red Winter Wheat Belts could and probably would complain that their assigned domestic quotas and associated price supplements were inequitably small in view of the greater proportional flow of their wheat into domestic food channels.

Higher wheat prices to producers do not necessarily mean higher incomes from wheat marketings when direct production and marketing controls are used. Nor do higher incomes from wheat necessarily imply higher total farm incomes. Still less do they imply higher per capita net earnings. Although farm incomes from wheat have presumably been raised by the Government price intervention of recent years, this, in turn, has probably kept more people in wheat production and perhaps in farming, has retarded the rate of expansion of efficient farms, and has left many farmers to face more difficult future adjustments than if wheat prices had been allowed to

decline gradually to substantially lower levels. The certificate plan, with its domestic parity support, would further postpone needed adjustments.

To domestic consumers the certificate plan would inevitably mean higher bread and flour prices. As compared with world export prices in 1956-57, the additional annual consumer burden under such a certificate plan would approximate \$475 million, as against \$215 million under the present single domestic-price system with the minimum legal 75-percent-of-modern parity support or only about \$50 million with a 60-percent support. This means that consumers would be paying a substantially increased Federal "bread tax" under the certificate program—a regressive tax that would put the greatest burden on large families in the lower-income brackets.

In general, the similarities between the two price-support systems here discussed seem to be greater than the differences; and most of the differences could be removed by modification of specific legislative and administrative provisions. Detailed analysis thus supports the generalization that the economic effects of any price-support program depend much more heavily on the level of price support and the levels of associated differential prices than on the form of the program.

The chief advantage of the proposed certificate program is, in a sense, a negative one—that it gives the Secretary of Agriculture more freedom to lower the general support price and, unlike the present program, does not contain a mandatory escalator clause that would force the Secretary to raise the support level as surplus wheat stocks are reduced. On the other hand, the Secretary's price discretion would, in fact, be seriously limited so long as other basic commodities would have to be supported at or above the present 75-percent-of-parity legal minimum and so long as surplus Canadian stocks are so enormous.

Some conclusions and suggestions.—The conclusion seems inescapable that neither the present wheat-price program nor the proposed certificate plan comes to grips with the basic problem of persisting imbalance in the world wheat economy. That problem has two distinct parts requiring different methods of solution: (1) burdensome world wheat stocks accumulated from past overproduction; and (2) continuing pressure toward current overproduction.

As difficult, expensive, and time-consuming as it would be to dispose of roughly a billion bushels of accumulated surplus wheat stocks, this would be manageable if the pressure toward further overproduction could be removed. For the existing surplus stocks the solution would seemingly lie in modification of our present Public Law 480 program away from its narrowly nationalistic focus toward international consultation and cooperation with respect to (1) the diversion of American, Canadian, and other surplus stocks to markets promising increased grain consumption for food or feed; and (2) the selection of development projects worthy of being promoted through Public Law 480 development grants and loans. Such cooperation is essential both in the interests of our national foreign-policy objectives and also in recognition of the international character and threat of huge surplus wheat stocks, wherever located.

Much more serious and difficult is the problem of appropriately relieving the continuing pressure toward overproduction of wheat, typically subsidized with large government funds. At present this pres-

sure is mainly suppressed by direct controls and by costly acreage-diversion incentives. In the United States, particularly, where the suppressed pressure toward overproduction at recent subsidized prices is greatest, the problem is not merely that of curtailing wheat production, but of doing so in a way that will promote more efficient, unsubsidized, and unrestricted farming.

Personally, I believe that any solution that meets these requirements will include provisions for gradual and very substantial reduction of all American agricultural support prices to disaster-prevention levels—levels consistently maintained well below the equivalent of representative world export prices in the several years immediately preceding. Such prices would, in my opinion, be much fairer to efficient American producers than would present parity prices. With the government price guaranties changed to a standby insurance basis, domestic market prices would normally stand significantly above the guaranteed levels, being primarily determined by economic forces, not by questionable government decisions; and direct production and marketing controls would not be needed.

Our recent agricultural price policies, phrased in illusory parity-price terms, do not make any sense to me—either economic sense or common sense. In the case of wheat, specifically, we have persistently held support prices at 82–90 percent of what we have arbitrarily called a fair price. And year after year these support prices (below the officially designated fair level) have resulted in overproduction of wheat, in curtailment of wheat feeding, in negligible commercial exports, and in the piling up of unprecedentedly heavy stocks in the hands of CCC—all symptoms of excessively high wheat prices. These developments in turn have resulted in restrictive direct controls on American farmers to keep wheat production down, in huge supplementary soil-bank payments to take wheatland temporarily out of production, in heavy export subsidies even on export sales made on a semicommercial basis, and in the establishment of extremely expensive surplus-disposal programs involving special concessional export sales at less than \$1 per bushel. Our aggressive wheat-export drive, in turn, substantially restricted the foreign markets open to Canada and other friendly competing exporting countries, leading to many protests against American export dumping. And much of the land taken out of wheat under the government's programs was diverted to the growing of government-supported feed grains and other crops that promptly developed new surpluses that were channeled to CCC stocks to be subsidized by taxpayers. All these results in the name of parity—indeed, with prices considerably below parity.

Official price fixing at fair levels was tried, failed, and was discarded as early as the Middle Ages. Today the Soviet Union and the United States stand out as the two most prominent sponsors of government price fixing for agricultural products on a welfare basis. The difference between recent Russian pricing and our own has been that Soviet officials have tried to keep agricultural prices artificially low (for consumers) and to increase agricultural production, whereas the United States Congress has tried to keep agricultural prices artificially high (to certain groups of commercial farmers) and simultaneously to reduce production. Both countries have failed because price fixing is not an appropriate tool for promoting welfare or political objectives. Particularly in a free-enterprise

economy, commodity prices need to be free to guide the production and consumption decisions of millions of independent persons trying to further their own interests.

This does not mean that longtime welfare objectives should be abandoned, but rather that different tools—not price tools—must be used if the objectives are to be attained. It does not imply that all farm subsidies are to be condemned, but rather that such subsidies can most usefully and effectively take the form of short-term adjustment grants, insurance against common hazards, disaster relief, disaster-prevention price guaranties, and in some instances, special grants to promote increased efficiency. Moreover, in the future, as in the past, American commercial farmers can be expected to derive maximum benefits from more indirect welfare programs, such as the various free agricultural information services, government-financed research, subsidization of agricultural education and extension work, and general social-security programs.

POTENTIALITIES OF MULTIPLE-PRICE PLANS FOR IMPROVING AGRICULTURAL TRADE RELATIONS

Lawrence W. Witt, Michigan State University

Agriculture in the United States long has been vitally concerned with the size and strength of the export market. The sale of farm products provided a major part of the foreign exchange needed to buy industrial products during the colonization, settlement, and industrial development of the Nation. Despite competition for foreign dollar earnings from the increasing quantity and variety of industrial commodities which move abroad, farm exports have averaged over \$3 billion per year since the end of World War II. In physical quantities or in constant prices, they represent about the same amount of exports as in the 1920's. See appendix, table C-18.

There is one striking difference, however, in the financing of present-day exports. Since the inauguration of lend-lease, a substantial share of farm exports has moved under special export programs. In some cases, food has been a private or public gift; in other cases, farm products have been paid for out of dollar loans, in others bartered for strategic materials, and more recently sold for local currencies. Such programs paid for as much as 80 percent of our farm exports in 1942-43 (under lend-lease) and 60 percent in 1948-50 (under ECA and other programs). They dropped to 18 percent in 1952-53 (with the tapering off of ECA). See table 1. Under present programs, about 40 percent of our exports result from direct aid; the rest are commercial sales for dollars but often at special prices negotiated through the International Wheat Agreement or the Commodity Credit Corporation. One of the questions of concern in this paper is the effect of such sales upon agricultural trade relations. Another question is whether alternative policies may resolve or mitigate the problems which exist.

TABLE 1.—*Farm products exported under foreign aid and surplus disposal programs, 1941-57*

Year	Agriculture exports (billions)	Under aid programs		Percentage under aid programs
		Amounts (billions)	Major aid programs	
1941-42	\$1.0	\$0.7	Lend-lease	70
1942-43	1.5	1.2	do.	80
1943-44	2.3	1.8	do.	78
1944-45	2.2	1.6	do.	76
1945-46	2.9	2.0	Lend-lease UNRRA	69
1946-47	3.6	2.0	UNRRA, United Kingdom loan	56
1947-48	3.5	1.9	Interim aid, Army civilian supply	54
1948-49	3.8	2.3	ECA, Army civilian supply	60
1949-50	3.0	1.8	ECA	60
1950-51	3.4	1.2	ECA	35
1951-52	4.0	.9	ECA	22
1952-53	2.8	.5	ECA	18
1953-54	2.9	.7	FOA, foreign currency sales	24
1954-55	3.1	.8	Currency sales, grants	26
1955-56	13.5	1.4	do.	41
1956-57	14.7	1.9	do.	40

¹ Estimated from Foreign Agricultural Trade Digest, July 1957.

Source: Agricultural exports from Foreign Agricultural Situation, Foreign Agricultural Service, Washington, D. C., November 1955, table 35. Exports under aid programs from Lawrence Witt, Agriculture, Trade and Reciprocal Trade Agreements, Michigan Agriculture Experiment Station, Technical Bulletin 220, June 1950, and Doris Detre Rafler, Government Financing of Farm Exports in the Postwar Period, Agricultural Economics Research, October 1955.

The evaluation of these export programs and alternative policies must take account of the goals toward which they are or may be directed. Lend-lease, for example, was developed to provide the sinews of war to friends and future allies over and above the amount that was possible with ordinary commercial trade. Similarly UNRRA, ECA, and other postwar programs provided financing for food and capital to speed up reconstruction and to counter the political forces which thrive on dislocation, insecurity, and misery. Gifts of food are intended for the same purpose in areas of drought and famine. Such programs implement basic humanitarian values held by the people of the United States. They also advance the self-interest of this country through strengthening independent responsible political forces and weakening Communist groups.

There are other impacts of these programs which must be considered. Domestic price-support programs have raised farm prices above world-market levels. Export programs to restore an appropriate share of the world market benefit American agriculture but injure competing agricultural producers whose share is reduced. Deficit countries receiving food through loans, gifts, or local currency purchases benefit both from the additional food and the stimulus to other purchases which the program may make possible.

United States manufacturers, farmers, and taxpayers are affected in different ways by these programs. This paper will sketch some of these effects in more detail.

Attention will first be directed toward a number of foreign-trade problems, mostly economic in nature. An alternative multiple-price system will be evaluated relative to these problems, along with a straight commercial sales policy. Attention also will be given to the longer run effects of special export sales by the United States upon economic development and levels of living in other countries.

AGRICULTURAL TRADE PROBLEMS

Other countries are less willing to purchase American farm products in commercial markets than in earlier years because of changes in American and worldwide production characteristics in both agriculture and industry, and because of shifts in the kinds of products they wish to purchase. A number of characteristics of agriculture and values about food make these problems more serious.

United States agriculture has lost some comparative advantage

It appears to be more difficult for agriculture to compete with industry for the dollars foreign countries earn through their export of goods and services. Evidences supporting this conclusion are the trends indicating that except in wartime, farm products are a smaller and smaller share of United States exports. (See appendix, table C-17.) Less tangible evidences are the choices which many countries make when they impose exchange controls, import quotas, and new tariff rates. At times United States farm products are more severely curtailed than are industrial products. It may be argued that in the United States industrial efficiency has advanced relatively more rapidly than agriculture compared with other countries of the world. However, the evidence on comparative advantage is far from clear. The domestic price-support program has pushed American farm prices above world levels. It has provided an additional flow of income to agriculture which has bid up land prices and increased the general cost structure. There appears to be some indication that productive efficiency has increased for some farm commodities at least as much as in many American industries. Hence, given some years of price competition and readjustment in production some farm commodities may be able to compete effectively with industry for the dollars earned by other countries.

(This paragraph accepts the view that the major competitors for the American cotton, wheat, tobacco, and rice farmer are not his overseas counterpart, but the American manufacturers of automobiles, electrical equipment, industrial tools, etc. If a shipment of coffee brings Brazil \$10 million, she may choose to buy wheat, or gasoline, or parts to assemble trucks or industrial machinery or trade the dollars to Argentina for wheat. In this latter case, Argentina will make the choice between farm and industrial products. The aggregate of these decisions, worldwide, increasingly appear to be in favor of buying nonagricultural products from the United States.)

The most difficult part of this problem is that under negotiated sales and export subsidies it is impossible to define clearly the price which represents the capacity to produce and that part, if any, which represents the capacity of the Treasury and taxpayers to absorb losses. The foreign producer argues that he is competing with the United States Treasury while the American producer argues that only the disparity imposed by support programs has been removed. Adequate economic analysis and applied studies have not been devised to determine and clearly establish which is the more accurate statement.

Foreign agricultural capacity has expanded

The productive capacity of other countries in competing agricultural products has expanded. There are at least four reasons for this:

(1) The application of agricultural science has expanded production in other countries as in the United States;

(2) Postwar reconstruction stepped up the emphasis on the extension of agricultural information in many countries;

(3) Normal and accelerated economic development projects have provided irrigation projects, fertilizer plants, new tools and machinery, and other capital items which encouraged further agricultural expansion; and

(4) United States price-support programs since 1933 have provided a measure of world-price stability which has encouraged many countries to expand their production of crops formerly supplied by the United States. Low prices for other agricultural commodities encouraged a shift into the production of those whose prices were somewhat protected. Dollar shortages have also encouraged expanded domestic production, sometimes on new or abandoned lands.

In any case these increases in capacity are a fact. As in American agriculture, a reversal to lower production levels is extremely difficult. Production once expanded does not easily contract. Capital assets once created and adapted to the production of a particular product tend to continue in production even though the product prices decline. Hence a policy of renewed competition does not insure that excess capacity will be liquidated. Meanwhile economic development and the application of new agricultural science spreads over a wider and wider area.¹

Economic development increases the demand for industrial goods

Analytically, increased population has a different effect on demand than does economic development, at least in terms of emphasis. Both, however, put greater pressure on supplies of foreign exchange. The great desire for economic development in many countries means that monetary authorities need to make choices between the tools and machines for a new industry, the machinery and raw material for operating present industries at higher levels, consumption goods appropriate to the higher level of income and food both for the new population and for the better feeding of the existing population. The necessity for such choices pose hard dilemmas. Economic development is desired as a means of raising levels of living, and increasing national strength; yet implementing economic development requires giving up possible present consumption goods in favor of tools, machines, buildings, and education. It means that many countries will choose to use available dollars for trucks and transportation equipment, and industrial tools instead of for food and consumption goods. The market for American farm products is correspondingly reduced.²

This again points out the fact that international trade is largely competition between domestic industries, producing different exportable products; not competition between United States producers and overseas producers of the same commodity. It also points up, as will be discussed, the special role which sales for local currency can fulfill.

¹ See, for example, Long-Term Projections of the Demand for Farm Products, Foreign Agriculture, USDA, October 1957.

² William F. Doering, Foreign Customers Have Fewer Dollars, Foreign Agriculture, USDA, October 1957.

OTHER CONTRIBUTING PROBLEMS

To the major dynamic factors affecting the market for American farm products must be added a number of characteristics which make the solution to these problems more difficult.

Foreign markets are vital to American agriculture

The producers of rice, cotton, wheat, tobacco and dried fruits normally send 30 to 40 percent of their production abroad. In some years a substantial proportion of the lard, tallow, soybeans, and a number of other farm products move overseas. (See appendix, table C-16.) The domestic price or the size of the CCC stockpile of these products is directly affected by the extent to which exports are made. In times of relative economic stability a change in the foreign market may be one of the major determinants of the level of farm income in commercial agriculture. Even the producers of fruits, vegetables, livestock and livestock products sold primarily in the domestic market are affected by shifts which export producers may make into or out of direct competition for the domestic market, or by changes in costs of feed because of competition between wheat and other grains.

A strong export market will enable agriculture to operate at a higher level of capacity. The large proportion of fixed costs in agriculture means that net income is strengthened substantially when, at a given price, a larger output can be produced and sold. Farmers thus have economic reasons for desiring a large volume of trade.

Efforts to strengthen farm income interfere with farm exports

Many people have felt that farm incomes would be too low without Government assistance. This attitude has led to nearly 30 years of agricultural programs. Most of the techniques used have striven to raise the market prices of the products sold by commercial farmers. To the extent that they have been successful they have tended to raise American prices above world levels. Overseas purchasers look elsewhere for cheaper farm products, and expand domestic production. Foreign producers try to sell to the United States to take advantage of our higher domestic prices—which has led to a series of import quotas, pressure to modify tariff concessions, and other measures which weaken the strength and logic of our overall foreign-trade policy. Thus domestic programs have made it more difficult to sell in the world market.³

Many countries depend on a few export products

For the United States, farm products constitute less than 25 percent of total export trade. Even to approach this figure requires aggregating several dozen commodities. (See appendix, table C-17.) In many countries, 2 or 3 farm products produce 50 to 75 percent and even more of their foreign exchange earnings. Cotton in Egypt, rice in Burma, butter in New Zealand, wheat and beef in Argentina, cotton and coffee in Brazil, oranges in Israel, butter and pork in Denmark are a few examples of this extreme dependence on a few export products. The ability of such countries to import other farm products and needed industrial products depends directly on the earnings of

³ Lawrence Witt, *Agriculture, Trade, and the Reciprocal Trade Agreements*, Michigan Agricultural Experiment Station Bulletin 220, June 1950, pp. 28-30, 32, 33.

their principal exports.⁴ Their economy, their politics, and their international policies inexorably must be influenced by the strength of the export market for their special commodity. Changes in government policies which influence production, imports, or the export prices of CCC stocks for one commodity may be minor in its effects here, but may drastically change the ability of another country to earn foreign exchange to finance needed imports. They have little choice but to follow countervailing measures which will protect their income and revenue positions even if it means a difficult and risky realignment of their foreign policies. Countries such as these become very concerned with the nature of our export policies.

Food plays a vital role in a nation's economic and political well-being

The existence of famine and malnutrition constitutes a weak point in a nation's economy. When people struggle for mere survival radical political movements have greater opportunities.

Moreover, farmers and many other citizens in this country believe sincerely that there is something wrong with a national and world economy which has food surpluses on the one hand and starvation and malnutrition on the other. They may not fully understand the functioning of the economic system, particularly as between nations. Even if they do, they consider it morally wrong to pile up surpluses and control food production while there are people whose food intake is considered inadequate. They believe that it is right and desirable to modify the functioning of the economic system so as to put food where it is needed, thus using surpluses to assuage hunger abroad.

THE NATURE OF THE ALTERNATIVE POLICIES CONSIDERED

For a variety of reasons, Congress has passed legislation establishing a number of programs to stimulate farm exports. The combination of these programs taken together constitutes a multiple-price system. Some farm commodities are sold for dollars at domestic prices plus transportation. Others are sold for dollars at prices established by the CCC, or at prices determined by competitive bid. Wheat may be sold at another price under the International Wheat Agreement. Finally, a large volume is disposed of under Public Law 480. This includes gifts, barter arrangements and sales paid for in local currency. Certainly this constitutes a multiple-price system under any definition of the term. For convenience this system will be referred to as Public Law 480, although it includes more than the authorizations under Public Law 480.

The multiple-price system suggested in the request for this paper presumably represents a different program. Several variants may be suggested by other contributors to this group of papers. The essential features of the alternative multiple-price system here considered include the following: a relatively high price for commodities moving into normal domestic channels; a free competitive world price for production in excess of this amount so as to facilitate international trading; possibly the same price or a subsidized price for nonfood and new domestic uses of the same commodity; controls such as marketing cards and import barriers which effectively separate the

⁴ Lawrence Witt and Mordecai Ezekiel, *The Farm and the City, Food and Agriculture Organization, Rome, April 1953, pp. 19-25.*

several market outlets; and, all sales would be for dollars. This will be referred to as a dollar multiple-price system. (It should be mentioned that instead of maintaining high domestic prices by marketing controls, domestic prices could function at world levels with special direct payments to farmers, without interfering with the rest of this analysis. Such a program, of course, would involve greater taxation, and larger Government disbursements than a program maintaining separate price levels, but not necessarily any greater cost to the Nation if consumers expenditures are included.)

A third alternative involves the rejection of all special programs and a return to a one-price commercial-sales program. When world prices were at comparable domestic prices, sales would be negotiated; at other times farmers would depend on the internal market and governmental purchase programs. It would involve drastic production controls for some commodities and/or a continued large Government purchase and storage program. Despite these difficulties it is an alternative proposal frequently considered. Like the others it has different effects on different countries and on various groups within the country, which will be referred to briefly.

POSSIBLE EFFECTS ON TRADE POLICIES

In comparing the three price programs there are a number of difficult questions to resolve. The first of these under any program is the future policy with respect to the disposal of CCC supplies. Will the sales policies continue as they are, or will efforts be made to dispose of larger quantities? World prices and world trade policies certainly will be affected. It is assumed specifically that the CCC sales policies will be adjusted so that world prices in dollars are maintained at about present levels. This assumption is made in the belief that a material decline in world agricultural prices would bring severe international pressure on the USDA to reduce sales.⁵ Moreover, continued selling for lower prices would increase the realized loss to the CCC.

Another difficult problem is the possible international reaction to a permanent Public Law 480 or permanent dollar multiple-price plan compared with the present "temporary" but extended Public Law 480. It is assumed specifically that counteraction by other countries will be greater against a permanent program than against a temporary one, but that the present Public Law 480 will bring more reactions the longer it is continued. Furthermore, these actions are likely to be greater with a decline in business activity than with continued prosperity.

Finally evidence to evaluate either program is qualitative or largely lacking. There is too little information on prices, on changing demands, on the effects of economic development, or on the changing world efficiency and economic structure to provide a basis for precise answers. Previous reports, congressional hearings, and similar state-

⁵The President's message to Congress of March 30, 1954, recognized this problem with the statement that the United States holdings of many commodities was "such as to be capable of demoralizing world commodity markets should a policy of reckless selling abroad be pursued." This statement also said that the United States would not use its surpluses "to impair the traditional competitive position of friendly countries by *disrupting world prices of agricultural commodities.*" [Italics added.] A fuller discussion of these points is found in Willis C. Armstrong, Policies of the Department of State on the Disposal of Surplus Agricultural Commodities, Department of State Bulletin, February 20, 1956.

ments are helpful, but they do not provide the systematic evidence that is needed to collate different trends in different countries and to evaluate quantitatively the effects of alternative trade policies upon total trade patterns.⁶ Moreover, the trade relations which are discussed here involved subtle social and political attitudes, and interactions among leaders of many different nations. This report like the others will have to depend heavily upon logical analysis, recent import-export trends and current points of view. Since this appears to be a continuing problem it is urged that steps be taken to assemble more fundamental and basic analyses for future policy decisions.

Dollar sales programs would reduce the volume of farm exports

During the past 2 years or so the USDA under the provisions of Public Law 480 and pressure from farm groups has been putting great effort into exporting farm products. Where price cuts and competitive bids were insufficient inducements, contracts have been negotiated for local currency. A further increase in world population coincident with a rise in economic activity probably would further increase the volume of world farm imports and exports, particularly if they continue to lag behind most other commodity prices. Improvements in grades, quality, and merchandising practices may further stimulate United States exports. Aside from this it is difficult to see how a dollar multiple-price program could do anything but reduce United States exports; in fact there is reason to believe that Public Law 480 long continued will bring countermeasures by other countries which will reduce its effectiveness, unless the rules on local currency are further liberalized.⁷ Action by Mexico in 1955 which tied dollar imports to Mexican farm exports, the proposed Canadian-United Kingdom negotiations and the recent Australian-Japan agreement well may be the forerunners of other measures which reflect international tensions, and the type of policies that will interfere with future United States farm exports. A one price commercial sales program would reduce exports more than either multiple-price plan.

Also important is the change in the country by country pattern of exports. A dollar multiple-price system will not move farm products as readily into dollar short countries as Public Law 480. At present about half of the title I sales are to countries in the early stages of development, and another fourth to partially developed countries. (See table 2.) In such countries, as discussed earlier, there is severe pressure on foreign exchange and a desire to use dollar supplies for industrial goods to stimulate rapid development.

⁶ Among these reports are the following: Agricultural Surplus Disposal and Foreign Aid, a study prepared at the request of the Special Committee To Study the Foreign-Aid Program, U. S. Senate, 85th Cong., 1st sess., GPO, Washington, 1957; Howard R. Tolley, Using American Agricultural Surpluses Abroad, National Planning Association, No. 91, May 1955; George L. Mehren, Multiple Price Plans for Rice, California Agricultural Experiment Station, Giannini Foundation of Agricultural Economics, mimeo Rept. No. 175, April 1955; A Study of Various Two-Price Systems of Price Support and Marketing Which Could Be Made Applicable to Rice, letter from Acting Secretary of Agriculture, H. Doc. No. 100, 84th Cong., 1st sess., GPO, Washington, 1955.

⁷ The difficulties in negotiating appear to involve differences over (1) the uses of the currencies, (2) the definition of the usual marketings, and (3) the appropriate exchange rates in converting dollar values to local currency. Statement by Gwynn Garnett, hearings, Surplus Commodities Disposal, Committee on Agriculture, House of Representatives, 85th Cong., 1st sess., p. 54.

TABLE 2.—Value of total program of sales for foreign currency under title I, Public Law 480, by groups of countries

(In millions of dollars)

Area and country	Amount programed	Area and country	Amount programed
Latin America:		Middle East, Eastern Europe:	
Argentina.....	\$31.1	Egypt.....	\$19.6
Bolivia.....	6.8	Greece.....	46.2
Brazil.....	180.2	Iran.....	12.9
Chile.....	40.1	Israel.....	52.0
Colombia.....	29.2	Poland.....	18.7
Ecuador.....	8.1	Turkey.....	111.6
Paraguay.....	3.0	Yugoslavia.....	222.8
Peru.....	15.3		
	<hr/>		
Total.....	313.8	Total.....	483.8
	<hr/>		<hr/>
Far East:		Western Europe and others:	
Burma.....	22.7	Austria.....	43.3
Taiwan.....	9.8	Finland.....	27.7
India.....	360.1	France.....	2.1
Indonesia.....	98.7	Germany.....	1.2
Japan.....	150.3	Iceland.....	2.8
Korea.....	81.6	Italy.....	127.9
Pakistan.....	120.5	Netherlands.....	.3
Philippines.....	10.3	Portugal.....	7.1
Thailand.....	4.6	Spain.....	184.2
	<hr/>	United Kingdom.....	35.6
Total.....	858.6	Total.....	432.2
	<hr/>		<hr/>
		Grand total.....	2,088.4

Source: Semiannual Report on Activities Under Public Law 480, 85th Cong., 1st sess., H. Doc. No. 212, p. 39.

The above statements are made on the assumption that the CCC will be careful not to depress the price levels of world commodities, and will take up the slack in the amount stockpiled. It remains to explore whether there are production effects which would reduce United States and world production, thus affecting the volume of exports? Under the dollar multiple-price system as described, a part of each American farmer's production (a quantity) would be designated for domestic use at a special domestic price. Any additional quantity which he chose to produce would sell at the world price—lower than the domestic price. A dollar multiple-price plan then would mean lower prices for some of the production compared to the present Public Law 480 program. The extent of the possible response to lower prices is the subject of other papers. Clearly the dollar multiple-price system has the advantage of discouraging further expansion in production within the United States.

On the other hand the greater difficulty in obtaining farm products would induce many foreign countries to produce more of their own food. The export markets for the farm products of soft-currency countries would strengthen and induce some agricultural expansion. A one-price commercial-sales policy would be an even greater inducement for agricultural expansion in the rest of the world, as it has been in the past.

The operations of these three sales programs will have different effects on different commodities. In those cases where foreign production can be expanded at small additional cost the effect on world prices of dollar-sales policies will be smaller and the effects on United States exports will be larger than under Public Law 480.

Each sales program leads to conflicts of interest

Under the present program, the United States, in essence, is buying local currency so as to create a demand which is tied to United States farm exports. It is similar to the issuance of food stamps to low-income American consumers, except that the foreign currency has a value which can be turned to United States use now (by barter, military procurement, etc.) or in the future (when economic development loans are repaid). The program leads to a number of conflicts, which will be pointed out. Resolving them is another matter.

1. Large American farm surpluses combined with the Public Law 480 program have kept world agricultural prices from advancing as fast as other commodity prices. Thus agricultural nations competing with the United States have not shared fully in the rise in world levels of living. Industrial countries appear to have gained relative to agricultural countries. Table 3 summarizes information on changes in the index of industrial production. There are many influences besides earnings from farm exports which affect a nation's economy; yet it is significant that most of the industrial countries included have experienced a more rapid increase in production than countries depending heavily on farm exports. Moreover, competing agricultural countries with more industry, such as Australia, Canada, and Mexico, appear to have done better than those with less industry, such as Argentina and Burma. A comprehensive study is needed to better assess these effects. So long as the United States has extra supplies and is trying to sell them, the agricultural countries are likely to suffer relatively, almost regardless of the type of sales or disposal program. They would benefit, however, from a one-price commercial-sales program, since this would stabilize farm prices at a high level and lock up more American supplies.

TABLE 3.—*Indices of economic growth for selected countries, recent years compared to 1953*

[1953=100]

Country	Gross national product, 1956	Price index, 1956	Industrial production, 1956
Competing agricultural:			
Argentina.....	1 127	2 117	
Australia.....	121	105	
Burma.....	104	3 126	
Canada.....	110	102	114
Denmark.....	109	167	108
Mexico.....	4 150	130	130
New Zealand.....	117	104	
Noncompeting agricultural:			
Brazil.....	5 130	175	4 112
Ceylon.....	118	99	
Chile.....	1 258	277	109
Colombia.....	6 132	120	
India.....		97	126
Industrial:			
Belgium-Luxembourg.....	4 111	104	122
France.....	125	102	134
Germany.....	4 122	103	138
Italy.....	4 117	102	128
Japan.....	4 115	102	141
Netherlands.....	4 120	105	124
United Kingdom.....		4 104	112
United States.....	114	104	112

1 Net income, 1955.

2 Cost of living, 1955.

3 Cost of living.

4 1955.

5 1954.

Source: International Financial Statistics, International Monetary Fund, vol. X, No. 8, August 1957; Monthly Bulletin of Statistics, Statistical Office of the United Nations, vol. XI, No. 8, August 1957.

2. Countries receiving farm products for local-currency benefit compared to other nations and in comparison with the operation of a dollar multiple-price system. The difference is even greater with a one-price system. Most of these countries are less developed countries with food and nutrition problems. (See table 2.) Thus, Public Law 480 has the advantage in fighting hunger in other countries, but requires United States taxpayers to develop a large investment in local currency.

3. United States Government dollar costs have been raised by the amount appropriated to Public Law 480 less the dollars saved as foreign currency is used to reduce dollar expenditures. Over a billion dollars of such currency is now on deposit.⁶ A dollar multiple- or single-price program would bring in dollars as sales were made. To completely evaluate the comparative costs of the three programs it is necessary to calculate the costs of accumulating a larger domestic stockpile of commodities, or having a more severe production-control program. The smaller foreign sales, however, would bring in dollars (but see below). These costs and gains would need to be compared with a realistic calculation of the value of these foreign currencies to the United States over the period of time that they are used and repaid.

⁶ Sixth Semiannual Report on Activities Under Public Law 480, 85th Cong., 1st sess., Dec. 212, p. 8.

4. Larger dollar sales of farm products means a smaller sale of industrial products. It is not possible to maintain exports of non-agricultural products and increase farm exports for any length of time unless extra dollar loans are made or the United States steps up imports. Thus, a shift to either dollar-sales program conflicts with the interests of other American exporters.

5. Economic development can be stimulated by the addition of extra food and fiber to a nation's resources. More and more of the local currency is being used for this purpose—over 60 percent in 1956-57. (See table 4.) If the use of the farm product is carefully planned to use unemployed and underemployed resources to create other forms of capital, the contribution can be enhanced. In most countries, however, the stimulation would be even greater if imported industrial products could be added to the farm products. An FAO report, for example, points out that in a country like India it is difficult to provide more than half of the total cost of a development project with local currency.⁹ A program which primarily feeds the hungry may have the imported food built into the economic structure more or less permanently. So long as the food shipments continue there may be great appreciation, but this can turn into great bitterness if the program ceases.

TABLE 4.—Planned uses of foreign currency under title I, Public Law 480, by period of agreement, by percentages

Planned use	Agreements signed from beginning of program through June 30, 1955	Agreements signed July 1, 1955, through June 30, 1956	Agreements signed July 1, 1956, through June 30, 1957
Market development.....	2.7	1.6	1.4
Purchase of strategic commodities.....	.6	.8	.....
Military procurement.....	16.4	16.2	7.1
Purchase of goods for other countries.....	2.9	3.0	.6
Grants for multilateral trade and economic development.....	2.1	.....	5.2
Payments of United States obligations.....	31.1	23.1	2.4
Loans for multilateral trade and economic development.....	42.6	54.4	61.6
International education exchange.....	1.6	.9	.6
Information and education.....	.....	(1)	.9
Translation and publication.....	.....	.....	.2
Total.....	100.0	100.0	100.0
Total amount programmed.....	\$357, 100, 000	\$685, 800, 000	\$1, 045, 500, 000

¹ Less than 0.1 of 1 percent.

Source: Surplus commodities disposal, hearings before the Committee on Agriculture, House of Representatives, 85th Cong., 1st sess., Government Printing Office, Washington, 1957; Semiannual Report on Activities Under Public Law 480, 83d Cong., as Amended, 85th Cong., 1st sess., H. Doc. 212.

6. Under the present program Congress is asked to appropriate money periodically to continue Public Law 480 sales. What criteria can be used to decide how much more is needed, if any? This is an extremely difficult decision. Under the dollar multiple-price system described above, or a simple commercial sales policy, no such decisions are required. Congress might appropriate money for dollar-short countries to encourage United States food exports and to stimulate economic development thus replacing the stimulus presently provided

⁹ Uses of Agricultural Surpluses To Finance Economic Development in Underdeveloped Countries, FAO Commodity Policy Series No. 6, June 1955.

through local currency. Developing appropriate criteria for such programs are not quite as difficult, though far from easy.

7. Under the dollar multiple price plan United States farmers would receive lower prices for that part of the crop destined for export, whereas the present program and a one price sales program provide the same price for the entire crop. While contraction would be slow with the dollar multiple-price plan the expansion in productivity such as in the last decade would be limited particularly since the quotas presumably would be on a quantity basis. Government expenditures would be smaller, but so would be the farm income of commercial farmers, especially for those producing export crops.

8. Economic development in other countries will expand the demand for food more rapidly, particularly where per capita incomes are very low, than a similar expansion in a country with a higher per capita income. In poorer countries people spend more of their increased income for food; technically they have a high income elasticity. Thus in the long run the American farmer has a real interest in stimulating economic development. For them and for us there is a conflict between higher present incomes and levels of consumption and less increase in the future versus smaller consumption now, the creation of more capital, more rapid development and more goods and consumption in the future. Economic development in some countries may provide additional agricultural competition.

SUMMARY

Export markets constitute an important part of the market for United States farm products. However, only a small proportion are moving under normal sales procedures. Approximately 40 percent are sold under direct export aid programs and a substantial part of the rest are sold as special prices negotiated with the CCC or under international agreement.

Agricultural products face these difficulties for several reasons. The first reason is that farm products meet severe competition in contending with American industry for the dollars which other nations earn selling goods and services to the United States. United States industry is increasing productivity and efficiency about as fast as most branches of export agriculture.

Secondly, in other countries, it often is far cheaper to expand local farm production than to establish the industrial organization to provide desired nonfarm commodities. Hence they expand agriculture and purchase industrial goods.

Thirdly, many countries are actively involved in economic development programs and are determined to make them effective. Implementing these program require the purchase of additional industrial tools and equipment, while maintaining most of the present purchases until the new production is established. Both agricultural goods and consumers goods tend to be squeezed out.

Finally, domestic price support programs have raised United States farm prices over world levels. They have encourage overseas production and discouraged purchases from the United States. It is not easy to reverse this process.

Changes in Government policies which influence production, imports, or export prices have important effects on other countries. Countries dependent upon 1 or 2 commodities for their earnings of foreign exchange will be more deeply affected than countries with a variety of exports. Since the majority of the countries depend on a relatively few exports, they are very vulnerable to policy changes.

Three trade policies are compared: The present multiple-price policy of negotiated sales, gifts, loans, and sales for local currencies; a multiple-price plan involving only dollar sales; and the traditional one-price commercial sales program.

Each of these sales policies leads to conflicts of interest and conflicts of value. American industry benefits from sales for local currency while commercial farmers also gain so long as price-support programs thereby are maintained. Those who pay the taxes find the present tax burden somewhat larger than it would be under either dollar sales program.

On the other hand sales for local currency stimulate economic development and assuage hunger in dollar-short, food-deficit nations. The supplies of local currency are a potential asset which may reduce government dollar expenditures and tax rates in the future. The repayment of the local currency in the future will reduce the future market for American industrial and agricultural products. Economic development, effectively attained however, will expand the market for both agricultural and nonagricultural goods. The effect of food exports on economic development probably will be increased if there are supplies of dollars and other foreign currencies to provide necessary nonfood items.

Under Public Law 480 Congress is asked periodically to increase the overall authorization. There is little basis for determining how much is needed and desirable.

The present program of special export sales has met with criticism from competing countries. Its elimination would lead to complaints and problems from other countries including the danger of unrest and revolt. There probably would be less criticism if a traditional sales policy were followed coupled with a fairly large scale program of loans to finance the purchase of farm products. Such a program might be more costly and probably would be more difficult to tie to farm products and humanitarian values with respect to food and hunger than the present Public Law 480. In other respects it would have substantial advantages.

It is for the American people and its representatives in Congress to decide whose interests are paramount. The opposing values and objectives need to be studied, the goals clearly defined, and needed compromises deliberately selected. The assets which surplus food represents in a hungry world should be used to implement the human values and social objectives which America represents.

MULTIPLE-PRICE PLANS

Kenneth Hood, American Farm Bureau Federation

Multiple-price plans for agricultural commodities are not new. The McNary-Haugen proposals of the 1920's were two-price plans. There has been a long series of related bills dating back for at least 15 years.

Elements of multiple pricing are evident in classified price plans for milk, the International Wheat Agreement, Public Law 480, export subsidies, market agreements, the compliance, noncompliance, and noncommercial loans on corn, and others.

Many of the above programs are designed to be temporary and flexible in nature. Some involve small areas of operation. Some provide for diversion into products that cannot be reconstituted back into the original product. Some keep inferior products from entering normal channels of trade.

Despite the fact that many price programs in operation today have multiple pricing aspects, there is not one in existence that even remotely resembles the current multiple-price proposals for wheat, rice, dairy products, and other agricultural commodities. These currently proposed plans generally are mandatory, permanent, inflexible, and involve processing taxes and certificates. None of these features are basic characteristics of plans with which we have had experience. Truly, we will be out on uncharted seas if we embark on any of these untried multiple-price proposals. This in itself should not condemn the many new proposals before us, but it does indicate that we should subject them to a most careful examination before we think seriously of adopting them.

The objectives which the American Farm Bureau Federation has for a farm program are outlined in our AFBF Policy Statement. Essentially, these objectives are expanded markets, more freedom, and higher net farm incomes.

Could it be that some of the various multiple-price proposals would contain provisions that would be helpful in making progress in this direction? Let us examine some of these, first in broad scope, and then individually, to see how they might contribute to a long range solution of the farm problem.

Perhaps we should pause to take a quick look at the general features that characterize most of these plans before we delve into an analysis of specific ones.

The basic objective of multiple-price proposals is to divide the market for the commodity in question into a primary market, which would be charged a parity or near parity price, and one or more secondary markets, which would be supplied at lower prices. The mechanics of most of these plans are such that the specified commodity would move through United States trade channels at one price with variations for class, quality, and location. The actual cost, however,

of acquiring the commodity would vary according to the use that is made of it.

Under most of these plans, producers would be given marketing certificates for a pro rata share of estimated domestic consumption. Processors would be required to buy such certificates in proportion to the use in products destined for domestic human consumption. The value of such certificates would be determined by the Secretary of Agriculture on the basis of his estimate of the amount by which the parity price of the commodity will exceed the average farm price for the year. Thus, producers would be assured of something approximating parity for a percentage of their crop, which would be equal to the percentage of the total production that is consumed domestically. Certificates would not be required for exports, or in some cases, for nonfood domestic uses. Refunds equal to the value of the certificates involved would be made when products are exported.

As we now switch from description to analysis, let us first examine the probable effect of these programs on our foreign markets.

These programs are designed to expand exports. Will they do it? Certainly they will not solve the foreign exchange problems which limit our sales in many areas. They will not change the fact that our products are not always competitive in terms of quality. Increased quantities of our products may be available for export markets at world prices if we subsidize foreign shipments by giving United States producers additional income for the domestically consumed portion of production. If foreign countries, however, impose restrictions against the importation of our products, what have we gained?

We have made it a point in our organization to discuss multiple-price proposals with the many foreign agricultural visitors who come to our offices almost weekly. We have explored these plans in conversations with foreign traders and Government officials in our visits abroad. We have brought these plans to the attention of importers and exporters in our conferences on trade development and international affairs. We discussed these proposals at a number of important gatherings, including the recent world conference of the International Federation of Agricultural Producers. A part of the statement relative to multiple-price plans and international trade, which was presented by Walter Randolph, vice president of the American Farm Bureau Federation, in behalf of the Federation, follows:

So far as United States policy relating to international trade is concerned, we believe it should be designed to promote trade with other nations on a fair basis and at a high level.

The application of this principle to United States Government price policy has particular significance to you and to us:

(1) We agree that it is not fair on a continuing basis to subsidize the production of surpluses of our export crops through policies which require Government surplus disposal programs to market the commodity. That is why we have insisted that so-called surplus disposal programs should be temporary. We are not interested in their becoming a way of life.

That is why we have insisted that Government price policies on supported commodities should be consistent with production objectives. We would remind you that the six commodities having price supports about which much of our discussion has centered account for less than 25 percent of United States cash farm receipts and that commodities accounting for over 50 percent of cash farm receipts have no Government price supports.

(2) This objective of conducting international trade in farm products on a fair basis cannot be attained by proposals to assure producers a relatively high price for that portion of the crop sold domestically—or for a part of that portion of the crop sold domestically as in the case of the three-price wheat proposal which has been under discussion in the United States and which was referred to earlier in this meeting.

United States feed grain and livestock producers are as frightened by the possibility of this sort of economic dumping on a permanent basis in the domestic market as are the producers in other wheat exporting countries who have analyzed its implications to them.

What is the real test of fairness so far as the production and export sales policy of any government with respect to price supported agricultural commodities?

Is such test whether the supported commodity is sold for export at a price not lower than the price at which the production of the commodity was induced by Government programs? Such programs include loans, purchases, blend prices arrived at by multiple-price schemes, payments (incentive payments, deficiency payments, compensatory payments, production payments, etc.), and other similar devices.

If this can be accepted as the proper test, then all of us have an opportunity to move gradually in the direction the test points.

After these inquiries and discussion, we are forced to conclude that a permanent program of maintaining high prices in a protected domestic market, in order to produce more for export to foreign markets, would be considered export dumping by other countries. We do not allow other countries to dump products into our markets and we can expect them to retaliate if we engage in such practices. In the case of importing countries who have domestic producers of the commodities in question, the retaliation probably would come in the form of restrictions against the importation of that product. In the case of exporting countries, the retaliation could be expected against United States export of other agricultural products and manufactured articles.

Many foreign countries already are extremely unhappy over our present programs of export subsidization. The recent violent objections of Canada to our recent wheat export activities is only one of many that have come to our attention in recent months. Fortunately, we have some flexibility in our present operations and we are in a position to make changes when conditions warrant. Our foreign

competitors console themselves at present with the knowledge that we are trying to get out from under a serious surplus situation and that we have not committed ourselves to a program of subsidizing exports on an expanding scale. When and if we do, we are told that we will be embroiled in a prolonged bitter struggle that inevitably will restrict our trade and endanger our international relations. Can we afford to take this chance?

WILL DOMESTIC CONSUMPTION BE AFFECTED?

Since multiple-price plans generally incorporate high levels of domestic price support, it is necessary to consider the effect of this pricing policy on consumption. In another paper, submitted by AFBF to this committee, some relationships existing between prices and consumption are reviewed. It is important to reiterate here that prices have a marked effect on domestic consumption of dairy products, cotton, meat, and a host of other agricultural commodities. Even for wheat and rice, prolonged periods of high prices may induce important shifts in consumer habits.

High prices will encourage a further increase in the consumption of synthetics and other substitutes.

WHO WILL BE HURT?

Each proposal should be analyzed to determine if it is fair to United States consumers, to producers of quality products, and to producers of other agricultural commodities.

If we try to obtain satisfactory prices for wheat growers, milk producers, and others through a processing or similar tax, these payments may be interpreted to be bread taxes, milk taxes, or taxes on other consumer necessities. This could create an adverse public reaction which would affect consumer demand for the products in question and could jeopardize the successful operation of the program. While the American consumer should expect to pay a fair price for food, it is quite a different thing to tax domestic consumption of individual commodities to finance the export of these commodities. Processing taxes shift the burden from those more able to pay to those less able to pay. Now, support money comes from Federal funds, part of which comes from graduated income taxes. Increased costs of domestically consumed foods, brought about by processing taxes, would be borne by the users and would bear as heavily on the low income segment of our population as on those more able to pay. Consumers can be expected to object strenuously to programs that permanently increase their food and fiber costs in order that foreign consumers may pay less.

Many of the proposed programs distribute certificates according to production history and bear no relationship to the historical participation in the domestic market for the product. In the 5-year period, 1952-56, domestic consumption of durum wheat averaged 105 percent of production; hard red spring wheat, 88 percent of production; soft red winter, 73 percent; hard red winter, 47 percent; and white wheat, 37 percent. Is it equitable to give the producers of each of these varieties of wheats equal shares of the domestic food wheat market?

Any plan established for one commodity may have serious implications for producers of other products. When devising a multiple-

price plan for a commodity such as wheat, we need to consider the effects of this plan on feed grain producers, livestock growers, and others.

In considering the use of processing taxes, it would be advisable to take into account the almost certain opposition of processors. In the past they opposed processing taxes and were successful in getting the processing taxes, established under the original Agricultural Adjustment Act of 1933, declared unconstitutional. They can be expected to attack the constitutionality of current proposals and might well win their case in the courts. The possibility of this eventuality would add confusion and uncertainty in the operation of the program.

PROBLEMS OF ADMINISTRATION

Administration of multiple-price systems will be difficult and complicated. The proposals require in general all the administrative decisions necessary under present plans. In addition, advance estimates of domestic quotas, parity prices, and market prices will be required. Also, there will be certificates to handle. The administrative costs of collecting the processing taxes and making payments to farmers would be high.

Multiple-price plans might produce black markets through which wheat, rice, and other products would move into human consumption without payment of the processing tax or purchase of a food certificate. This could result in administrative problems of auditing and enforcement far beyond first expectations.

A natural development of a two-price plan would be a multiprice system with prices varying according to usage. In fact present wheat proposals, if adopted, would result in at least 3 levels of price—1 for food, 1 for feed, and 1 for foreign shipments. Expansion of a 2-price system to a 3- or 4-price system would greatly complicate administrative problems.

A general adoption of multiple-price plans will result in increased involvement of Government in the individual affairs of farmers and in the production and marketing of agricultural commodities. This will not be good for agriculture or for America.

WILL FARM INCOMES BE INCREASED?

Overproduction is one of the big problems in agriculture today. There appears to be nothing in any of the proposed multiple-price plans that will help solve this problem. In fact, production could be expected to increase. If higher prices are achieved at the beginning of the program, this would stimulate output. Moreover, farmers would feel impelled to expand production in order to maintain or increase base histories. If the value of the certificates, plus the going market price of the product, results in a favorable blend price, producers may, in the absence of controls, continue to expand output to the point where blend prices would be no higher than what market prices would have been without any program whatsoever. Under such conditions, the average producers would get no benefit from the proposed program.

Then, too, exports may be less—not more—if foreign countries find our multiple-price systems an unacceptable form of competition.

If certificates, marketing cards, allotments, and other rights to produce or sell have value and go with the farm, they will be capitalized

into land values. This gives a windfall to existing landowners, and penalizes new purchasers of farms who have to pay higher prices for farms than they otherwise would, if they want to buy properties with certificate rights.

Wheat

The certificate plan calls for supporting a portion of the domestic wheat crop at a high and very profitable level so that wheat producers will be able to produce to capacity and dump their surpluses in the export and domestic feed markets. Since we already have a number of wheat export-subsidy programs, the immediate objective appears to be to dump wheat in the domestic feed market.

Foreign countries can be expected to take retaliatory measures against the adoption of this plan. Importing countries, almost all of whom have some domestic wheat producers, would seek to protect these producers by imposing various types of trade barriers against a flood of cheap wheat from the United States. In competing export countries, retaliatory actions probably would be directed against other American exports, such as cotton, soybeans, lard, tobacco, fruits, vegetables, and industrial goods. This could result in a net reduction in our exports of both wheat and other commodities.

Let's take the Canadian situation as an example of how countries could react to a multiple-price program for United States wheat. It is not necessary to outline here Canada's extreme displeasure with our present temporary program of subsidizing wheat exports. Since the Canadian farmer doesn't have a program that gives him a much higher price for half his production, which the certificate plan would provide for United States, he could be expected to regard such a program as the most vicious, unfair type of subsidized competition imaginable.

Canada now buys 200,000 to 400,000 bales of cotton and millions of dollars worth of other farm products annually. Can we hold this market if we adopt a wheat-certificate plan? In view of our urgent need for expanded agricultural exports, can we afford to antagonize Canada and other trading nations whether they are exporters or importers of wheat?

Producers of corn and other feed grains can be expected to oppose any plan that allows wheat producers to dump hundreds of millions of bushels of surplus wheat into the feed market.

It is argued that the amount of wheat that would be fed under the certificate plan would be small in relation to the total feed-grain supply. But the amount of wheat that could be fed is neither small nor insignificant. Our present wheat carryover of nearly a billion bushels is the feed equivalent of nearly one-third of a normal corn crop.

Furthermore, we have a big oversupply of corn and feed grains, with the carryover of corn this year totaling about 1.5 billion bushels, or almost the equivalent of a half of a normal crop.

Many analysts minimize the impact of a feed-wheat program on feed-grain producers. Even the USDA failed to consider this important matter in its recent study of the feed-grain situation.

Feed-grain producers may be affected in another way. If a large volume of low-priced wheat is made available to foreign markets as a result of a United States wheat-certificate plan, it is logical to assume that important quantities will be used in the foreign feed market. This would reduce the export demand for our feed grains.

Feed-grain producers, no doubt, are perfectly willing to compete for the feed market provided the power of Government doesn't stack the rules of the game against them. If the wheat farmers will accept support prices on their entire crop, based on the feed value of their product in relation to the support price on corn, and not just the feed portion of it, corn farmers and producers of other feed grains cannot complain that wheat is being fed on an unfair competitive basis.

The proposed wheat-certificate plans not only would work an injustice on domestic producers of feed grains and foreign wheat producers, but also would create inequities among domestic wheatgrowers. Under the proposed plan, food wheat certificates would be distributed to all wheat producers on the basis of past wheat production without any reference to their participation in the domestic food market. This means that the growers of Durum, Hard Red Spring, and other wheats that are consumed largely in the domestic food market would in effect be taxed to subsidize the dumping of surplus wheat of other types into feed and export markets. Producers of high-quality milling wheat would be taxed for the benefit of producers of feed wheat.

Presently proposed multiple-price plans for wheat would, no doubt, increase rather than decrease wheat production. Growers would produce to maintain or increase base histories and their share of the certificates. With uncontrolled production, the average or blend price of wheat might, and probably would, drop to the level that would prevail on a free market without any program, and farm incomes from wheat production would not be raised one iota by the operation of a program that subjects us to the grave risks of international ill will and displeasure of feed-grain and livestock producers and other commodity groups in this country.

Rice

This commodity has been cited as one for which a simple workable multiple-price plan could be devised. The proponents say that price in the domestic market has little or no bearing on consumption and our surpluses have no force whatsoever in establishing a world market. It is further argued that a multiple-price plan for rice could be easily administered because the crop is small; rice uses are few; and compliance could be easily checked as all rice must be passed through driers.

Let us examine the validity of these observations.

While rice has no close substitutes in the United States market at the present time, is it not logical to assume that the long-run maintenance of high prices would induce shifts to other foods? Can rice producers afford to take the chance of losing markets that may be extraordinarily difficult to recoup after consumers have changed their dietary habits? Food experts tell us that consumer food habits change relatively slowly but once a commodity has lost favor, it is a difficult task to recover lost markets.

United States exports of rice were relatively unimportant in world trade prior to World War II but they have risen substantially since then and have made up 10 to 18 percent of world shipments since the end of the war. Any long-time permanent program of subsidizing exports through supporting domestic prices at high levels could lead to retaliation on the part of foreign countries and in the

end reduce rice exports and the exports of many other American products as well.

While rice has relatively few industrial uses, it is used in the production of beer. It is questionable if this commodity can bear a processing tax and compete in the domestic beer and other industrial use markets.

Some rice areas in the United States produce largely for export while some have a much larger stake in the domestic market. A question that is often raised, when multiple-price plans for rice are being discussed, concerns the probable reaction of producers of rice for domestic use when they are asked to finance exports of other producing areas. We have seen no evidence to indicate that the growers, who have domestic markets that have been developed through cooperative and company brands, would be willing to pay a tax to finance payments to growers who produce largely for export.

Should Cuba be included in the domestic quota if a multiple-price plan for rice is instituted? This poses a most difficult question. Since this country is a heavy importer of our rice, there is strong support to include it in the high price market. If this is done, will it encourage an expansion of Cuban rice production and result in an eventually smaller market for United States rice? Will Cuba be tempted to purchase rice from other countries where it can be bought at lower prices, or will the tax, which applies on milled rice only, be evaded by shipping rough rice to a third country for milling or for milling in Cuba? Can we charge Cuba more for her rice than we do other countries and keep from violating the most-favored-nation provisions of the General Agreement on Tariffs and Trade? Moreover, United States has a tariff preference on rice in the Cuban market. The proposed processing tax would greatly reduce or eliminate this advantage.

All plans that include Cuba in the higher priced market, either directly or indirectly, involve what amounts to a tax. Since the Constitution prohibits export taxes, it may be difficult or impossible to develop a program that would enable us to charge Cuba a higher price than we charge other countries.

If farmers are stimulated to increase production as a result of more favorable prices, what measures exist to curtail production? What assurances are there that rice farmers will not produce enough surplus rice to bring the blend price down to the free-market level?

Can it be positively demonstrated that a certificate plan for rice will net producers more money in the long run than the present program, a program of reduced supports and expanded acreage, or a free-market price with no limits on acres planted?

Cotton

Cotton producers have many problems. Two big ones arise out of a phenomenal expansion of synthetic-fiber production and a loss of export markets. Will any two-price plan solve either of these problems? Let's look at the synthetic-fiber picture first.

The United States production of synthetic fibers increased from 1,930,000 bales (cotton-equivalent basis) in 1940-44 to 5,349,000 bales in 1956. During this same period, per capita consumption of cotton in this country declined from 36.8 pounds in the 1940-44 period to 26.0 pounds last year.

In 1955, cotton's share of the United States fiber market slimmed down to 66 percent. In 1950, the slice was 68.5 percent, and in 1940, 80.6 percent. Synthetics and other fibers took over the markets that cotton lost. Price helped them do it.

High domestic cotton prices make it difficult, if not impossible, for our cotton-textile manufacturers to produce cotton goods at a price that will enable them to compete successfully for export markets. Moreover, these same manufacturers have to compete with imported cotton textiles fabricated from raw cotton which we made available to foreign countries at cutrate prices.

Any plan that supports domestic cotton prices at a high level unquestionably will aid in a further expansion of synthetic-fiber production, hurt foreign sales of finished cotton goods, and contribute measurably to a further curtailment of cotton consumption. A multiple-price plan for cotton would be suicidal insofar as the domestic market is concerned.

It is doubtful if any two-price plan could be devised for cotton that would solve the domestic consumption problem and at the same time enlarge the export market for any extended period of time.

Dairy

The classified price plan for milk, which has been incorporated in Federal milk-marketing orders, has been cited as a precedent for establishing multiple-price plans for other agricultural commodities.

Let's examine the system of classified pricing which establishes different prices for milk for different uses to see if there actually is any similarity between this method of milk payment and the many multiple-price plans that are being widely discussed today.

Federal milk-marketing orders are confined to metropolitan milk markets where milk is primarily produced for fluid consumption. Multiple-price plans, on the other hand, generally are nationwide and include all producers.

Dairymen can justify higher prices for fluid milk than for milk used in manufacturing dairy products on the grounds that health regulations increase production costs in metropolitan milksheds. This does not hold for food wheat, food rice, and other commodities involved in current multiple-price proposals.

Most multiple-price plans involve certificates, processing taxes, and reduced prices for exportable surpluses. Some include quotas, support prices, loans, and many other devices. None of these are a part of a classified price plan for milk.

A number of multiprice stabilization plans for milk are being widely discussed today. Space will not permit a detailed discussion of any of these specific proposals. While many of these plans have the very laudable objectives of expanding exports, balancing production and demand, substituting producer financing for Government support, and increasing net farm incomes, it is difficult to see how the present proposals can attain these goals.

In a further study of these many proposals, it may be advisable to seek a clarification of a number of very perplexing questions.

The first question pertains to the method of operating the program. A Federal Dairy Stabilization Board is proposed in most plans. This would be a quasi-governmental agency of farmers or representatives of farmer cooperatives empowered to establish support prices, set

stabilization tax rates, buy and sell surplus dairy products (or set policies relative to acquisition and disposal of these products), and to do many other things necessary to effectuate the program.

This approach is a wide departure from presently established methods of supporting prices of agricultural products.

Many are asking if it is in the national interest to give a commodity group major authority in the pricing and operation of the market for that commodity. Others question the legality of this procedure.

The effects of a higher domestic price on production and consumption of dairy products need to be examined. Many proponents of dairy stabilization plans have minimized the impact that increased prices would have on production. Likewise, they have failed to appreciate the amount of adverse influence that increased prices may have on the consumption of milk and dairy products. Butter, in particular, is in a very vulnerable position. Consumption fell from 17 pounds per capita in 1940 to 8.5 pounds in 1953. Modest gains in consumption have been registered since this all-time low in butter consumption was reached. Is the dairy industry prepared to run the risk of a disastrous loss in butter demand by pushing butter prices to unrealistic levels and encouraging substitutes to wreck the industry by moving in and taking most of the market that is left?

Many analysts expect losses in operating the program to offset gains. They are asking:

How long will it take farmers to produce enough so that losses from surplus disposal balance gains from higher prices for milk sold in regular channels? How long will it take for milk prices to reach the level that would prevail if we had free-market prices?

High-level supports have been associated with heavy Government purchase of dairy stocks. When dairy price supports were at 90 percent of parity, CCC purchases were more than double purchases since support prices moved lower. If this experience is repeated under a dairy stabilization program of high supports, how long will it be before costs of operating the program become prohibitive?

Some proposals would attempt to limit the production of surplus milk. This effort would involve a national base-surplus plan, with a small stabilization fee assessed against the base quantity of milk, and a much larger tax assessed against surplus production. Base-surplus plans have been used in many markets in the past. They have been fairly successful in reducing seasonality of deliveries of fluid milk to plants but have usually resulted in greater annual production. The seasonal swings have been minimized by filling in the lows without any appreciable decrease in production during the peak months of milk flow.

If bases under the base-surplus plan were not rigidly defined and tightly administered—and provisions of the proposals appear to indicate continual expansion rather than close control of bases—the plan would not reduce total production.

Let us suppose a plan could be devised that would actually control milk production. What then?

First, we can assume that a minimum volume of milk or a minimum number of cows would be allowed, such as is provided in the burley tobacco program and others. This would jeopardize the milk production control program but probably would be politically essential.

Possibly a maximum base quantity would be allowed. This would penalize larger producers and could have an adverse effect on the overall efficiency of milk production.

In the end we would have more producers, fewer cows per farm, higher average production and marketing costs, a reversal of the trend toward greater efficiency in milk production, and lower net farm incomes from dairying. Some would be exempt from the program, according to some of the proposals.

What will be the major effects on costs of efficient producers, especially if dairy farmers with a few cows are exempt from the program? How would this affect producers of manufactured milk if producers in fluid markets that have supply and demand in reasonable balance are exempt?

If producers with a few cows are included, what are the administrative problems in making collections from producer-distributors, sour-cream shippers, and others? If all fluid markets are included, will producers in these markets be willing to be taxed to support a program for producers of manufactured milk?

The question of exports should be raised again.

Although our exports of dairy products have been an insignificant part of our total production in past years, we ought not to foreclose any opportunities that may exist to expand this outlet.

Will any of these programs expand foreign markets for dairy products, or will we face retaliation as we subsidize cutrate foreign sales through a program of high domestic prices and find ourselves with less outlets instead of more?

And, finally, we need to appraise the prospects for higher net incomes for our dairymen if we adopt any of these plans. To date, we have seen no realistic projections that would indicate that favorable results would be achieved.

Sugar and wool

The sugar and wool programs have been cited as examples of programs that embody certain features of some of the currently discussed multiple-price proposals. Actually, these are special programs for agricultural commodities in deficit supply in the United States and are comparable with the plans proposed for commodities with exportable surpluses in very few respects. One similarity exists in that domestic producers of sugar and wool get returns above world prices. In addition, sugar has a processing tax.

The processing tax on sugar has been cited as an example of how the tax might work on other commodities. This tax goes into the United States Treasury and is appropriated out to make payments to producers who comply with specific requirements relative to child labor, wages, and other matters.

It might be observed in passing that these conditional payments are illustrative of how far Government may go with other commodities, as they have with sugar, in dictating wage levels, and many other provisions, if we involve producers in compulsory multiple-price programs that include certificates and payments. This appears to be a long way around to reduce governmental interference in the individual affairs of farmers.

Since a tax of 50 cents per hundredweight of sugar, raw value, is imposed on all sugar processed in the United States and all sugar

imported for direct consumption, and payments are made only to domestic producers, collections usually exceed payments by 15 to 20 million dollars a year.

Quotas, imposed on importations of sugar, associated with domestic farm allotments for sugar beets and sugarcane, set the level of supply in this country and have a much greater impact on producer prices and incomes than the small payments that are made to producers for complying with certain requirements relative to wages, hours, provisions, etc.

The wool program is financed from receipts derived from wool tariffs. This is a direct payment plan designed to encourage an annual production of 300 million pounds of wool.

We produce only one-third of apparel-wool needs and buy two-thirds from other countries. This fact makes it possible for us to have a domestic wool price above world price levels without causing the kind of international concern over unfair price competition that arises when we use a high domestic price for commodities with exportable surpluses to subsidize cheap exports.

SUMMARY AND CONCLUSIONS

Multiple-price provisions have been used successfully in classified pricing of fluid milk in metropolitan areas. Marketing agreements for fruits and vegetables have been helpful in assisting producers in limited production and marketing areas to improve quality of products marketed and to divert lower grades into products that cannot be reconstituted and sold as the original product. Diversion programs have been used to divert surplus agricultural commodities into starches, alcohols, and many other useful products.

Multiple pricing can be advantageous in accomplishing the limited objective of programs outlined above but we fail to see any long-time advantages to agriculture in adopting any of the currently proposed multiple-price plans. Some of the plans may give us a momentary lift but we should be ever mindful that it is necessary to distinguish between short-time advantages and long-time consequences.

It is doubtful if any of the widely discussed programs of a multiple-price nature will expand markets for any extended period of time. In fact, there is real danger that our export markets will be curtailed.

If these plans would move us away from governmental interference and domination of the agricultural industry, and allow market prices to have more influence in guiding production and consumption, it would be advisable to give the plans a trial. This would be especially true if it could be demonstrated that there is a road back if these plans fail. There is little evidence, however, that these plans could work without a multiplicity of certificates, allotments, loan programs, and elaborate machinery to enforce requirements of the law. Conceivably, the Government would dictate wage rates, and other provisions as a condition of eligibility for certificates as is now incorporated in the sugar program. Moreover, the end result of this approach could be a complete system of Government-administered prices and a collateral Government control over every aspect of American agriculture.

It is also doubtful if any of these programs would increase farm incomes for any appreciable period of time. Production would be stimulated until the value of the certificates, or the advantages of a

higher support program as outlined for milk and dairy products, would be entirely wiped out and prices would in effect be no higher in the end than the free market would have brought without the program.

Many will agree with the writer that we need something that will work better than the farm programs that we have had in the past. Fortunately, we are not faced with a choice between present plans and the multiple-price approach. There are other plans that offer better possibilities for dealing realistically with the perplexing problems of agriculture. Plans that will build markets at home and abroad—help balance production and demand—minimize the role of Government—preserve and enlarge opportunity—and improve the net-income position of farmers.

NEW USES AND NEW CROPS

Wheeler McMillen, Farm Journal, Inc., Philadelphia, Pa.

The concept of new uses for agricultural products looks in the main toward industrial or nonfood forms of consumption. Likewise, the desire for new crops aims principally at products for industrial rather than food purposes. In neither instance, however, is the possibility of new food uses excluded. Food and fiber doubtless will always be agriculture's primary business.

The idea for diverting a portion of farm production into industrial rather than food channels came into being during the 1920's, more than 30 years ago, when agriculture was producing surpluses and numerous "farm relief" plans were being advanced.

At that time it was remarked that while the quality of domestic consumer diet might be further improved, the quantity of consumption per person could hardly be expanded. The observation was made that the capacity of the human stomach was limited.

It was further noted that while the richest American consumed no more than three meals daily, the consumption of nonfood goods had no limits except purchasing power. After supplying needs for food, no automatic limit appeared to restrain the satisfaction of wants for housing, furnishings, apparel, or for the innumerable varieties of objects which consumers buy.

During this period the relatively new science of organic chemistry was demonstrating its ability to turn hitherto useless substances of nature into valuable commodities. Chemical needs for raw materials were expanding. The newness of the organic chemical industry and the prospect that it would grow gave urgency to new questions.

Farm crops were full of cellulose, proteins, starch, sugar, oils, and other compounds, the very materials with which chemical manufacture could work. It seemed appropriate to inquire, then, whether industry could not use farm-grown raw materials.

The question was sharpened by the known fact that roughly half of the total tonnage of farm products—straw, stalks, rinds, shells, feathers, and many other parts—are inedible and for them farmers are generally paid little or nothing.

From these considerations rose the concept which came to be called chemurgy—the idea of putting chemistry and related sciences to work to accomplish larger industrial utilization of farm-grown materials.

Proposals were advanced that scientific research be activated to examine the components of the crops farmers grow, and to seek industrial markets for which some of these components could provide raw materials. It was urged that the unmarketable half of farm product tonnage, the inedible farm residues, be explored fully as sources of raw materials for industry.

Then the idea emerged that new kinds of crops might be discovered which could be grown solely or principally for their value as raw ma-

terials for industry. To whatever extent such crops could be grown profitably by farmers the acres they occupied would serve to prevent surpluses of the existing overproduced crops.

Through recent decades a considerable amount of progress has been made toward developing both new uses and new crops. The extent of this progress, however, has been far less than the apparent potentials. The lack of adequate research has been a principal reason why progress has not been greater; there are some other reasons which will be touched upon later.

CROPS ARE ANNUALLY RENEWABLE

Two considerations of high importance to the national future should be inserted at this point.

Mineral resources are exhaustible. They cannot be re-created. Once consumed, mineral substance is gone forever. Already American industry has found it necessary to bore far deeper into the earth for oil, and to search beyond the national borders for iron ore and other metals, both at increasing cost for the raw materials thus obtained.

In contrast, the resources from the vegetable kingdom are ever-renewable and relatively inexhaustible. The entire product of 1 year's crop, less seed, may be consumed in 1 year and fully reproduced in another season. So long as soil and water are adequate, more crops can be grown. Only about 2 percent of the body of most plants is actually extracted from the soil; the rest of the plant's constituents are derived from moisture, atmosphere and sunshine. Fortunately the minerals requisite for that 2 percent appear to exist in abundant supply for the indefinite future.

Therefore the utilization of crop materials for industry constitutes conservation of the Nation's resources, a fact that far-sighted statesmanship will take into account.

CROPS FOR PAPER

For the successful establishment of a new use or a new crop an existing or creatable need is essential, an adaptable plant species must yield raw material which is suitable, manufacturing processes and facilities are required, and those who will engage in the various parts of the enterprise must be able to anticipate profits. A new crop will usually require agronomic experimentation to determine the best methods of culture, and frequently also will need genetic development either to improve the economy of cultivation or to enhance the content of its desirable components. These points can be brought out more clearly by citing some particulars.

Cellulose fiber has become a major organic raw material. Paper, plastics, rayon, building requisites and many other items in daily use call for cellulose. Paper alone is now consumed at the rate of 418 pounds per person per year, and has risen steadily in price for decades. The major source of cellulose for paper and other products has been woodpulp. Large quantities have to be imported.

A prospective new source of cellulose, and new crop for the United States, is timber bamboo. Enough has been learned about it to in-

dicating that it will yield 4 to 6 times as much cellulose per acre as does the fast-growing southern pine, that it will attain full maturity about twice as quickly, and that superior paper can be made from the pulp. Once an acreage becomes established an annual harvest can be removed. All cutting and handling can be done economically with power machinery. Bamboo apparently will flourish in most areas where cotton or peanuts, both now in surplus, are grown; it may be adaptable to as many as 50 million southern acres. Aside from wood-pulp it has structural and other uses.

The paper industry is also a major market for another new crop, not yet fully established; this is guar, a legume whose seeds yield a gum. This gum materially aids in certain papermaking processes, and has other industrial uses. Under the encouragement of a private milling industry some 70,000 acres were planted last year in Texas and Oklahoma.

New crops, such as bamboo and guar, are not the only means by which agriculture can contribute to paper industry needs. Crop residues—millions of tons of straw, cornstalks, cotton stalks, and other fibrous materials—are available when economic means for their collection and transportation can be devised. Most of these are now unmarketable and wasted.

New strains of corn, with an 80 percent or greater content of amylose starch, are being bred. Amylose produces a long molecule, rather than the small, round one of ordinary starch, and thus can be used in paper not merely as a sizing but as an integral part of the fiber. It can be made into transparent plastic sheets, and may eventually appear as a transparent, edible wrapping for meat and other foods.

PRESENT INDUSTRIAL NEEDS

In many other extensive and important areas needs exist for materials which the increased development of new crops and new uses for crops can supply.

The United States now is compelled to import 85 percent of its vegetable tannins, a condition which might well become troublesome in an emergency. Canaigre, which grows naturally in the Southwest, and can be cultivated mechanically as an annual crop, is a proven satisfactory source of tanning materials. With some additional research it can be established as a crop to the benefit of the producing areas and of the leather industry.

The Nation does not produce its requirements either of hard or soft fibers. Kenaf, sansevieria, hemp, phormium, ramie, and many other plant species offer potentials as new crops to fill these needs which, incidentally, have strategic as well as industrial importance.

The pharmaceutical industries present numerous opportunities for new crops, important though generally small. Dioscorea, the yam from which cortisone is obtained, and Rauwolfia, a source of tranquilizing drugs, are examples.

Industry has need for additional domestic sources of waxes, anti-oxidants and gums. Plant species which yield suitable ingredients are known and can probably be developed as crops.

An interesting fact, whose potential with reference to possible new crops is yet to be assessed, is that certain species of plants extract from the soil and concentrate in their substance rare and valuable minerals such as selenium and germanium.

Some of the industrial needs and corresponding new crop opportunities just mentioned may seem to be and are minor so far as potential acreage and consumption may be measured. In total they may become impressive, and each acre thus occupied will be an acre not competing with the surplus crops.

VEGETABLE OIL CROPS

The field of vegetable oils, however, commands markets which are not only large already but which continually expand. The vegetable oils serve multitudes of uses, are turned into hundreds of different derivatives, and are constantly demanded for new purposes. Although for some purposes various vegetable oils are interchangeable, numerous of their uses require specific components which only one crop species can provide.

Among the new crops which have been successfully established in recent times are durum wheat, the navel orange, avocados, dates, lespedeza, ladino clover, crested wheat grass, oriental persimmons, Acala cotton, Sudan grass, and various forages. The outstanding example, however, is a vegetable oil crop, the soybean. This crop, new to the United States within recent decades, now occupies 20 million acres and yields more than 400 million bushels in a year. Although the output increases year after year soybeans have never been in surplus. It may well be noted that had not the soybean appeared, these 20 million and more acres would have continued to produce corn and others of the old crops which overflow the Government warehouses.

The castor bean grows best in the Southwest, on lands which now are largely in surplus cotton. Research has developed varieties which lend themselves well to complete mechanical handling. The industry which handles castor beans confidently asserts that within 20 years it could be using the produce of a million acres. Castor is solely an industrial oil with important strategic significance. Wartime necessities for castor oil led to the payment of incentives which produced more than 150,000 acres. The acreage this year was 15,000; imports are considerable. Proper steps can make certain the establishment of castor beans as an important crop which, where grown, will afford an alternate for the production of surplus cotton.

The unusual qualities possessed by safflower oil have been recognized by a demand which now takes the produce from around 100,000 northern California and western Nebraska acres.

These are but a few examples, cited to indicate that industrial markets do exist for new crops and that plant species are being developed which are capable of supplying these needs. Vigorous research and development effort could result in their making substantial improvements in the farm incomes of various areas. Many other examples could be listed.

NEEDS YET UNREALIZED

The "old" crops common to agriculture are indeed old. They were not selected with reference to modern conditions, but have been perpetuated from the truly prehistoric past. Within the United States about 150 species are cultivated commercially. The Department of Agriculture lists 52 kinds as "principal" crops. Around the world

some 250,000 species of higher plants are known to science. Relatively few of these have ever so much as been examined with modern laboratory equipment to inquire what useful compounds they may contain. Inasmuch as within the area of continental United States almost every combination of growing conditions exists—soil, temperature, moisture, altitude, and other factors—almost any new species not truly tropical may be domesticated.

The most important new crop that modern times have seen to become established is rubber. Three-quarters of a century ago the world was unaware of any great need for rubber except for rainwear and a few other trivial purposes. Now civilization rides on rubber. New plantations are being created to maintain the supply, even though synthetic production is immense.

New needs for other plant materials will arise in the future. Until cortisone was discovered no one was conscious of need for the plant species which now supply the basic steroids. Until the merits of *rauwolfia* became known no demand for its roots existed. Both of these instances have arisen within the past decade. These needs appeared before the sources were adequate, and they are still inadequate.

American agriculture and the national economy both most certainly could profit if a comprehensive study of the earth's entire wild flora, the whole vegetable kingdom, were carried out with full use of effective modern scientific devices to determine the components and nature of every plant kind. The cost would be far less than that of shooting balls into barren space and the results probably far more beneficial to humankind. Not only could new materials for present known uses be disclosed, but materials discovered to meet needs yet unsatisfied or even yet unknown. Not only could more new crops for our agriculture be expected, but new industries could follow to bring new items into the standard of living.

Men search the ends of earth for mineral wealth which, when consumed, is irreplaceable; the green frontiers of the vegetable kingdom will yield up wealth that is annually renewable.

LARGE SURPLUS, HUGE POTENTIALS

The potentials for much-increased industrial utilization of present and established crops invite vigorous exploration.

No farm product stands in greater or more continuous surplus than starch, the major component of corn, grain sorghums, wheat, and potatoes. None has greater industrial possibilities. Starch can be modified and altered by chemical, microbial, and physical means, and caused to assume a multitude of forms. As more becomes known about starch, especially as basic research penetrates certain remaining mysteries of the starch molecule, its several hundred present industrial uses undoubtedly can be extended in volume and multiplied in number.

Really vast industrial uses for starch are envisioned in research proposals which have been advanced by highly competent scientists. To mention a few of these:

Starch derivatives to use in ore-flotation processes;

Starch for pelletizing iron ore;

Chemical combination of starch and cotton for such end results as one-use throwaway garments;

Starch to serve as a binding agent and in other ways with wood for improved building-construction materials;

Starch materials to act as soil stabilizers in roadbeds and embankments for highway construction;

Starch for chemical base in plastics, textiles, and structural materials;

Starch for sewage and water treatment, silt prevention in lakes and reservoirs, and in reclaiming brackish or sea water;

Starch for insecticide and defoliating formulations;

Starch for rubber synthetics by way of alcohol and butadiene; and

Starch for detergents, antioxidants, and industrial acids.

These are large-volume fields. The ideas proposed are not idle dreams, but objectives which scientists believe can be achieved. Any few of them could consume hundreds of millions of bushels of grains which will otherwise continue to be in surplus.

OPPORTUNITIES ARE VARIED

Research to create new uses for nonagricultural materials has outstripped research to increase the markets for things which farmers grow. Ten years ago 80 percent of inedible animal fats went into soap; now the proportion has fallen below 30 percent, due to the rise of synthetic detergents. Recent studies, however, have shown that such fats themselves can be used to make detergents and have important values in certain types of plastics. As lumber impregnants to prevent moisture effects and for incorporation in cement and asphalt, animal fats may find extensive new markets.

Another area where agriculture has been researched out of its natural market is in the uses of hides and skins. Whereas 9 out of 10 shoe soles were made of leather a few years back, now 7 out of 10 shoe soles are synthetic. Other materials than leather have taken over much of the luggage market. Improved tanning methods and extensive basic research are needed for leather, especially because hides are normally an important item in the prices of livestock.

While fibers are not food products, they are large items in farm production, and cotton is in surplus. Research techniques have been indicated which promise much larger industrial uses for cotton and which can greatly improve its competitive position versus synthetic fibers in the field of textiles for clothing and other domestic uses.

Wool and mohair and their byproducts could be used in several industrial fields extensively if more were known about how to adapt them. As a single instance, wool felt has every desired quality but one for use as a filter and oil wicking in diesel-train journal boxes. It lacks in heat resistance. If wool could be made sufficiently resistant to heat by chemical or other treatment, this one would be nearly large enough to consume the present entire annual United States wool clip.

Sugar is a relatively cheap, pure compound whose chemical potentials have been little explored. Detergents, films, surface coatings, and plastics offer new outlets as research progresses.

The poultry industry turns out annually more than 100 million pounds of inedible eggs and egg byproducts, 300 million pounds of feathers, and many thousand tons of inedible wastes.

No attempts can be made here to mention all the industries, all the farm-grown materials, nor all the products which can emerge as science and technology devote to them increased attention. It is hoped that these few illustrations, however, will convey the conviction that here is a vast field for the improvement of farm income as well as for the economic betterment of the Nation.

RECOMMENDED ACTION

What can be done to hasten the establishment of new crops and the fullest development of industrial uses for farm products? The greatest immediate need is for scientific research on a much larger scale. This is a service to the Nation which will only be provided amply through the resources of the Federal Government.

Industries undertake research in these fields only when urgent need for otherwise unobtainable raw materials or the opportunity for sufficient profit may afford reason to do so. Most of the products and problems involved are too widely dispersed for any single State to assume responsibility. Farmers are not sufficiently organized or financed to do more than a little. Meanwhile, agriculture has had a watch while competitive raw material producers, better organized and financed, have invaded their natural markets not only as in soap and leather, but in paints, fibers, and other items in universal consumption.

Much of the research required is basic or fundamental in nature. Very little is yet known about the actual chemical components of most crop products. This type of research is particularly a Federal province, because when undertaken little can be foreseen as to where the eventual benefits will fall.

Congress in 1948 provided for the erection of four regional laboratories to study industrial uses. For nearly half of the time since then the laboratories had to be diverted to war work. Nevertheless they have produced such important results as the large-scale production of penicillin, frozen concentrated fruit juices, and more than 125 other processes which are now in commercial use. Some 300 other processes have been developed and await favorable conditions for commercial adoption, and many important studies are under way. However, the funds so far made available each year have been inadequate to employ sufficient force to yield quick and effective results.

The 84th Congress in Public Law 540 provided for the creation of a Commission on Increased Industrial Use of Agricultural Products. The report of this Commission, which by law expired last June 15, has been published as Senate Document No. 45. I commend this report to the attention of those who wish more detailed information than this statement can include.

The Commission urgently recommended that the appropriations now available for industrial uses and new crops research should be approximately trebled, up to around \$50 millions. It suggested that such funds be used not only in Federal establishments but in the land-grant institutions and for contract work by independent institutions and private industries. The Commission recommended a total appropriation on the order of \$100 million annually, in order to provide training for additional scientific manpower which is urgently needed, facilities, as well as to meet costs of large-scale trial com-

mercialization, and to provide incentive payments in order to bridge over what was called the awkward stage which frequently prevents or delays effective establishment of a new enterprise.

A POSITIVE PROGRAM

Farmers, as do other Americans, like to advance. Their urge to progress has been manifested by their swift adoption of revolutionary new techniques in mechanics and science. Their impulse to push ahead has been shown by the skills with which they have nullified attempts to restrict their output. They have increased production per acre and per man. Prospects indicate that neither increasing population, increased food consumption, nor expanded foreign markets can keep pace with the advancing agricultural technology.

They will hail every new opportunity to diversify their effort, and to produce crops that offer alternatives more profitable than those which now only accumulate surpluses. They will welcome opportunities to pursue an affirmative program that will open up new markets and new fields for agricultural and business endeavor. They want to be part of the ever-expanding American economy.

Through a vigorously prosecuted program of research and development to establish new uses and new crops, this can be brought about.

THE PLACE OF FOOD PROMOTION AND ADVERTISING IN EXPANDING DEMAND FOR FARM PRODUCTS

Herrell DeGraff, Cornell University

I would like to begin this discussion in an area quite removed from the topic assigned. The reason is that I believe food advertising and promotion, as effective means of building additional market for farm products, are related to certain fundamental characteristics of our farm economy and of our national economy. To some of these I would like to make brief reference.

I

The first of these is our annual crop output and how we use it.

The United States turns out more total annual crop production than any other country in the world—even including China or India-Pakistan, with their very much larger populations. Our crop harvests, if used to supply an oriental type of diet, would furnish 3,000 calories of food per person per day for a population roughly 3 times as large as we now have. It would be a diet based predominantly on cereals, supplemented by potatoes, beans, and other plant products. It would contain a very small fraction of animal products—only 4 or 5 percent, as is the case in the more densely populated areas of the Orient.

But, of course, we do not use our crops in the oriental fashion. We could not do so and ever achieve a balance between production and consumption. Instead, we normally feed to livestock between 70 and 75 percent of our total tonnage of all harvested crops, in addition to the forage produced on pasture and rangelands.

Cattle, sheep, hogs, and poultry, in the proportions in which they are raised on American farms, concentrate about 7 pounds of dry matter in feeds into 1 pound of highly nutritious animal-product foods. Thus, enormous tonnages of crop products, which the Nation cannot otherwise use as such or sell to advantage in world markets, are converted and concentrated into much smaller quantities which can reasonably well balance out with our domestic population.

This illustrates a fundamental principle of our food supplies—the principle of food elasticity. The primary consideration is crop output. The next question is how we use the crops. We could feed 500 millions on a wholly plant-produce diet. This would be stretching our food supplies to their ultimate. Conversely, if we feed the total harvests to livestock, we could maintain only one-seventh as many people—about 70 million—on a wholly animal-product diet. All of which puts the primary function of livestock in our agriculture and our food supply into proper focus. The animals are the balancing factor, without which we would at all times be buried so deeply under

excess crop production (surplus) that we could never possibly balance what we produce with what we can consume.

At present approximately half of the total pounds of food in our national average diet are animal products—red meats, poultry meat, eggs, milk, and milk products. On this basis we are a little short of having sufficient domestic and overseas market to balance production at what generally is considered to be acceptable prices to farmers.

What farmers need is more market—and the fundamental question we are all concerned with is how to get it.

II

The remarkable population growth we are now experiencing is providing some market expansion from year to year. On the other hand, increasing yields per acre and per animal unit are apparently at least an offset. Thus what is needed is a little bigger market per person.

This we quite certainly cannot get by selling more pounds of food to most individual American consumers. For half a century our per capita disappearance of food has varied only in a narrow range from an annual figure of 1,550 pounds. And this figure seems somewhat more likely to decline a little than to increase.

The only answer to more domestic food market per capita lies in the livestock function in agriculture.

If the livestock fraction of the diet could be slightly increased, we would be moving in the direction of more agricultural resources used per person of the population—which, in effect, is an expansion of market.

How much shift would be necessary? During the past 35 years during which surpluses have been chronic, about 2 percent more livestock production annually would have used up all the surplus crops. Moreover, a comparable 2 percent more livestock would go far toward establishing the balance between production and consumption that we are now seeking. (This statement refers to current production, and does not take into account the accumulated excess stocks.)

In recent years 81 percent of our total agricultural land resources (converted to cropland equivalent) have been used for livestock feed, 15 percent for food crops, and 4 percent for industrial crops. As mentioned above, the 81 percent produces half of the pounds of food in our diet—the 15 percent produces the other half. Enough land shifted to current feed production to increase livestock output by 2 percent would decrease acreage for food crops and industrial crops by about 10 percent. Each person of our population would then be eating the product of a little more agricultural resources, some market expansion would be accomplished, and a better production-consumption balance would be achieved.

I am fully aware of the distortions now existing and the threat to livestock producers resulting from the present excess stocks of feed grains. Surely these cannot be dumped suddenly on the livestock industry, nor can livestock be expected to function adequately as the balancing factor in our agriculture and our food supply until these stocks are worked down to something approximating normal carryovers.

Ever since the price decline following World War I national agricultural policy has properly been directed toward relieving the economic disadvantage of farmers. But solutions to the farm-income problem have been sought in terms of the major crops—the so-called basic crops—and have fallen a good bit short of being successful. The balancing function of livestock has been overlooked or hampered.

I make this statement for clarification and not as a criticism.

Livestock, in our agriculture or in any other agriculture in the world, are a means of marketing crop products. What they get is the residual after higher priorities are filled. But with us that residual is about three-quarters of the total.

Price supports for crops have, at times, put another bidder in the picture between the higher priorities and the livestock—and our Government, in consequence, has been left holding such quantities of price-supported crops as would not clear the market at the support price. This is the origin of the surpluses that have built up to very large size over a period of years out of relatively modest year-to-year additions. Our potentials for surplus are fantastic when tonnage is bid away from livestock, and when three-quarters of our total tonnage is normally feed.

In other words, crops have been the end point of our price policy, whereas livestock is the end point of the major segment—and the balance wheel—of our agriculture.

Alternative policy would be to foster the production of products for which the elasticity of demand is higher, for which the market is more expandable, which would use more farm resources and thus provide more market per capita, which would assist in maintaining the balance between production and consumption.

But I do not conclude that the answer we are seeking is artificial prices (price supports) for livestock, because I believe these would lead to even more serious problems than price supports for crops.

It is these circumstances and this background that has led to my interest in food advertising and promotion. Can these tools be used to increase the demand for livestock products?

The goal is quite modest, in fact, encouragingly small. Can 2 or 3 percent more meat, poultry products, and dairy products per person be sold in our markets without producers taking lower prices? Can the demand curve be shifted this much and by this means?

III

Basically what we are talking about is successful selling. Advertising and promotion activities are salesman's tools. They are not all of selling, but they are and can be very important.

We live in an economy that is much influenced and that has been much modified by successful selling. In scarcely more than a generation we have been sold a vast array of new things most of us didn't know we wanted—automobiles in endless new models, radio, television, Rube Goldbergs for the kitchen and hobby shop, air conditioning, and numberless gadgets dreamed up by people who always are sure they have something all of us need. Our society has come to be characterized by the development and production of new goods and services designed to satisfy newly created wants.

In such a society salesmanship rises to eminence. The farther any society moves away from subsistence, the greater is its capacity (1) to divert productive resources to new products and services and (2) to indulge frivolous whims in consumption. Certainly if we look at ourselves now with the conscience of a Calvinist we have to conclude that a sizable part of our present American standard of living is purely frivolous. That this is true is a tribute to salesmanship.

More than most of us would acknowledge we are molded by salesmanship. We may pride ourselves on our capacity to sort out and discount the self-serving appeals to our pocketbooks. But we still fall for whoever piques our curiosity, stimulates our imagination, and ends up creating a "want" in our minds where that "want" didn't exist before.

I do not mean that I consider myself and my fellow citizens to be economically irrational. The point is that human wants are insatiable—not for the essentials of life, but completely so for the frivolous things.

In a market where consumer spending power is very limited—where all the capacity to spend is absorbed by the barest essentials—little gain is to be expected from aggressive selling behind any product. But exactly the opposite is true in a society like our own, where the capacity for discretionary spending—money that can go either one way or another—is very large.

Over the years the essentials of living have required less and less of our productive efforts. Some formerly frivolous things have become "essentials" and new frivolities have taken their place.

In this kind of an environment, advertising and merchandising—the sum of which is sales promotion—become an important part of selling. Their purpose is first, through advertising, to tell what is available, what are its characteristics and values, and why the prospective purchaser would find satisfaction in the product. Second, if it is good sales promotion, it includes the merchandising activities carried on somewhat closer to the prospective purchaser, that follow up on the advertising and convert a mere interest into an actual sale.

Advertising and merchandising have become notably successful tools in a market as large and diverse as that existing in the United States—because to reach such a vast mass market it is necessary to use mass selling mediums. How else can more than 170 million people be reached across more than 3 million square miles? And they are effective tools because in a market like ours a very large part of total consumer demand is highly subject to influence.

In such a market aggressive selling may function so well as actually to affect the demand schedule of the public—in other words to move more goods at a given price. Or, alternatively, to increase the elasticity of demand—resulting in a greater sales response for a given price change.

Through changing the characteristics of demand, it becomes possible that competition in the market does not need to concentrate solely on price. Instead, at least in part, it can center on service and convenience, or on emotional appeals—or, let's hope, on highly ethical efforts to educate consumers and upgrade the understanding of product values. All of these techniques—and more—have been used in promotional efforts, because in one situation or another each has successfully boosted sales. All will continue to be used, because

in our highly competitive market no stone can be left unturned by the producer who would successfully appeal for the consumer's dollar.

That the American people now have more capacity for discretionary spending than any other people ever had is only half of the story. Among sellers the competition for this spending is equally great. We live with the kind of market where the producer who tells his story most effectively, who follows through most forcefully with his sales effort all the way to the consumer, is the one who gets the business. It is pointless to argue that consumers are easily seduced and often get less than maximum satisfaction for their money. Desires (wants) are individual—more so as discretionary spending increases—and the satisfaction of them stems largely from selling.

IV

I do not think that food-selling is, or can be, essentially different from the successful competitive selling of other products.

Food is, of course, more necessary—far less frivolous and less luxurious than many other consumption goods. But this is much more true for the aggregate of all foods than it is of individual foods. In our highly diverse diet there is a very large potential for the substitution of one food product for another—and for this reason alone there is an equal potential for successful aggressive selling.

In other words, our food market provides a setting in which the producers and processors of any one food can expand their market by effective promotion. At least, they can do so relative to other foods.

Some persons, who see the problems and the opportunities differently than I do, frequently argue that the market for food is so different from the market for many other products that aggressive selling of food is self-defeating. The argument runs that the human stomach can hold only so much, and that the food market is measured by the size of the stomach multiplied by the national population. Thus they argue that what one food may gain from aggressive selling is offset by a corresponding loss in sales of one or more other foods.

It is my thinking that such an argument stems from a major error in interpreting the character of our agriculture. The error is to regard all of agriculture as though it were a single-unit business.

The people, it seems to me, who are most prone to fall into this error, are economists, college professors, and legislators. These are groups who characteristically look at agriculture as a whole. The nature of their work and their responsibilities cause them to see farm problems in a broad setting, and consequently tend to treat agriculture as a single aggregate. The tendency is wholly understandable, but the agricultural facts of life make it no less an error.

If American agriculture ever was properly treated as a single-unit business, it no longer can be so regarded. It must more properly be seen as some 1.5 to 2 million commercially operated farms—in other words 1.5 to 2 million individual business units—producing many different products. Increasingly these individual farms are specialized in the production of one, or a very few, commercial products each.

Many of these products are directly substitutable one for another, and thus are directly competitive. In consequence the producers (groups of producers) of each such product are directly competitive one with another, as all strive to improve their own place in the market, and to increase their own share of the consumer's food dollar.

The essential point here is that competition among different groups of commodity producers has come to be no less aggressive than is competition between food as a whole and the many nonfood items in consumers' total spending.

This is a setting, then, in which the producers, or groups of producers, who do a good job of competitive selling are the ones who get business away from other producers who sell less aggressively.

If our diet were less diverse, and thus held less potential for substitution, and also if farmers were less specialized, the intensity of competition among different food items would be significantly reduced. But a high degree of substitutability in our diet and a high degree of specialization in our agriculture are facts that cannot be overlooked. Consequently, just as in the nonfood segments of the national economy, aggressive selling can serve the competitive interests behind different food products. This fact rather thoroughly fractures the untenable concept of unity in agriculture.

V

As the American economic society has moved ever farther beyond a mere subsistence for our people, consumers have been able to buy the necessities of life with a decreasing proportion of their income. Their correspondingly increased capacity for discretionary spending could go entirely for nonessentials, or it could go in part for upgrading their purchasing of such essentials as food. This means more of the preferred, higher-priced foods and more food services—and in fact, this is exactly what the American people have done.

Before the war, food purchases absorbed 23 percent of per capita disposable income. The same per capita quantity and kinds of food could now be bought for 16 percent of disposable income. But the American people, with their increased spending capacity, obviously are not now satisfied with their prewar diet. They are actually spending for food 25 percent rather than 16 percent of their income after taxes. In other words, of present per capita expenditures, two-thirds are going for the equivalent of the prewar diet and one-third for increased amounts of the choicer foods and for additional food services.

How much more "market" for farmers has been provided by improvement in American diet in the last 20 years?

From 1935-39 through 1956, per capita consumption of red meat increased 30.5 percent; eggs, 23.3 percent; and poultry meat, 88.2 percent. An enormous quantity of additional feed—additional market for United States crop production—is represented in the much-expanded output of livestock products which has provided both for the increase in population and these increases in per capita consumption.

In the 5 prewar years, 1935-39, the annual consumption of all feeds utilized in the production of beef, pork, poultry meat, and eggs was 213.5 billion pounds of corn equivalent. In 1956 the total was 365.3 billion pounds—or an increase of 71 percent above prewar.

Of this increase, 30 of the 71 percentage points was absorbed by increased population and 41 of the 71 by improvement in per capita consumption.

This means that the market for American farmers is not measured by the number of stomachs in our population. Instead, it is the number of stomachs adjusted either plus or minus or what we put in them. More persons—more stomachs—fed on plant products might be a smaller market. More persons consuming an increased proportion of livestock products inevitably means a much larger market.

American consumers have bought their improved diet—these sharply increased quantities of livestock products—without anything like a corresponding decrease in the retail price of livestock-product foods. What is the explanation? Is it nutrition education? Is it increasing recognition of the satisfactions of good eating? Is it the result of the food-promotion work done by such groups as the National Live Stock and Meat Board, the Poultry and Egg National Board, the American Meat Institute, the American Dairy Association, and the National Dairy Council?

If anyone wants to concede effectiveness and give credit for gains to promotional work such as these groups have done, then advertising and promotion of the livestock-product foods already have proven a success. If anyone wants to go to the other extreme and withhold any credit for such efforts, then at the very least consumers have proven themselves ready to go along with promotion of livestock-product foods—as proven by their own purchases in the market.

VI

Fifty percent of the pounds of food in the average American diet are now livestock products. But it isn't quite enough to give farmers the market they need. Two percent more livestock products per capita would result in reasonable balance between total current farm production and total consumption. Three or four percent more would give a significant lift to all farm prices.

To attain either goal requires a shifting of demand schedules for livestock products so that larger quantities will be bought at a given price.

Here, then, is the place to concentrate sales efforts that can really serve the needs of American farmers. I think the goal of a continuing, expanding market for the full production potential of our farms and ranches can be achieved only by aggressive educational efforts and sales promotion, concentrated on the product for which the market clearly is most expandable—the livestock-product food.

A variety of appeals can be used for the larger share of the homemaker's dollar that we are trying to get. Health angles, the enjoyment of good eating, and gracious living are potent appeals—but not the only ones. It is a large and complex job that must be done—because Mrs. Homemaker is not easily moved when price is not the basis of appeal.

Yet the competitive bidding for the consumer's dollar in the American market is so intense that agriculture certainly cannot ignore it amid all the appeals for enticing but frivolous things.

To me, it is absurdly fatalistic to gain sales only through price reductions. The first lessons taught me by the first sales manager I ever worked under was that anyone can give things away—but that it takes work, and imagination, and aggressive promotion to really sell. That lesson was learned in the early 1930's. It applies equally to any competitive market today. And agriculture has the most competitive market, in bidding for Mrs. Consumer's money, that it has ever seen yet. The promise for the future is only that it will be more competitive still—and how is agriculture going to meet that challenge except by selling—and selling hard—those products which can expand its market?

IX. DIRECT PAYMENTS TO PRODUCERS; COMPREHENSIVE VERSUS COMMODITY-BY-COMMODITY PROGRAMS

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DIRECT PAYMENTS TO PRODUCERS; COMPREHENSIVE VERSUS COMMODITY-BY-COMMODITY PROGRAMS

DIRECT GOVERNMENT PAYMENTS TO FARMERS

Lauren Soth, the Des Moines Register and Tribune

For nearly three decades—since 1929—the Federal Government has been carrying on direct-action programs to increase the incomes of farm people above the levels provided by the free market. A secondary purpose has been to stabilize the supplies and prices of farm products from year to year.

A variety of methods has been employed, including some straight subsidies. But the major emphasis in this effort to increase farm income has been to raise the level of prices received by farmers. The Government has helped farmers cooperate in applying acreage controls and marketing quotas in an attempt to reduce production of basic farm crops. Also, prices have been supported directly in the markets by Government purchases and by Government loans on storable commodities. Price supports have been backed up by import controls and by export subsidies.

EXPERIENCE WITH PRICE SUPPORTS

The results of these programs have been disappointing in some respects. Acreage controls have proved to be a weak instrument for controlling farm production. Controls have been applied only to a few basic crops, and the producers of these crops have been able to offset reductions in acreage quite readily by stepping up output per acre. Acreage allotments have diverted production into noncontrolled crops and livestock to some extent. But on the whole, it is fair to say, agricultural production has been restrained only slightly, if at all.

Price supports have benefited farmers producing a few basic crops, but producers of livestock, livestock products, vegetables, fruits, and most other foods have been helped scarcely at all by the acreage control and price support programs.

During World War II farmers were guaranteed minimum prices for a long list of farm commodities, including livestock, livestock products, and other perishable commodities. However, market prices were high enough during most of these years so that no action by the Government was required to fulfill the guaranty to farmers.

One exception occurred in the winter of 1943-44. The Department of Agriculture was faced with a difficult task in trying to make good on the Government guaranty of hog prices at 90 percent of parity. An enormous pig crop in 1943 flooded the winter markets and sent prices below the guaranty. The Department tried to buy enough pork to hold the market up to 90 percent of parity but was unsuccessful.

cessful. Experience with price supports on eggs, potatoes, and dairy products after World War II also was unfavorable. In these cases the Government was able to make good on price guaranties but only by building up great supplies of perishable products in storage. Some spoilage occurred, and part of the stocks had to be sold for lower uses. Potatoes were used for alcohol, and dried eggs and milk for livestock feed. The egg and potato "mess" was so widely denounced that Congress abandoned any guaranties for these commodities.

Even in the case of the "durable" commodities—wheat, corn, and cotton—the buy-and-store method of maintaining a guaranteed price level to farmers has not been an unmixed success. The Commodity Credit Corporation has accumulated supplies considerably in excess of those needed for safe reserves against crop failure or war emergency. Despite some reduction in price support levels in recent years, and despite strenuous efforts by the Department of Agriculture to dispose of surpluses overseas, the bulging bins and warehouses are still bulging.

The supply of corn on hand at the start of the current feeding year (1.45 billion bushels) was the largest on record. The stocks of wheat on hand last summer prior to harvest time were more than 900 million bushels. This is only 100 million bushels less than the record carryovers of the 2 previous years. Production has been so large that even though the Department of Agriculture has stepped up exports substantially by sales for foreign currency, the surplus has been barely reduced.

The accumulation of these huge reserves creates serious problems of storage and rotating of stocks to minimize spoilage. It also leads to export disposal programs which disrupt ordinary commercial trade in these commodities and antagonize other exporting countries, such as Canada and Australia.

Except for recent years, the price-support system for basic crops worked fairly successfully, and reserves in storage did not grow beyond requirements for "an ever-normal granary." It may be too soon to conclude that the established system of price support for these commodities is unworkable, just because of 2 or 3 years of excess supplies on hand. Nevertheless, recent experience does warn us that reserves can become burdensome, even of highly storable commodities like corn, wheat, and cotton.

Protecting farmers' incomes by means of Government buying farm commodities to support prices has these serious drawbacks:

1. Such price supports are practical only for a limited number of storable commodities.
2. Such price supports, concentrated on a few commodities, tend to distort the pattern of agricultural production. Despite acreage controls, price supports plainly have stimulated output of several of the basic commodities in recent years. Allotments and quotas based on farm history tend to hold crops in traditional areas and limit desirable changes which would otherwise come about through new technology, changing markets, and so on.
3. Supporting prices by buying the commodities leads to serious problems of storage and disposal.
4. Price supports interfere with our national policy of establishing freer trade in the world. When United States prices are fixed above

world levels, import quotas and high tariffs are necessary to prevent the American market from being flooded from abroad—and export subsidies become inevitable as a means of disposing of our surpluses.

THE DIRECT PAYMENT METHOD

In light of the weaknesses and shortcomings of the acreage control, price-support methods of increasing farm income, more consideration might well be given to the direct-payment method.

This would not be anything new, for the Federal Government has been making substantial payments to farmers since 1933. In the early stages of the agricultural adjustment program, benefit payments were paid to farmers for complying with acreage allotments. Since then, farmers have received substantial payments under the agricultural conservation program for using lime and fertilizer, planting legumes, building erosion-control structures and for drainage. During World War II, subsidies were paid to livestock producers and to milk producers in order to hold down prices of meat and milk to consumers.

The following table shows Government payments to farmers, as reported by the Department of Agriculture:

Year	Total (millions)	Per person living on farms	Year	Total (millions)	Per person living on farms
1933.....	\$113	\$3	1945.....	\$659	\$26
1934.....	397	12	1946.....	638	26
1935.....	498	15	1947.....	277	10
1936.....	242	8	1948.....	227	9
1937.....	283	9	1949.....	162	6
1938.....	377	12	1950.....	249	10
1939.....	661	21	1951.....	251	10
1940.....	626	21	1952.....	240	10
1941.....	472	16	1953.....	186	8
1942.....	563	19	1954.....	225	10
1943.....	563	21	1955.....	200	9
1944.....	687	27	1956.....	484	22

The most recent application of the direct-payment method of supporting farm income is in the soil-bank program. The only action necessary to make this a real farm-income support program would be to increase the rate of payments. If Congress were to step up the soil-bank payments, it would be feasible to lower price supports still further without lowering the incomes of farm people.

If the soil-bank payments were to be increased to replace price supports as a means of supporting farm income, it would be advisable to eliminate the "acreage reserve" part of the program, or to change to a "conservation" instead of a "historical" base. Acreage-reserve payments are made for reducing acreage of the basic crops below the regular allotments for those crops. Thus this part of the soil-bank program is really only an extension of the old allotment system, based on crop history.

If general income-support payments were to be made, it would be more sensible to relate such payments to conservation of the Nation's soil resources. The general taxpaying public would then be paying individual landowners for performing a task in the public interest—keeping land out of use when it is not needed and preserving it for future generations. In the "conservation reserve" part of the present soil-bank program, farmers are paid relatively small amounts of

money for putting land in permanent pasture, trees, or other long-range uses to conserve soil and water. This is the part of the program which could be readily expanded.

ADVANTAGES OF CONSERVATION PAYMENTS

General income payments to farmers have been proposed at various times, in the form of special lower income-tax rates or higher exemptions, checks from the Federal Treasury based on a percentage of the gross farm income and other forms of open subsidies. Such direct subsidies are paid to American shipping firms to permit them to compete with the maritime services of other countries. Direct subsidies to American farmers certainly are as justifiable as subsidies to the merchant marine. They would be more acceptable, however, if they were in the form of a payment for a public service performed—conserving the Nation's soil and water resources.

Experience with the conservation-payments programs and with the educational and technical assistance program of the Soil Conservation Service provides backing for this argument. Payments to farmers for performing agricultural conservation practices have been popular with both farmers and nonfarmers. Soil conservation, in general, has been one phase of Government activity in agriculture which has had general approval and practically no opposition.

Income-support payments based on performance of conservation practices would not create surpluses. If the payments were attractive for such practices as establishing timber tracts, permanent pasture, and other nonintensive uses of land, the effect might be to lower total farm output slightly.

It would be essential, however, that the payments be made for genuine conservation. In the agricultural conservation-payments program, the overall effect has been to stimulate output. Payments are made for liming, for drainage, for fertilizer, even for irrigation. Thus this program has been in direct conflict with the acreage-reduction program and other attempts to reduce farm output.

In the kind of conservation-payments program suggested here, the major objective would not be to reduce farm production but to raise farm income. But the program should be devised and administered so as not to stimulate output and intensify the overproduction problem.

ADJUSTABLE PAYMENTS

Direct subsidies to farmers for the performance of soil-conservation practices could be made adjustable according to some general index of business activity or prices of farm products. That is, the payments could be made to take up the slack in farm income from a sag in the market. During World War II and during the Korean war there was no justification for income subsidies to commercial agriculture. However, when export demand fell off and farm prices collapsed, there was nothing a farmer could do to maintain his income against forces beyond his control driving it down.

Such compensatory income payments to farmers in time of industrial recession or loss of foreign markets could be logically justified as part of the Nation's general economic stabilizing machinery. A

distinguished committee of the Farm Foundation made a similar recommendation in 1952. This committee said:

The primary objective of farm policy in times of depression threat is to see that large numbers of farmers are not bankrupted in the process of price adjustment and their production programs disorganized. Direct income payments are the most effective means of accomplishing such an objective, and they will provide the means for preventing the purchasing power of farm people from falling to levels which demoralize other lines of business as well as their own.

A Government payment program of this character would be simpler, cheaper, and less disrupting to the individual enterprise and competitive market system than the present program of price supports and acreage controls. It is true that direct subsidies would loom larger in the Federal budget than price-support costs. But the total cost (taxes and food costs) to the nonfarm public of maintaining a given level of farm income probably would be less.

With a payments system, prices would be free to reflect changes in demand and supply—except for a modest ever-normal granary price-stabilizing program which ought to be maintained. The objective of price supports in this kind of program would be to level out the swings in prices from year to year, caused by changes in production due to weather. The objective would not be to raise the long-run level of prices. Farmers would be free to grow what they pleased and to sell as they pleased. Incentives to produce efficiently and market efficiently would remain as strong as ever.

Direct payments to support farm income also would be much less of an interference with foreign trade than price supports when used to boost income.

MIGRATION FROM FARMS

Payments to farmers would have to meet the same objection as does any other form of subsidy, direct or indirect, in that they would tend to keep people in farming who are not needed there and who could serve the total economy better in nonfarm work. On the basis of the per capita income figures published by the Federal Government, however, agriculture could be paid a considerable subsidy and still not enjoy such high incomes as to stop the movement of people to other industries.

Nevertheless, a Federal payment program for farmers ought to be coupled with a corresponding payment program to farm families who want to leave agriculture and get established in urban occupations. It would be foolish to make farming so attractive, by means of Government payments, that the normal, healthy movement off farms ceased.

In the long run, the most effective action the Government can take in behalf of agriculture is to expedite the transfer of farm people to other occupations by means of education, employment services and loans and grants-in-aid to encourage people to leave farming.

PRICE AND PRODUCTION STABILIZATION

In addition to providing income support for farmers, direct payments might be used as a technique of price and production stabilization. The loan and purchase methods have proved to be successful in stabilizing prices of the major storable or basic crops. However, these methods obviously are impractical in the case of perishable livestock products, fruits and vegetables. It has been suggested, therefore, that farmers be given a compensatory payment in lieu of direct price support on such commodities. That is, if the market price fell below the guaranteed price, the farmer would be paid the difference in cash.

This method is being used at present in the wool price-support program. In this case, the objective is to increase income from wool production and stimulate more wool growing. There is no problem of a surplus of wool. If the same technique were to be applied to other livestock products, i. e., with a high level of support, some form of production control would be necessary.

A flat guaranty of 90 percent of parity returns for hogs, for example, undoubtedly would result in a big expansion in production, bringing market prices down. Such a plan, without modifications discussed later, would greatly increase the cost to the Government of the compensatory payments.

As a method of income support, direct payments related to prices of individual commodities would be a source of some of the same troubles that we now have with price supports on basic crops. The Government would be confronted with the administrative problem of allocating quotas to farmers. Very likely, some historical base would have to be used. This would tend to freeze production in the areas and on the farms where it is now located. Very likely, these quota rights would soon be capitalized in land values, as the acreage allotments and marketing quotas have been capitalized into land values in tobacco areas.

Despite these complexities, however, production payments to producers of nonbasic crops would at least have the merit of benefiting a larger proportion of the farm population than present supports do.

If production payments were used only as a means of stabilizing prices to producers, then many of these difficulties might be avoided. There is an obvious need for greater stability in agricultural markets, particularly in the markets for livestock and livestock products. Under the free-market system, farmers tend to overshoot the mark on production both on the upswings and on the downswings, with the result that we have large and wasteful price and production cycles for most of these products.

Trends in the hog market in recent years provide a good example. In response to rising prices of hogs in the Korean war, farmers raised a huge crop of pigs in 1951. When these pigs were marketed, prices fell sharply. This caused a reduction in pig production in 1952 and 1953, so prices rose again in 1954. In the winter of 1952-53, hog prices at Chicago averaged around \$17 a hundred pounds. A year later they were around \$25. The \$25 hogs in the winter of 1953-54 and the higher prices throughout 1954, induced farmers to raise more pigs in 1955. Down went prices again in the last half of 1955 and early 1956 to as low as \$10. There was some reduction in production

and a substantial rise in prices in 1957, but the handwriting is on the wall for another slump in prices in 1958.

These huge variations in hog prices—from over \$20 to \$10 within 1 year—were a consequence of unstable production. Consumer demand for pork was steady at a high level during all these years. The supply and price of corn have been a stabilizing influence on hog production at least up to the current year when corn price supports have been drastically lowered. So the ups and downs in hog production must have been caused almost entirely by farmers guessing wrong on prices.

Sensible Government price policy might do much to even out the flow of supplies and the movements of prices. A hog price guaranty of around \$18 or \$19 announced in 1952 for the year 1953 probably would have prevented such a sharp drop in pig production as occurred in 1952. With a stop-loss guaranty, farmers would have been more likely to maintain their usual production. Prices in 1953-54 would not have risen to \$25 and higher, so the incentive to expand pig production in 1954-55 would not have been so great. And prices might not have fallen to such depths in 1955-56.

Forward price guaranties of this type on dairy products, meat animals, and perhaps some other commodities could help smooth the price swings. The authority for adjusting these guaranties, within wide limits, should be lodged in an independent price stabilization board, with a status something like that of the Federal Reserve Board in monetary policy. The Committee for Economic Development recommended such a board in a study of agricultural policy published in January 1956. The Secretary of Agriculture, as a political officer, probably would have difficulty in setting prices for stabilization purposes—especially when lower prices were called for. An independent, nonpartisan board, with proper insulation, might be able to do so.

The direct payment technique might also be useful as a means of guiding and directing farm production to better fit consumer demand. For example, direct payments could be used to encourage production of meat-type hogs. The American consumer increasingly is demanding a lean type of pork. The consumer wants less fat in his fresh pork, in his ham and in his bacon. With a direct payment system for stabilizing hog prices, it would be possible to pay premiums for the best grade of meat-type hogs and thus stimulate production of that kind of animal and discourage production of the old lard type of hog. In Canada, all butcher hogs are sold on a rail grade or carcass grade basis. Carcasses are graded by Government inspectors, and farmers are paid on the basis of prices established each day and published by the Dominion Livestock Marketing Board. The Government pays a \$2 premium for each carcass which meets grade-A standards for weight, length, shoulder-back fat and loin-back fat. It pays a \$1 premium for carcasses which grade B. This Government premium for the desirable grades is paid in addition to the ordinary market price differentials.

The objective in a price-compensation program such as described here would be to improve on the ordinary free-market system, not to replace it. The free market obviously does not work very well in allocating production from year to year in the case of many of our farm commodities. Neither does it work very well in reflecting consumer demand for particular kinds and qualities of food products.

Direct payments could help improve the functioning of the market in these respects.

FARMER ATTITUDE ON PAYMENTS

One of the chief objections to direct payments for farmers, either the income support variety or the price stabilizing variety, has been that farmers don't want them. It is said that farmers want to receive their income through the market place and not via a Government check.

There is no evidence to indicate that more than a very small percentage of farmers have objected to the benefit payments in connection with acreage-control programs, conservation programs, or the soil bank. However, these payments have not been very large and they have not been considered major elements of the farm-income support programs.

Whether farmers would object to receiving much larger payments, as a replacement for market price supports, is uncertain. A number of studies of farm opinion, however, indicate that most farmers are not opposed to the direct payment method in connection with stabilizing prices of perishable commodities.

A study in Michigan by Dale E. Hathaway and Lawrence W. Witt, of Michigan State University, indicated a high degree of favorable opinion for the direct-payment method. About the same percentage favored payments as favored purchase and diversion. In the case of potato producers, who have had experience with the weaknesses of the diversion method of supporting prices, 2 to 1 favored direct payments.

A series of polls of Iowa farmer opinion by Wallaces' Farmer and Iowa Homestead, running from February 1953, to December 1956, showed fairly high percentages in favor of direct payments, with large majorities in favor of this method for hogs when hog prices were low in late 1955.

Here are the percentages showing Iowa farmers' attitudes on production payments versus Government buying to support hog and butter prices in recent years:

[Percent]

	Payments	Buy and store	No support or undecided
February 1953.....	37	48	15
December 1953 (butter).....	25	36	39
February 1954.....	36	45	19
July 1954.....	47	38	15
May 1955.....	52	38	10
August 1955.....	52	35	13
December 1955.....	66	13	21
December 1956.....	39	37	24

An opinion survey by the Des Moines Register and Tribune in November 1952, when hog prices were still relatively high, indicated about as many farmers in favor of direct payments as were in favor of the Government buying pork products to support the hog market.

In short, there is no conclusive evidence to indicate that farmers are strongly opposed to Government checks as a method of protecting their prices and incomes.

DIRECT VERSUS INDIRECT SUBSIDIES

A number of prominent farm organization leaders oppose direct payments to farmers for stabilizing prices or for supporting income. One of their objections, perhaps the main one, is the fear that the cost would be too high and that Congress would not pay the bill. Also, these farm leaders fear that farmers would be dependent on Congress for appropriations each year. They believe that farmers would get less income help in the long run this way than through the production control and price support programs.

In theory, production control decreases the Federal Government outlay for a given level of income support by raising prices in the market place. In practice, however, as we have seen, production control does not work. So the Federal budget is not any lower over the long run than it would be with a payments system. We are now paying the cost, in the form of losses of the CCC in disposal programs overseas, for price support programs of several years back.

Perhaps this experience will make the general public more aware of the fact that an indirect or invisible subsidy is no less a subsidy than an open one.

The choice between the invisible subsidy of market price supports and the invisible subsidy of direct payments is not an either/or choice. We now have subsidies of both kinds. The choice is whether to move farther toward the direct subsidy method and away from the indirect subsidy method.

So far as method goes—without saying anything about the level of income support—the economic arguments strongly favor the direct-payment method.

DIRECT PAYMENTS TO PRODUCERS

George K. Brinegar, University of Connecticut

I. INTRODUCTION

My comments on compensatory or direct payments are presented in four parts. Initially, some general remarks will be made concerning the uses of direct payments. Secondly, the costs of transferring income to agriculture are compared under price supports and direct-payments programs. Third, the secondary effects of price supports and direct payments are contrasted. Fourth, I turn briefly to an examination of past proposals for the use of direct payments. Lastly, some concluding remarks are presented.

II. GENERAL REMARKS

The salient economic difference between direct payments and price supports is both important and simple. Under price supports, a single set of prices is used to pay farmers for their products and to distribute them to consumers; while under direct payments, two sets of prices are used—one to pay farmers for the items they produce and a second to distribute these commodities among users. Thus, the direct-payments technique is a more powerful tool of program administration than is the price-support technique.

Direct payments provide an opportunity for implementing programs having a greater impact than do price supports. This impact may be either desirable or undesirable. Direct payments in themselves are neither good nor bad; the program they are used to implement determines whether the results are good or bad.

Direct payments can be used to reach many possible objectives. They can be used to transfer income to agriculture, to stabilize agricultural income, to raise and/or stabilize agricultural prices to producers, to lower food and fiber prices to consumers, to "solve" surplus-disposal problems, to promote international trade, to improve nutrition levels, to increase the level of employment, and to lower the Consumer Price Index.

The potential usefulness of direct or compensatory payments is high because they can be used along with almost all, and as a substitute for many, of the tools commonly used to implement agricultural policy. Direct payments can be used with price supports, credit programs, soil-conservation measures, soil banks, storage programs, surplus-disposal programs, consumer programs, export programs, acreage allotments, marketing agreements and quotas, classified pricing systems, etc. Additionally, direct payments can be used to replace many of these devices. The administrative problem of using direct payments in combination with other measures is not complex. The administrative problem may well be eased by using several

measures in combination, rather than by placing the entire burden of program implementation on a single or small number of techniques.

At this point, to place the topic in perspective, note is taken that the choice to use a direct-payments technique or a price-support technique is not determining with reference to many important problems in agricultural policy. This choice does not necessarily govern (1) the average levels of prices farmers receive and pay, (2) the relative prices among agricultural commodities, (3) the flow of resources into agriculture, (4) the output of food and fiber, (5) the incomes of farmers, or (6) the changes in the efficiency of agriculture. Farm incomes can be high or low under either technique, food can be over or under produced under either technique, resources can be wasted or efficiently employed under either technique—and, perhaps most important, the rate of economic progress can be speeded or retarded under either technique.

The magnitudes of the problems associated with the use of price supports and direct payments appear to be similar, though the actual problems differ. One major difference is that under price supports, surplus disposal becomes a major problem—or more accurately a perpetual series of problems, domestic and foreign, requiring solution over and over again with results satisfying no one. Under direct payments this set of problems is avoided by placing all production on the market. In this way all agricultural commodities are permitted to enter domestic and foreign trade through regular channels of commerce, and thus special Government dumping and barter deals are eliminated. Elimination of special Government dumping and barter deals would make a significant contribution to a freer flow of international trade as well as to more nearly make our actions consistent with our expressed trade policies.

On the other hand, under direct payments, the added variability that is introduced into the market prices, permitting all commodities to clear the market, generates secondary problems. The secondary problems that flow from this added price uncertainty affect both producers and consumers. One of the most difficult problems, common to both techniques, and one that affects total agricultural output and its composition, is that of fixing minimum prices for farm commodities. For example, what will farmers receive for wheat? Under either technique this price might be \$1.50, \$2, or \$2.50 per bushel.

The major factors in determining the feasibility of employing these techniques, at the administration level, are largely dependent on the average level of minimum prices that are set or the amount of income to be transferred to agriculture, the number of commodities included under a program, and the specific provisions of the program that are not necessarily directly linked to the use of either price supports or direct payments. If minimum prices are set low, or to put it a different way, if a small amount of funds are to be transferred to farmers, either method can be administered with ease. Alternatively, if an attempt were made to double agricultural income and to include every agricultural commodity in the program, neither plan would work well.

In the past, the factors that seem to have determined the feasibility of using direct payments, at the national policy level rather than at the program administration level, center on the facts that Treasury costs of transferring a dollar of income to farmers are much higher under direct payments than under price supports; while, on the other side

of the coin, the domestic consumer is better off, per dollar of income transferred to farmers and per dollar of total cost, under direct payments. In a real sense the decision to use price supports or direct payments is in a large measure, though not exclusively, a question of whether the gains to consumers, under direct payments, are of sufficient magnitude to justify the increased Treasury payments required by direct payments. Put in this context, the problem of determining the extent to use direct payments depends on quantitative measures of gains and losses rather than on ethical considerations.

We now turn to an examination of the differences that will be realized when the choice is made between the use of direct payments and price supports. In all cases this comparison will be made on the assumption that the total amount of income to be transferred to farmers is the same independent of the transfer method employed.¹ This contrast will be drawn, not between specific proposals, but in the abstract in the effort to be meaningful in a broader context than would be the case in a comparison among specific agricultural programs.

III. COSTS OF DIRECT PAYMENTS PLAN

The total cost of a given program of farmer benefits—in terms of Treasury outlays and consumer payments for food and other items—would not be significantly different under direct payments and price supports. The distribution of the cost per dollar of income transferred to agriculture would be different, however, as between the two plans.

Under the direct payments plan households with low incomes would likely gain the most. The real cost to the public would be lower under direct payments than under price supports. Cost to the Treasury would be about three times as much under a direct-payments scheme as under a price-support technique.² Lastly, private costs, exclusive of taxes, are much higher under price supports than under direct payments.

Total costs.—The total costs, Treasury plus private, of transferring a specified amount of income to farmers is virtually the same regardless of whether direct payments or price supports are used. The mechanics by which markets would assure the equality are complex and the secondary effects on the supplies and prices of various commodities, as well as the incomes of individual persons, would be quite different depending on the technique used.

Under price supports a farmer receiving, let us suppose, \$2 per bushel for wheat would receive the entire amount from the market with the wheat buyer, in effect, paying an excise tax on wheat directly to the farmer in an amount equal to the difference in the market price of wheat and what the price of wheat would have been in the absence of price supports. Under direct payments the farmer would still get, let us assume, \$2 per bushel, but with part of it being obtained from

¹ This does not imply that all farmers would receive the same prices for each individual commodity—this would be impossible if the total amount of income to be transferred is to be the same.

² The differences in Treasury costs between the two plans would approach zero if outputs were restricted to levels at which the price elasticities of demand for food and fiber at the farm approached unity. Treasury cases could be reduced to nominal amounts if a system of price discrimination, comparable to that possible to use in milk marketing, were employed. The validity of the statement in the text rests on the assumption direct payments are used for the commodities now given price supports in the United States and to alter prices within the ranges usually considered.

the buyer of wheat and the balance from the Government as a direct payment. Any difference in the total dollar cost of direct payments, compared with price supports, would flow from differences in the cost of administration.

The differences that would result from the choice to use price supports or direct payments would flow from pressures that would be placed on the prices and supplies of other commodities, thus altering the incidence of cost. Under direct payments, let us use wheat as an example, the resulting low market price of wheat would tend to decrease the price of animal feed and thus meats, while under price supports the supply of meat would be low and the price high. Under price supports, the exact ways in which surplus commodities were disposed of would determine the places and times in which the supplies and prices of other commodities were altered. These price differences, while not changing the total cost, would shift the burden of cost among various producer and consumer groups.

Distribution of total costs.—The distribution of the costs of a program employing direct payments or price supports can be determined by measuring the gains and losses to various groups flowing from the differences that will be found in (1) food and fiber prices and quantities used, (2) the prices and quantities of other commodities, and (3) total taxes with account taken of tax incidence. Under direct payments the effect of the decrease in food and fiber prices is to benefit the buyers of these products. The groups gaining the most absolutely are, likely, persons in the upper middle-income groups, while persons in the lower middle-income groups would gain the most relative to their incomes. After account is taken of the incidence of the additional taxes required to finance direct payments the groups likely gaining most would be the lower middle-income ones, while low income groups would gain, as a percentage of their income, the most.

At best, these latter statements are informed guesses because net gains and losses to various groups would in a large measure be determined by specific taxes employed to finance the program. If taxes similar to the old AAA processing taxes or the existing sugar tax were employed, the potential gains of low-income groups, from the adoption of direct payments, would be largely lost. Alternatively, low-income groups would gain most if a progressive income tax were used to finance direct payments.

The incidence of the cost of transferring income to agriculture by the price-support technique presents the same analytical problem as when direct payments are examined, and it is necessary to determine the gains and losses various groups realize from (1) the increased market prices for the foods and fibers that are price supported, (2) the changes in the prices of competing and substitute products, (3) Treasury costs traced back to taxpayers, and (4) the gains and losses flowing from the disposal of surplus commodities. Without presenting any analysis, it is clear that low-income groups will gain significantly less under price supports than under direct payments.

Real costs.—Direct payments will likely result in lower real costs—money costs adjusted for price changes—than would a price-support method of transferring income to farmers. The gains of direct payments flow from the fact the wastes of storage and surplus-disposal programs are largely eliminated. Under direct payments the surplus farm commodities would be used—in most cases eaten up—in

their most useful form. Under price supports, food and fiber can be wasted as was perhaps most vividly illustrated in potato fields a few years ago. The additional expenses that must be offset against the gains described above amounting to hundreds of millions a year, are those of the real cost of the Treasury, with the secondary impact on the economy, of obtaining the additional tax funds to operate the direct-payments technique. To others, the quantification of this offsetting cost is left.³

Treasury costs.—The difference in the money cost to the Treasury of direct payments and price supports, assuming the same total benefits to farmers, would depend on the commodities included in the program along with their price elasticities, the funds received from the sale of surplus commodities, and the minor differences in administrative costs. Quantitatively, the difference in Treasury costs between the two techniques would be most affected by the commodities included in the program and their price elasticities, and least affected by administrative costs.

If the price elasticity of demand for each commodity in the programs was -1.0 , that is a 1 percent increase in price resulting in a 1 percent decrease in consumption, direct payments and price supports would require identical initial Treasury outlays. If the price elasticities were -0.5 , that is a 1 percent increase in price resulting in a one-half percent decrease in consumption, initial Treasury outlays would be one-half as great under price supports as under direct payments. Elasticities of -0.25 would make direct payments four times as costly to the Treasury as price supports.

The net recovery value (sale price less costs of storage, etc.) of surplus products, that would accumulate under price supports, would reduce the Treasury cost by an amount approximately equal to these receipts.⁴

The difference in administrative costs between the two techniques does not appear to be significant.

When these costs are added together it appears likely that the direct payments would require United States Treasury expenditures of about three times the amount that would be required under price supports. This estimate assumes price elasticities of demand for commodities covered by the program of a bit more than -0.25 . The major unknowns in this problem concern (1) the amount of funds the Treasury would recover from surplus disposal, (2) the secondary effects of surplus disposal, which might be costly to the Treasury, and (3) the number and price elasticities of the commodities included in the program.⁵

Private costs.—Under price supports the costs paid by individuals, exclusive of taxes, are much higher than under direct payments since most of the cost of transferring income to agriculture is incorporated

³ This cost may be nominal as suggested by George F. Break, *Income Taxes and Incentives to Work: An Empirical Study*, American Economic Review, vol. XLVII, No. 5, September 1957, pp. 529-539.

⁴ The word "approximately" is used because Treasury tax receipts would be affected by the way in which surplus disposal was conducted, as well as the prices of other price-supported commodities. No account is taken of the changes in the costs of foreign-aid programs, even though these costs are important.

⁵ Secondary effects of surplus disposal to the Treasury might be high for a combination of many reasons. For example, in the case of foreign dumping exports that otherwise might have occurred may be lost. Dollar shortages may be made worse in other countries exporting the same commodities. In the domestic market the donation of food to needy groups or institutions lowers the amounts of expenditures on food they otherwise would have made.

in the price the buyer pays for the commodity. If private costs are defined to include indirect costs, that is taxes to support the programs, then private costs and total costs become identities.

IV. SECONDARY EFFECTS OF DIRECT PAYMENTS AND PRICE SUPPORTS

Secondary effects not common to both direct payments and price supports are largely attributable to the fact that under price supports the same set of prices is used to pay farmers and to distribute agricultural commodities to users; thus, surpluses are accumulated, requiring disposal programs, while under direct payments surpluses are not permitted to accumulate—each year's production is placed on the market at whatever price it will bring. The secondary effects, flowing from the choice to use price supports or direct payments, are examined with reference to (1) incomes of various groups of farmers, (2) supplies and prices of specific commodities (agricultural and nonagricultural) not covered by a program, (3) levels of nutrition and waste, and (4) the BLS Consumer Price Index. Primary attention is directed toward an examination of these effects under direct payments, since much experience exists with these effects under price supports.

Incomes of various groups of farmers.—Under an all-inclusive direct-payments plan, the problem of estimating the amount of income individual farmers would receive is more complex than under price supports. It is possible that the farmers receiving the highest incomes before Government payments would also on occasion receive the highest Government payments, both relatively and absolutely. These conclusions flow from the fact that market-clearing prices for commodities included under a direct-payments program are subject to wide variation. For example, the price the hog farmer must pay for corn is more precisely known ahead of time if price supports are used for corn than if direct payments are used. This variability in the corn price would also tend to make the market prices of other animal feeds subject to greater uncertainty. Thus, unexpectedly low market-clearing prices on commodities covered by direct payments and used to produce other commodities could result in large income gains to the producers of the final products or, conversely, unexpectedly high market-clearing prices could result in large income losses.

Thus, under direct payments, it is reasonable to expect the net incomes of farmers to be more variable, both among farmers and over a period of time, than under price supports.⁶ In general, the other secondary effects of direct payments and price supports on the incomes of various farmers are similar, though the specific farmers gaining and losing would not be the same persons. (See next topic.)

Supplies and prices of specific commodities.—The supplies and prices of agricultural and nonagricultural commodities will be altered, and differently, under price supports than under direct payments. The magnitudes of these effects, and in some cases the directions, will be altered, depending on (1) the levels at which prices are guaranteed, (2) the commodities selected for coverage in the program, and (3)

⁶ Administrative measures could be taken to dampen these potential sources of income variability, though they would be complex. The quantitative significance of the added income variability would depend on the number and kinds of commodities and the prices that were in effect under the direct-payments plan.

the restrictions, if any, placed on production. These differences will be touched upon in general terms.

Should the prices guaranteed to farmers under direct payments or price supports be lower than market-clearing prices, neither technique would have much effect; therefore, the more interesting case is examined where the prices guaranteed to farmers are above market-clearing levels, coupled with the assumption that no restrictions are placed on production. An exclusive use of direct payments providing coverage for all commodities, compared with price supports on all commodities intended to transfer the same amount of income to farmers, would bring about lower consumer food and fiber prices, lower feed prices to farmers, and higher Federal taxes or borrowing than would be the case if price supports were used. These effects would, in turn, affect the Consumer Price Index, the prices farmers pay, wage rates, and so forth, and the amount of food and fiber that would be used by consumers.

If a plan were adopted covering only some agricultural commodities, a more realistic assumption than the one above, the secondary effects would be similar to the above case with one major exception. This exception is that under price supports agricultural commodities not covered would tend to be increased in price; while under direct payments, the prices of these commodities would be under downward pressure, though these pressures would be greatly dampened by farmers shifting production from excluded commodities to the production of commodities with price floors.

If production controls were imposed, the prices of commodities not protected would be under downward pressure under both price supports and direct payments. The magnitudes of the pressures would depend on the effectiveness of the production restraints, and the consequent shifts in production among commodities.

Nutrition and waste.—Use of direct payments, rather than price supports, would decrease food and fiber wastage and increase the level of nutrition within the United States.⁷ This result would flow from the fact that under direct payments all the food and fiber produced would move into consumption rather than into storage for later use, or spoilage, or diverted into an uneconomic use.

Neither direct payments nor price supports are of much help in getting at the basic problem that more resources are being used to produce food and fiber than consumers are willing to buy at prices that will provide adequate incomes to farmers. By the same token they increase this waste of an excessive use of resources, largely labor, by tending to bring about an even greater production of agricultural commodities. The extent of this waste brought about by price supports is subject to many question marks and cannot be estimated accurately. The writer is of the opinion that this additional waste is relatively small. More specifically, in the writer's judgment, this cost is relatively much smaller than is the cost of unused steel, automobile, and housing capacity found in periods like the present

⁷ This statement is probably true if taken for the world. However, if all surpluses under the price-support plan were efficiently moved into foreign consumption, this statement need not be true for the world as a whole.

(September 1957), when the level of business activity is generally considered to be quite good.⁸

The consumer price index.—Use of direct payments would tend to decrease the BLS Consumer Price Index, rather than to increase it as do price-support operations. Suppose that compensatory payments were used in the dairy industry to make up the difference between prices paid to producers for milk used in fluid form and in other uses. During the past year (1956) a Treasury cost of a little more than a billion dollars would have been required, and the consumer would have been able to buy milk at about 4.4 cents less a quart. The initial effect on the all-items index would be about 0.4 of a point. When account is taken of secondary effects, the drop would be greater unless the Treasury obtained the funds in inflationary ways to make the compensatory payments.⁹

If compensatory payments were made on all or some large group of agricultural commodities, the downward pressure on the Consumer Price Index would be greater. Since food items represent 28.7 percent (December 1956) of the index and cash receipts from farm income is running at a little less than a \$30 billion a year rate, a billion dollars a year in compensatory payments would, on the average, initially reduce the Consumer Price Index by almost 0.4 of a point. The impact on this index is important because of its use in determining wage contracts, and so forth. Additionally, the Index of Wholesale Prices would be similarly affected in terms of direction, which is also used in pricing formulas.

V. PROPOSALS FOR USE OF COMPENSATORY OR DIRECT PAYMENTS

Proposals to use direct or compensatory payments in agricultural programs have been many in number and type though not widely used.¹⁰ Economists appear to take the position that the compensatory payment tool would be more widely used with advantage though no consensus is apparent as to the specific purposes for which it should be adopted.¹¹ At the present time wool and sugar producers receive special varieties of compensatory payments while no other United States groups receive comparable payments. During World War II considerable experience was gained with direct payments to producers. The largest of these programs was operated for dairy products and cost about \$1.5 billion.

The extent and combinations in which compensatory payments can be employed are virtually limitless. At one limit a single commodity could be covered while at the other limit all commodities could be included. Additionally, compensatory payments can be used in com-

⁸ This cost has been estimated as low by many others. See Calvin B. Hoover, *Fundamental Issues That Must Be Faced in Agricultural Price Programs*, *Journal of Farm Economics*, vol. XXXVI, December 1954, p. 761.

⁹ The secondary effects operate both within and outside of agriculture. Wage rates, as well as the parity ratio, are affected by changes in the consumer price index.

¹⁰ Comparable schemes have been suggested for other sectors of the economy. For a full-blown scheme of recent origin see Richard Hazelett, *Public Management of Employment* Volume, and the comment written by Albert Gallord Hart in the *American Economic Review*, vol. XLVII, No. 1, March 1957, pp. 136-152. In my opinion, schemes of this type—general ones and/or partial ones—are requirements during some phases of the business cycle if the twin objectives of full employment and a stable price level are to be realized—but this is another subject.

¹¹ William H. Nicholls and D. Gale Johnson, *The Farm Price Policy Awards, 1945: A Topical Digest of Winning Essays*, *Journal of Farm Economics*, vol. XXVIII, 1946 p. 267H.

bination with virtually all other policy devices. The purposes economists have had in mind for urging the use of compensatory payments have been diverse including such items, both separately and jointly, as: (1) depression-control measures; (2) price-level control measures; (3) aids to farmers; (4) aids to consumers; (5) aids to foreign trade and international relations, etc.

Perhaps the most widely discussed specific proposal in which compensatory payments were to play a major part was the Brannan plan. Under this plan storable commodities were to be price supported while compensatory payments were to be used on perishable commodities. This plan and similar ones were widely discussed and analyzed by the USDA and others.¹² The Brannan plan, while tentatively providing for high minimum prices to farmers and comparable restrictions on production, was moderate in the extent to which compensatory payments were to be used, since only nonstorable commodities were to be so covered. In the discussions of this plan and others, it was often pointed out that the advantages of compensatory payments are present, whether they are applied to storable or nonstorable commodities. In fact, the differences between storable and nonstorable commodities are virtually meaningless in this context.

Many other proposals have been made which embodied the use of direct or compensatory payments to farmers.¹³ This is perhaps best illustrated by the fact that in 1945, of the 18 prize-winning awards on agricultural policy, 16 recognized their usefulness and made provision for at least some use of compensatory payments.¹⁴ During the past few years numerous articles have been published in which a place has been found for varying sorts of direct payments to farmers.¹⁵

In citing the various policy proposals that include at least some place for direct payments to producers, it is important to note that both limitations and disadvantages are recognized. In general, direct payments are proposed as emergency measures or at least as a means of moving to a situation where they and their substitutes will either not be needed or, at least, needed to a smaller extent. No claims are made that their use would involve as small or smaller Treasury outlays than price supports except in special cases. Political objections are also frequently raised to the use of direct payments—the most common being that farmers do not like to get Government checks but would

¹² Karl A. Fox, *The Contributions of Farm Price Support Programs to General Economic Stability, Policies To Combat Depression*, a conference of the universities—National Bureau Committee for Economic Research: Princeton University Press, 1956, p. 295 ff. George Mehren, *Comparative Costs of Agricultural Price Support in 1949*, *American Economic Review*, vol. XLII, May 1951, p. 717 ff. John D. Black, *ibid.*, p. 747 ff. Willard W. Cochran, *ibid.*, p. 754 ff. W. E. Hendrix, *The Brannan Plan and Farm Adjustment Opportunities in the Cotton South*, *Journal of Farm Economics*, vol. XXXI, August 1949, p. 487 ff. Harold G. Halcrow and Roy E. Huffmann, *Great Plains Agriculture and Brannan's Farm Program*, *ibid.*, p. 497 ff. D. Gale Johnson, *High Level Support Prices and Corn Belt Agriculture*, *ibid.*, p. 509 ff. Stewart Johnson and George K. Brinegar, *What About the Brannan Plan*, *Farm Policy Forum*, vol. II, October 1949.

¹³ For a general discussion of direct payments see: R. J. Eggert, *Advantages and Disadvantages of Direct Payments With Special Emphasis on Marketing Considerations*, and O. H. Brownlee, *Some Effects of Compensatory Payments*, *Journal of Farm Economics*, vol. XXIX, February 1947, pp. 250-259.

¹⁴ See *Journal of Farm Economics*, vol. XXXVII, 1945, pp. 741-902. The 18 papers were authored by William H. Nicholls, D. Gale Johnson, Frederick V. Waugh, George W. Barr, Merrill K. Bennett, Gordon P. Boals, Karl Brandt, Willard W. Cochran, R. J. Eggert, Paul A. Eke, Carl C. Farrington, Rudolph K. Froker, Charles D. Hyson, Adiole L. Larson, James G. Maddox, Rainer Schickele, Geoffrey Shepherd, and Lawrence H. Simerl.

¹⁵ Examples are: J. K. Galbraith, *Farm Policy: The Current Position*, *Journal of Farm Economics*, vol. XXXVII, May 1955, pp. 292 ff. G. E. Bradow, *A Modified Compensatory Price Program for Agriculture*, *Journal of Farm Economics*, vol. XXXVII, November 1955, pp. 716 ff. George K. Brinegar and Stewart Johnson, *On Letting Go of the Bear's Tail*, *Journal of Farm Economics*, vol. XXXVI, February 1954, pp. 80 ff.

rather get the same amount of money from the market.¹⁶ This position is put forth succinctly by L. H. Simerl.¹⁷ A different sort of objection is sometimes voiced to the effect that Congress and the administration will not provide as much money to directly pay farmers as they will provide farmers by more roundabout, less obvious techniques. To the extent these political objections have valid economic content the cost of direct payments would be decreased compared with price supports.

VI. CONCLUDING REMARKS

I wish to direct attention to and highlight the major economic effects that would be realized if direct payments were placed into more extensive use than is the case at the present time. These effects would materialize (1) if less use were made of price supports as direct payments are more widely used, and (2) if no change was made in the total amount of income or benefits being transferred to agriculture.

The administrative problem of disposing of agricultural surpluses is simplified when extensive use is made of direct payments. This results from the fact that current production is currently distributed through regular marketing channels. Thus, the surplus problem we are now so familiar with, with its disrupting effects in both domestic and foreign markets, is eliminated in its present form.

The real cost of the existing agricultural programs would be decreased if direct payments were more widely used in place of price supports. The real cost, money cost adjusted for price changes, would be decreased because less food and fiber would be wasted and thus all income groups would gain. The decrease in wastage would also cause the BLS Consumer Price Index and the Index of Wholesale Prices to be lowered, thus checking some price increases.

Low-income groups would be better off, relatively, under a direct-payments plan than under a price-support plan, unless special regressive taxes were introduced to finance the direct-payments program. Low-income groups as well as all others would gain absolutely in the aggregate under direct payments.

Federal taxes would need to be higher to operate direct payments than price supports.

¹⁶ It has often been stated this reason is more imaginary than real. This is also suggested by the Michigan State Experiment Station Technical Bull. 235, 1952, authored by Dale E. Hathaway, E. E. Peterson, and Lawrence Witt.

¹⁷ Farm Attitudes and Methods of Supporting Prices, *Journal of Farm Economics*, vol. XXXIX, February 1947, pp. 246-249.

THE COMMODITY-BY-COMMODITY APPROACH TO FARM PROGRAM DEVELOPMENT

Gordon K. Zimmerman, The National Grange

As the Nation seeks a more satisfactory farm program, most of the disagreement centers on the degree of Government involvement in the program. Is it to be a thoroughgoing, active collaboration in all aspects of agriculture, or some much milder form of participating partnership between farmers and government?

No longer does any major farm group support the prospect of a completely competitive, completely unregulated farm economy. No longer is a Government farm program regarded as a temporary or an emergency measure, to be employed until the return of normal times.

The increasing concentrations of economic power in labor and many areas of business are now being widely recognized. These concentrations have the appearance and probably the substance of permanence. They are more likely to be intensified than dismantled.

One consequence of this aggregation of business and labor power has been to rule out, in all likelihood, any substantial and continuing support for a return to a completely free system of agriculture. Instead, more and more farm people see the necessity of restoring a greater degree of balance in the Nation's economic triad of business-labor-agriculture. In recent years, the agricultural leg has become progressively weaker and less secure.

While recognizing the continuing need for Government intervention in the affairs of agriculture, most farmers are still not prepared to accept a type of collaboration which would provide permanently for price fixing and state trading of the products of agriculture. Except in time of war, most farmers want to work with, but not under, the Government.

Short of price fixing and state trading, the most promising approach to an acceptable farmer-Government program partnership lies in the further development of individual commodity programs.

Farm-produced commodities are the merchandise, the stock-in-trade of agriculture. They are the central element of farming operations, from the initial production effort through the last unit sale.

Farm-produced commodities are still the principal source of farm income. As such, they constitute the best available medium for achieving beneficial adjustments in supply, costs of production, price, and many other of the critical ingredients of farm income.

Farmers are accustomed to thinking in terms of commodities. They traditionally measure supply and estimate demand in terms of individual commodities. They have had experience in adjusting production, commodity by commodity. They sell individual commodities, not aggregate farm production.

For good reason, farmers continue to recognize the existence of the cash crop.

A comprehensive approach to farm programing implies similarities in agriculture that do not exist in fact. There is the common denominator, of course, of production. But even this cannot be carried beyond its elemental concept—the transposition of the raw materials of nature into a more finished or usable state. Most of the similarity ends there.

A major part of the agricultural problem as it confronts us today has been the prolonged, common oversimplification that all farmers in all parts of the country are alike, have common problems, and common aspirations. It simply isn't so. Farmers are not necessarily alike and their problems are more often diverse than similar.

Neither is the farm problem a continental problem. If it can be said that there is any single farm problem, it would have to be reckoned as the aggregate of a multitude of separate problems. Dissimilarity is the fact and the common characteristic of American agriculture.

Indeed, the root of our farm problem is the consistent diversity existing throughout the American farming enterprise.

Experience during the past quarter century indicates too well that the legislative and administrative actions designed to relieve the troubles of farmers in one area, or State, or commodity, may very well have the contrary effect on farmers in some other area, State, or commodity.

The commodities themselves, and the circumstances surrounding their production, marketing, and value, are the most diverse of all. These dissimilarities underscore not the desirability, but the essentiality, of a commodity-by-commodity approach to farm programing.

The differences between perishable and nonperishable crops have been recognized, of course, for a long time. And there has been recognition of the different program needs for deficit crops such as wool and sugar, and commodities in almost chronic oversupply such as cotton and wheat.

These, however, represent only the more obvious distinctions. There is an almost endless range in the varying circumstances affecting the production and marketing of agricultural commodities.

There are not only marked differences and peculiarities as between the several commodities, there are in some instances clear-cut regional and type differences within what we would ordinarily regard as a single commodity.

Except in the broadest sense, for example, there is no indelible pattern of common interest or problem between the wheatgrowers of the spring wheat area, where ordinarily there is little overproduction; the growers in the Palouse region of the Pacific Northwest and in the hard winter wheat area, where heavy production has been customary; and the increasing numbers of eastern and southern growers of wheat for feed.

The factors of upland cotton production and marketing in the Southeast are different from those in the delta. Both are different from the high plains. And still other factors are involved in the production and marketing of long staple cotton from the irrigated lands of Arizona and California.

These differing conditions exist. They are in being. Farm program development that fails to recognize them, or undertakes to encompass and ignore them under the umbrella of a comprehensive approach, fails to recognize the facts of economic, physical, social, and political life.

Even a partial listing of some of the basic elements in production and marketing will indicate how profound and widespread commodity differences are—and why programs should be tailor made for each commodity in full recognition of the unique and distinguishing features of each.

Capital investment varies widely, for example, not only between commodities but within commodities. The investment necessary for operation of a dairy farm selling grade A milk to the Los Angeles, Birmingham, or Washington, D. C., fluid milk markets could easily be much larger than that of a manufacturing milk producer in Minnesota, a cottongrower in the Piedmont, or a wheat farmer in the Great Plains.

Some commodities, such as wheat and cotton, have traditionally depended on export markets to absorb a substantial share of annual production. Other commodities, such as wool and sugar, face competition in the domestic market from importations.

Still others are involved in no more than a minor way, if at all, in export-import considerations.

Since World War I, when the United States changed from a debtor to a creditor nation, the peacetime foreign market for American farm products has been declining. Around the world, nationalistic programs of self-sufficiency have been established and have spread. Competition in the world market has become more intense. For these and other reasons, our most aggravated surplus problems have developed with our traditional export crops.

Adjustment of American agriculture to this new world market situation is certainly one of the most difficult and essential problems ahead. Experience indicates it can be met with larger chances of success on an individual commodity basis rather than as part of a comprehensive approach involving many commodities, some of which may be only moderately influenced by export considerations.

Dissimilarities in labor needs and labor supply also argue for a commodity-by-commodity approach to farm programing. Fruit and some other commodities often require a considerable but seasonal labor force. Large dairy farms may hire year-around help. The cost of labor near industrial centers tends to be higher and the supply scarcer than in other areas. On the Pacific coast the pay scale runs higher than it does in the Northeast and the Northeast pays more than the Midwest.

Some commodities go to market; others are consumed on the farm. While cotton and tobacco go to market and are processed, for example, approximately two-thirds of the annual production of another basic crop—corn—is fed to livestock on the farms where it is grown. Marketing differences of this kind thwart effective operation of attempted comprehensive programs.

Competition for consumer favor exists unevenly among the commodities. Wheat and potatoes, as starchy foods, compete with each other more than with fruit and milk. Butter and oleomargarine compete with each other more than with fruit.

Cotton and wool, to a greater extent than other farm commodities, face competition from nonfarm products—rayon, nylon, and other manufactured fibres.

Tobacco, on the other hand, has no commodity rivals.

Geographic and climatic differences are also involved. A large part of the Nation's wheat production and an increasing volume of feed grain are grown in a region in an area of limited rainfall, high drought hazard, and few alternative uses for the land. In many of the rolling areas of New England, Wisconsin, and Minnesota there are few profitable alternatives to a grassland agriculture centered around dairying. Farmers in such areas cannot readily shift production from one commodity to another in response to changing conditions of supply and demand.

Because individual commodity programs can be more specific, they should be able to recognize and deal more effectively than a comprehensive program with the problems of farmers in particular regions.

The attitudes of farmers themselves serve to reinforce the desirability of individual commodity programs and deny the wisdom of a comprehensive approach. There is no uniformity at all in the producer viewpoint toward Government intervention in agriculture. In some areas and with some commodities it is much more favorably disposed toward Government than in others.

As a generalized statement, it can be said that cotton and tobacco farmers, for example, are accustomed to Government programs and approve of the idea if not the detail. Cattlemen, on the other hand, have never had a major, permanent-type program and traditionally are most vocal in rejecting Government intervention in their affairs.

These varying viewpoints are undoubtedly conditioned by experience and the relative severity of the problems faced in the region or the commodity. They account, too, for the range in Government intervention, from combinations of acreage allotments and marketing quotas, as in wheat, to marketing orders and agreements as in milk and some fruits, to emergency buying of end products, as in meat.

Farmers have not expanded evenly their plant and production capacity in all commodity fields. In the cotton areas of the Southeast, for example, farmers long ago developed a capacity to produce more than could be sold at prices capable of supporting an acceptable standard-of-living for many of the growers. At least in part, this was the consequence of concentration on cotton—dependence on a one-crop agriculture—and the healthy demand of foreign and domestic markets for the fiber from the turn of the century through World War I.

Overexpansion of productive capacity for wheat came later, largely in response to Government urging for more and more of the bread grain during World Wars I and II.

The buildup in productive capacity for soybeans and the feed grains is of more recent origin, deriving its momentum in considerable measure from the acreage allotment and marketing quota programs still in effect for basic crops. As everyone knows, farmers have understandably sought an income-producing use for lands diverted from production of the basics, and as a result the problems of surplus have been extended over an ever wider range of commodities.

The listing of differences could be extended, but the evidence seems plain that no single, comprehensive farm program can be effective in terms of commodities—or in serving the needs and aspirations of the farmers who produce them. Each of the basic commodities is unique in its production and marketing characteristics, its background and future requirements. Dissimilarity, rather than similarity, is the rule. And the same applies to most of the nonbasic crops.

To improve the position of producers of these commodities, then, individual programs must be designed to recognize and deal with the distinctive features of each of the commodities. The obvious outcome of such a course would be variety and flexibility in farm programs rather than unification and rigidity. Since no other pursuit of man is subject to more variety in its parts than agriculture, and since all the elements of nature and the economic system affecting agriculture are completely unstable, from rainfall to the level of spendable income, the case for variety and flexibility—for individual commodity programs—is a case founded first and foremost on reality.

Within the commodity-by-commodity approach to farm programming there is ample latitude for programs representing every degree of Government intervention, from much to little or none, as the individual commodity situation may warrant. Marketing quotas, direct payments, and self-help might be utilized, for instance, as well as such devices as grade labeling, domestic market allotments, loan and purchase operations, and acreage allotments.

It may also be noted that the individual-commodity approach has certain legislative and administrative advantages. Necessary modifications in a program affecting a single commodity can be accomplished with greater facility and farmer-public acceptance than changes involving a wide complex of commodities.

The conditions affecting individual commodities are altered in different ways and at different rates. The upland cotton program most serviceable in 1958 might be inadequate or excessive by 1962. On the other hand, a dairy or potato program put into service next year might have a useful life of 15 or 20 years without need for major modification.

There is no reason to rebuild a whole house because the windows stick in the kitchen or the light switch doesn't work in a bedroom.

If Congress finds that agriculture as a whole is receiving an inequitably small share of total national income, and determines as a matter of policy that steps should be taken to increase that share, selective actions commodity by commodity are most likely to bring the desired results. Only with such specialized programs is there practical opportunity to enhance efficiency and allocate incentives where and when they will do the most good. The alternative to selectivity is at least risky if not assuredly dangerous. This would be a broad-scale or comprehensive attempt at income priming, which would surely serve to perpetuate the inefficiencies of agriculture and compound rather than alleviate the problems of overexpansion—unless the income priming were accompanied by a degree of Government regulation heretofore regarded as excessive and unacceptable.

Congress could, with good reason, determine that parts of the agricultural plant are overexpanded, and that adjustments in human and physical resources would in time help bring farmers returns on capital, labor, risk, and management more nearly comparable to those

received elsewhere in the economy. In that case, selectivity along individual commodity lines would provide the greater assurance of social justice and lasting economic benefit. In any cutback, agriculture would fare better under the scalpel than the steamroller.

To emphasize the advantages of a commodity-by-commodity approach to farm programing, however, is not to deny the relationship of commodities to each other or, more specifically, the influence so frequently exerted by gains or losses in connection with one commodity on the prospects of other commodities. In operation, individual commodity programs cannot be successfully isolated from each other.

This relationship should not be regarded as an inevitable source of friction nor an adamant barrier to the successful functioning of individual commodity programs. Where programs tend to impinge on each other, modifications are clearly in order. Carefully undertaken, they should provide for harmonious coexistence—even mutually supporting benefits.

By any analysis, American agriculture is an aggregate. It has no entity or unity separate from the commodities which are its ingredients and the bloodstream of its existence. Any effective program for agriculture, therefore, should properly be the sum and blending of component, commodity programs. Only in this way can the myriad problems and conditions of farming be realistically encompassed.

To begin with the overriding positions inherent in a comprehensive approach is to incorporate in some degree an element of trouble-making artificiality. Farmers are being disadvantaged today because their present farm programs were rooted largely in two of the most abnormal periods in American history—war and the depression of the 1930's. Certainly no good purpose will be served by perpetuating either the artificial or the abnormal.

The case for a commodity-by-commodity approach is not doctrinaire. Its roots are in the fields, pastures, and markets of actual farm experience. We already have in operation some elements of a commodity-by-commodity farm program. Our present task is to take the most useful features of what we have, devise such new adaptations as promise to serve individual commodities best, and anticipate future requirements rather than repatch past mistakes.

OBSERVATIONS ON DIRECT PAYMENTS AND THE COMMODITY-BY-COMMODITY APPROACH TO THE FARM PROBLEM

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Most of this statement will be devoted to the second subject of this panel, the possibilities and difficulties of a commodity-by-commodity solution of the farm problem. As preparation for this, however, I do need to analyze somewhat the direct-payment approach to the problem, since this may well be the procedure best fitted to some of the individual commodities, and it could easily be used in such a way as to have important effects on the prices and incomes from other farm production.

I. THE DIRECT-PAYMENT APPROACH

First of all, we need to make sure that we all understand a direct-payment plan to mean the same thing. The direct-payment plan here analyzed is one that allows all the output, except some diverted to special outlets or to Government stockpiling, to be sold for what it will bring in the market place, and makes up the difference between this market price and some support level of price by direct payments to the producers. These direct payments will be referred to hereafter as "deficiency payments."

A reasonably conceived direct-payment plan has much to be said in its favor. First of all, it would be simple to administer. Second, it would call for less direct interference with the trade than most plans. Third, it would help much to stabilize farm incomes and output. Fourth, it would reduce the amounts of products in storage to reasonable proportions.

But to realize most of these advantages, a direct-payment plan will need to be much better conceived than, so far as I know them, is any one that has thus far been offered—certainly than the Brannan direct-payment plan.

A. The first requirement of a reasonable and workable direct-payment plan is that the level of prices used in calculating the deficiency payments must vary with the size of the crop or volume of production. Otherwise after getting a good price for a large crop or volume of output, and hence a large income from it, farmers will grow another large crop, weather permitting, or continue producing a large output of milk, eggs, beef, pork, and so forth. The surpluses will therefore get larger year after year. What greater inducement can a farmer have to expand his production than for the Government to say to him in effect: "Go ahead and grow another big crop. We guarantee you the same good return from it that we got for you this year." This was good strategy in the war years with demand growing year after year, but surely not after 1948.

At what rate should the total return per pound, bushel, and so forth (market price plus deficiency payment) fall off with the increase in

volume of output? Strictly speaking, this should vary by products, depending upon several factors, including:

(a) the rate at which the producers of the product increase their output with a rise in price and decrease it with a fall in price.

(b) related to (a), the additional or marginal out-of-pocket costs of output additional to what the market will absorb at "free" market prices, as a result of planting more acres or increasing the size of herds, and also increasing yields per acre or per animal unit. Some of the costs are fixed, that is, do not increase with output and decrease per unit with larger output. Others are variable and increase with output.

(c) the rate at which technology is increasing yields, bringing more land into cultivation or pasture, and so forth.

(d) the rate at which per capita consumption increases with a decline in price, and decreases with a rise in price.

(e) changes in consumption in prospect due to growth of population and income per capita, and trends in per capita rates of consumption by products.

(f) exports and imports of the product and trends in the same.

(g) the quantity of the product which the Government plans to dispose of outside the usual channels of domestic and foreign trade.

In general, the total return per unit (market price plus deficiency payment) for any product should be such that a larger output yields very little larger net return to the farm and farm business, after deducting out-of-pocket costs, than would an output that just meets domestic needs with normal storage stocks plus the export-import balance. This means that the farmer and his family will receive very little return for any extra labor which they devote to producing the larger output. This limitation is in general necessary if surpluses are not to increase from year to year.

The last paragraph is only an "in general" statement. For any particular product in any particular crop year or period, the total returns per unit may need to be somewhat higher or lower than determined by any one or any combination of factors (a) to (f). A rapid advance in technology of some product that lowers costs may, for example, call for somewhat lower total returns per unit, and a relatively slow advance the opposite. Similarly for a marked relative decline or upturn in demand. The total returns schedule that is determined at the outset will, of course, be a tentative one to be tried out in actual operation and adapted as needed.

Some one may fail to see how farmers will benefit with such a schedule of total returns. The answer is that they will benefit a good deal. First of all, there will not be the big drops in total income that occur in the free market in years or periods of large supply. Producers will instead get an assured stable income in all the years with average or larger supply, and the same higher incomes as now in years of short supply. Given this stability of income, they will be able to plan their production programs much more effectively.

Second, the large drops in total returns that have come in the past in periods of business recession and stagnation will be much reduced.

How much they will be reduced depends, of course, upon how much aid the Nation decides to give agriculture at such times; also how much aid to the urban unemployed in the form of more food and other farm products than they can afford to buy at the lower prices that will come to prevail.

B. Now as to the second requirement of a reasonable and workable direct-payment plan. The foregoing still leaves open the matter of the general level of the total returns support. The requirement is that the level for any product must not be set so high that it induces overexpansion of its output beyond what can be disposed of without excessive stockpiling and/or surplus disposal at heavy losses. The Brannan plan, of course, set too high a support. Even with marketing quotas applied where feasible and considerably effective, it would have cost the Government around \$2 billion in 1949, and \$3 billion annually within a few years, according to estimates made on the basis of analysis by Prof. George Mehren and reported at the December 1950 meeting of the American Economic Association.¹ Without marketing quotas, these estimates would be raised to 5 or 6 billion dollars a year. What was more serious, in spite of such results as these marketing quotas might have achieved, such high levels of support would have served to retard needed production adjustments.

The usual form in which the support level is expressed by proponents of direct-payment plans is a percentage of the parity price, or of parity income occasionally. Parity as a standard has already been analyzed by panel G. Only two things will be said here. The first is that to base the relative level of supports for different products on a uniform percentage of the parity standards in force before 1948 will give a structure of total returns supports that is clearly unworkable because it will set some of the supports so low as to reduce output below market needs, and others so high as to pile up still larger surpluses or dump heaps; and to meet this situation by varying the percentages of parity for different products means that parity is used only as a way of expressing the support level chosen; there is still needed some basis for the variations in percentages. Moreover, if this procedure is followed, there needs to be a much more consistent basis for the percentage variations than at present.

Accepted as real in all the foregoing is the relationship that the output of individual farm products does respond to price changes, in general more rapidly to price increases than to price decreases, but in fact to both. This relationship is frequently disputed these days. I once heard Secretary Brannan do so in an address in the Department of Agriculture auditorium. All that needs to be said in refutation is that if this relationship were not true, there would be no production cycles for any farm product—even the hog-corn cycle would vanish utterly. There must be a down response as well as an up response to produce such cycles.

The principal way in which these responses occur is by shifts among different lines of production, from wheat to feed grain and back, from beef cattle to hogs and back, from butter to cheese, etc. Accordingly, if all lines of production were under effective production and marketing control, there would be much less of this shifting and

¹ Discussion, by John D. Black, *American Economic Review*, May 1951.

therefore less response to price changes. But getting a sufficient degree of such control to prevent such responses and shifts clear across the board would prove so difficult, and so repulsive to farmers generally, that it is useless to undertake it. The most that can be expected is a helpful degree of it in some special cases.

Also it needs to be pointed out that in recent decades, more and more of the response to price rises has taken the form of using more improved technology, and this is more difficult to reverse with lower prices. This is the main reason that surpluses have persisted in recent years.

The foregoing is in terms of responses product by product. How about aggregate farm output? Agricultural output rose around 20 percent from 1940 to 1947-48, while farm prices deflated by the parity index were rising around 39 percent. But how about the other way? Constant-dollar farm prices fell 27 percent from 1947-48 to 1956, and agricultural output rose 14 percent.

This recent situation, however, is a very special one. At the onset of World War II, there was a large backlog of unused technology. The high demand and prices of the war and early postwar years drew on this technology and set in motion a surge in output growth that has been difficult to check. Farm prices really continued relatively high clear to 1952. They were still 110 percent of parity in 1951. Thus there really have been only 5 years for any response to lower prices to show.

The principal reason that the break to around 82 percent of parity since 1951 has not reduced output more is that the farmers really using the improved technologies are still doing pretty well at current prices, and they are producing more than half of the output. They are doing thus well in large measure because of a doubling of the output per person mainly employed in agriculture since 1940, and a decrease since then of more than one-third in the farm labor force (census series).

It is interesting in this connection to divide the net income from agriculture by the labor force in agriculture (census series of persons mainly employed in agriculture) and note the changes since 1940. The gain has been 60 percent in constant dollars in spite of the sharp break since 1952.

Related to the foregoing is the growing evidence that production is now proving increasingly difficult to control by means of quotas. This is especially true of acreage quotas. The nearest possible exception to this is in the case of tobacco. It has been considered almost useless from the start to attempt to use such controls with livestock production. It appears to be almost as difficult with feed crops. With crops, the yields per acre soon increase enough to offset the reductions in acreage quotas, and this is as true for feed crops as for wheat and cotton.

II. THE COMMODITY-BY-COMMODITY APPROACH

It is familiar to all concerned that the farm programs since 1920 at least have differentiated somewhat by commodities. Differentiation in rates of tariff duties of course goes back to the beginnings of protective duties on farm products. The Emergency Tariff Act of 1921 and the Fordney-McCumber Act of 1922 differentiated drastically among farm products. Insofar as any policy or principle of action

was involved in this, it was in the case of wheat, corn, meats, and dairy products simply to set the rates high enough to exclude all imports whatever. (In the case of sugar and wool, this would have been going much too far because of our large dependence on foreign supplies.) The form of statement in which this principle had been spelled out in the Payne-Aldrich Tariff Act of 1909 was to base the tariff duty on the difference between the costs of production at home and in countries selling to us. Of course if this were really done, there would be no imports at all. Nevertheless, definite provision was made in the 1922 Tariff Act for revising the tariff duty on any product on this basis whenever an investigation made in response to a request of interested parties showed a difference in costs between the United States and the principal exporting country. The McNary-Haugen bills of the later 1920's were designed to add the tariff duties thus or otherwise determined to the domestically used part of the supply of any product that was being in some part exported. The Hawley-Smoot Tariff Act of 1930 set up a higher and more differentiated schedule of rates than any previous act.

The Federal Farm Board's activities were virtually all directed to particular commodities by organizing national cooperatives to market them, and stabilization corporations in the case of cotton, wheat, and wool, and making loans to existing commodity cooperatives. One common principle underlay all these commodity activities, namely, orderly marketing or withholding from the market till prices improve, even though the implementation differed somewhat.

The program of the Agricultural Adjustment Administration differed much more widely by commodities than the foregoing even from the start and more so as time went on. This was in part made possible by the very wide and diverse set of powers that were granted the administration, including voluntary agreements with producers supported by direct payments for participation, excise taxes on processors and distributors, agreements with processors and distributors and compulsory licensing, and removal of supplies from the market. These were fitted to programs adapted to the needs of each commodity or group of commodities. Special additional powers were granted for cotton and tobacco in the Bankhead and Kerr-Smith Acts in 1934. The production control powers applied to the basic commodities, 7 in the first act, but 15 by 1935. The adverse Schechter court decision in the spring of 1935 caused a termination of Bankhead and Kerr-Smith controls and a narrowing of the list of commodities under marketing control. The Hoosac Mills decision of January 1936 caused a large revision of the production control provisions and a classification of crops as soil-conserving, soil-maintaining, and soil-depleting, with conservation payments to match. A special Sugar Act was enacted in 1937. The Commodity Credit Corporation had been first set up in 1933, and the scope of its activities was broadened thereafter. The Agricultural Adjustment Act of 1938 provided for a range of loans without recourse from 52 to 75 percent of parity. Later, of course, a limit of 90 percent of parity was set in the Steagall amendment, and continued in the Agricultural Act of 1949.

But more determinative of individual commodity programs than the provisions of congressional acts was the administrative discretion left to the AAA administrators. This was very large in the early acts, but was narrowed considerably as time went on. Usually

it was commodity group pressure that caused the enacting of special provisions. But sometimes it was the desire of congressional leaders and others to make the program more workable or save it from destructive attack. This way well have been the case when the support limit on potatoes was lowered to 60 percent of parity in 1949.

A clear example of the discretion left to the administrators was the level of the processing taxes in the original 1933 act. They were not to be set so high that they would raise consumer prices to a point that would decrease consumption importantly and thus add to surpluses. The economists of the Department made hurried analyses of these relationships for the different basic commodities. There was similar discretion as to the level of the benefit payments and acreage allotments, and later of nonrecourse loans, which presently largely determined the price-support levels. With the onset of the war, however, Congress set more and more minimum limits on loan rates, maximums on acreage cuts, and the like, and has continued with these since.

Examples of clearly differentiated commodity programs in the early years are that for sugar in the Jones-Costigan Act, that for corn-hogs, that for beef in the Jones-Connally Act and that for milk and dairy products. These have mostly continued on a clearly differentiated basis ever since.

Another major differentiation occurred during the war years under the Steagall acts. To the 7 commodities in the basic group were added by January 1946, a total of 13 other commodities, the prices for all of which were to be supported at 90 percent of parity for 2 years after the war was officially declared ended. These have been referred to since as the Steagall commodities. The list included: hogs, eggs, chickens, turkeys, milk and butterfat, dry peas, dry edible beans, soy beans for oil, peanuts for oil, flaxseed for oil, American-Egyptian cotton, sweetpotatoes, and Irish potatoes. The basis for these guarantees was that producers would not expand their output of them as needed in the war years if the price was in danger of dropping immediately when the war ended. The support levels for the different products was in general what was deemed necessary to call forth the needed production.

The classification of commodities receiving price support according to a support basis in 1957 and for which support prices are currently announced as percentages of parity, is as follows:

A. Mandatory: The 6 basic commodities—wheat, corn, cotton (upland and extra long staple), rice, tobacco, peanuts.

B. Mandatory: The 6 nonbasic—butterfat, manufacturing of milk, wool, mohair, honey, tung nuts.

C. Nonmandatory: Nonbasic—barley, grain sorghum, oats, rye, cottonseed, flaxseed, soybeans, dry edible beans, crude pine gum.

But this list does not include sugar, and all the commodities under marketing orders and agreements, including fluid milk in 67 milksheds, citrus and other fruit in 6 different producing areas, other fruits in 11 different producing areas, tree nuts in 2 producing areas, potatoes in 5 producing areas, and vegetables in 4 producing areas. Even one special type of tobacco comes under this head in one area.

Full details as to the programs for all of these are given in the set of official publications listed following. All that will be done here is to point out the more important differences among them. So complex are the arrangements that one mind can scarcely embrace the details of all of them. Hence there may be some inaccuracies in what follows:

Price Programs, Agricultural Information Bulletin No. 135.

Price Support Handbook, issued by the CSS in August 1955, and November 1956.

Acreage Allotment and Marketing Quota Summaries, issued by CSS in September 1955.

Agricultural Handbook No. 113, containing a compilation of the relevant statutes.

First as to the level of price supports of the A, B, and C lists of commodities above. For the mandatory basic or A list, the range in 1957 was from 75 percent for extra long staple cotton and 77 percent of parity for corn to 90 for tobacco. The 90 percent for tobacco is fixed if marketing quotas are voted. For the others, a schedule of minimum supports is spelled out in the act of 1949, as amended, the level depending upon the supply percentage of normal at the beginning of the marketing year. For corn, wheat, and rice (and tobacco if quotas are not voted), this schedule runs from 90 percent with a supply not more than 102 percent of normal to 75 percent with supply of more than 130 percent. Normal supply is the domestic consumption of the year just ended, plus expected exports, plus an allowance for carryover. For cotton and peanuts, the range in percentage of normal supply is from 108 to 130 percent of normal. Transitional parity is in operation for wheat, peanuts, and corn. The support level has declined since 1955—for wheat, from 82.5 to 80; for corn, from 87 to 77; for upland cotton, from 90 to 78; for peanuts, from 90 to 81; for rice, from 86 to 82. It would appear that some were set above the minimum in 1955, at least. These levels of support drop to 50 percent if marketing quotas are voted down, and to 0 in the case of tobacco. For wheat and corn outside the commercial areas, the support level generally is three-fourths of that inside.

For the B list of mandatory nonbasic (including 4 called designated nonbasic), the range of supports in 1957 was from 70 percent of parity for honey to 106 for wool. It has changed since 1955—for butterfat, from 76 to 80 percent of parity; from 80 to 83 for manufacturing milk; from 106 to 101 for wool; from 91 to 86 for mohair and no change for honey. The range provided for in the applicable legislation is from 90 to 60 percent for honey and tung nuts, from 90 to 75 percent for milk and butterfat and products thereof. The criterion is an "adequate" supply. The range of supports allowed for wool (Wool Act of 1954) is from 60 to 110 percent of parity depending on what is necessary to step production up to 360 million pounds of shorn wool.

For the C list of nonmandatory nonbasic commodities, the range in 1957 is from 65 for cottonseed and flaxseed to 90 for pine gum. The rest are at 70 percent. All of these are storable commodities. The legislation permits the Secretary to support prices between 0 and 90 percent of parity after considering 8 factors, including supply in relation to demand. It is apparent that the Secretary has considered well these reasons.

The sugar program is not ordinarily considered a price-support program. The domestic quotas, offshore quotas, and import quotas, however, are in fact set at amounts that will cause domestic prices to equal closely the world market price for sugar laid down in our ports plus the import duties. The taxes of 50 cents per hundredweight of sugar processed in this country or imported more than cover the direct payments to the producers.

Wheat also is a very special case because of the part that the International Wheat Agreement and our way of operating under it plays in setting the level of prices.

The prices set under the 67 milkshed orders come closer in most of the markets to what free-market prices would be than is achieved in most of the competitive markets for farm products in the United States. The exceptions are those markets in which regulations have the effect of excluding some cheaper outside milk.

The marketing agreements and orders for fruits, vegetables, and other products function much more nearly to stabilize marketings from year to year than to raise prices. But they do raise them above what they otherwise would be in some years and in some periods during marketing seasons. The way in which they do this is to regulate the amount which moves to market at any time. They may do this by grading out the poorer grades and keeping these from being marketed, often diverting them to other uses; perhaps to lower order uses. Or they put the surplus of some period into a reserve pool. Or using section 32 funds to distribute them outside the usual channels of trade may be resorted to. The general effect of such operating is surely to raise the average level of prices somewhat over a series of years.

Now let us differentiate more systematically the means by which the prices for these different classes of products are supported. For the basic commodities, the principal resort is to acreage or marketing quotas or both. Marketing quotas are specifically authorized only for basic commodities other than corn. Acreage allotments may be used with all the basic products. They can be used with nonbasics, but have been so used only to limited extent. Marketing quotas must be approved by two-thirds of the producers voting in a referendum. For wheat, the law specifies a minimum below which the acreage allotment cannot be set—55 million acres. A minimum marketing quota of the smaller of 10 million bales or 1 million bales less than prospective domestic consumption plus exports is provided for cotton. Peanuts have a minimum marketing quota expressed in terms of a minimum acreage allotment into which it is translatable. Allotments and quotas are additionally restrained by temporary minima applicable to 1957 and 1958. Wheat growers can grow 15 acres without coming under control; farmers not collaborating receive no price support loans or purchases. Minimum allotments to individual farmers are in use for other basic commodities.

Mention must be made at this point also of the provisions under the acreage reserve part of the soil-bank program. For all except peanuts of the basic crops, producers can receive payments per acre for specified percentages of their acreage quotas which they do not harvest or feed to livestock, which since the first year means do not plant to these crops. They cannot feed to livestock any substitute crop, such as grass or hay, except with permission under emergency

conditions. The conservation reserve part of the soil-bank program applies to any cultivated crop or tame hay. The land must be diverted to particular conservation uses and not pastured.

Integrated with the acreage and marketing quotas are two other procedures, loans without recourse and purchase agreements. The first of these, as explained earlier, was first used to promote orderly marketing by taking some of big crops or peak deliveries off the market for a time. Delivery to the Government usually occurred, however, if the loan level was higher than market prices at the end of the loan period, and as the loan level was raised eventually to 90 and 92½ percent of parity for the war years and 2 years following. Under these circumstances, the loans became largely indirect purchases. With the discretion now left to the Secretary on the C lists of products, this is less likely to be true. Thus with oats, barley, grain sorghum, and rye, the loan level is now 70 percent of parity. Purchase agreements supplement the loan programs; they obligate the Government to accept delivery of the commodity at a later date. Direct purchases are used considerably for less storable, notably dairy, products.

Whether the operation is a loan or purchase, the CCC is faced with the need for disposing of the stocks that it acquires. It uses many different operations, including cash sales for export and domestic use, barter, relief donations and foreign currency sales. There may be involved a sizable carrying charge while waiting to find some such outlet.

The procedures for disposal of stocks on hand, and lower-grade products under marketing agreements, also vary considerably. With the basic commodities, the Government's CCC handles this except that in the case of peanuts, tobacco, and naval stores the CCC uses facilities of marketing cooperatives. Under the marketing-agreement arrangement, the Secretary has to approve the agreement or order, but a committee of growers or handlers or both, nominated by them but appointed by the Secretary, is given power to administer the order under the rules and standards set forth in the order—except in the case of milk markets, for which a Federal administrator is appointed. These committees analyze marketing conditions, formulate policies, keep records, determine quotas of growers, and collect assessments to cover costs of operation.

Also not mentioned in the foregoing are the section 32 purchase or donation programs to schools, hospitals, orphanages, prisons, needy persons, and welfare agencies; also diversions to new uses to help develop new outlets. These can be used with any commodity in surplus. They help to support prices. They have been used with meats and other products not included in any of the other programs.

Surely it is clear from all the foregoing that the present farm price-support and related programs are very much differentiated by commodities. Also one must agree that the differentiation by commodities are in general suited to the differences in the commodities and the conditions under which they are grown and marketed.

Why then the present demand for separately administered commodity programs? The reasons are in general as follows:

1. Producer groups for individual products have not been satisfied with the provisions made for their products in the congressional legislation. There may be sound justification for some of this dissatis-

faction. With so many special provisions in the legislation for different products or groups of them, it can well be that particular pressure groups with special interests had too much influence in the writing of the legislation, and have had too much in keeping it in force. This could well be the case with tung nuts, for example, or even corn—only one-fifth of the corn production is under loan this year.

2. Such producer groups may not be satisfied with decisions made by the Government agencies in cases where administrative judgment is allowed. There is less likely to be a sound basis for dissatisfaction in such cases, but still situations arise in which certain public administrators have too strong leanings in one direction. The public utterances of the present Secretary of Agriculture may well have inspired a demand that less direction be left to him and his successors. This could be true even though his actual decision was wise in the case of the commodity in question.

3. Some groups of producers see no reason why their products should not have 90 percent of parity support the same as tobacco, at least for the part of it that is consumed domestically. They, therefore, think that they are not being treated fairly.

4. A growing opinion among some groups of farmers, or more particularly among those seeking to be popular leaders of these groups, that the producers of any farm product should be helped to organize in such a way as to exercise a considerable measure of control over the selling prices and disposal of their products and related matters such as output.

Some considerations that may weigh in the other direction in the final decisions of Congress and the public are the following:

1. The groups that are proposing and working toward separately administered commodity programs may not really represent the rank and file of the producers of farm products. It would be easy, for example, for groups of cotton producers in the irrigated areas of the Far West, or in the high plains of Texas, or the Delta, who do not represent the rest of the South; and vice versa; similarly for dairy producers in the Northeast, South, Midwest, and the Far West. Or even a group of leaders in these different regions could get together and work out a compromise program that would not be what the rank-and-file producers need or want.

2. Some program that might be acceptable at the time to the rank and file of the producers would not really be what they want and need. There must be careful analysis of a commodity situation and full discussion before a producer group can decide what program will be best for it.

3. There are important intereffects of individual commodity programs—for example, of pork and beef, of grain sorghum and cotton and wheat, of corn and other food grains—that must be taken account of even in the best interests of each commodity group as well as the national interest. One cannot entrust individual commodity groups to do this as it needs to be done.

4. Neither can one rely on individual commodity groups to weigh as need be the larger national interest—the consumer, international trade relations, national security, et cetera.

5. To set up in this country at this time a set of commodity organizations that may go so far as to establish the price at which each

farm product is sold, and regulate the amount produced or put on the market, or perhaps instead establish a level of market prices plus deficiency payments, goes beyond anything that has generally been achieved in business or labor in this country. It is true that some important industries and services do have a pretty rigid structure of prices as a result of price leadership and other practices. But still there is vigorous competition in sales and in other ways and there are no output quotas of any kind. The labor unions must bargain for their wage increases. Still, it is increasingly true that a combination of such bargaining with price leadership is able to pass on to the buyers the wage increases obtained by bargaining, so they are in effect passed on to the public. But the concern of the great rank and file of the people of this country is to restrict such actions rather than to extend them. This was the intent of the last important national labor legislation, the Taft-Hartley Act. It is much to be doubted if our people will favor granting such power of action to farm commodity groups. It is not stated here that the commodity programs that will be proposed will ask for such extreme grants of power. Still some of them may.

What would be desirable next would be to analyze a set of proposed commodity programs from the foregoing points of view. Unfortunately, none are really available in final form as of the date of this writing (October 10, 1957). All that one can do is judge from some newspaper statements, one discussion in the Congressional Record (Senator Carlson, August 1957), and one near-final draft of the dairy product proposal. Let us review the dairy product proposal first. Its principal features are as follows.²

1. Producers will each have quotas equal to their share of the estimated domestic commercial demand, their shares being based on their last year's production.

2. Ninety percent of parity for this quota.

3. A Federal Dairy Stabilization Board, comprised of 15 producers, nominated by the producers but finally appointed by the President, 1 from each "dairy district." This Board will develop a plan of operation for the year, determine the total domestic quota, and submit this to a Dairy Advisory Committee representing the public, the processors, and other groups. If this Committee and the Secretary approve the Board's plan the Board will run the program, using the CCC, however, to carry out under its orders the actual disposal operations for all milk and dairy products in excess of domestic commercial consumption.

4. The producers will receive the full 90 percent on all quota milk delivered, less 15 cents per hundredweight to cover costs of operation, less the difference between this 90 percent and actual average receipts per hundredweight on all the excess milk and dairy products disposed of, applied to the individual producer's excess over his quota, except

²The draft statement prepared by the National Grange dairy program advisory committee as of June 1957 contains several confusing statements. Thus in one place it says that the program would "withdraw price support for that part of milk production for which there is no estimated commercial, domestic demand"; but in sec. 33 it specifies that milk in excess of such demand must be purchased by CCC at "price levels which the Board determines will reflect to producers . . . the prevailing stabilization levels." I am assuming that the tax on milk in excess of the quotas is not collected on the milk disposed of in the 5 or more uses listed under 4 following, because of statements elsewhere that CCC must absorb the losses on this out of its usual funds, but I am not sure about this.

that disposed of "for use by military personnel, the school-lunch program, veterans institutions, relief, foreign aid, et cetera."

5. Thus, this plan will cost the Government only the losses on disposal under the 5 or more uses listed under 4. It is called a self-help plan, but it doesn't help on these five or more uses.

6. If the Secretary, however, refuses to accept the Board's proposed plan for the year, he will present an alternative plan along with the Board's to a special committee of Congress, and this committee will determine the plan to be followed for the year. If it is the Secretary's plan, the self-help financing will not be provided.

7. Other features of the proposal provide for stepping up the individual producer's quotas gradually as they expand production, and the same for new producers. Quotas, however, will be transferred with farms or with herds.

8. Also, provision is made that any marketing area is excluded from this program if 90 percent or more of its production is sold as fluid milk or cream. This excludes all the New England States except Vermont, and all the Middle and South Atlantic States except New York, Pennsylvania, and West Virginia.

9. There is also provision for the usual referendum of producers, except that only 50 percent of those voting must favor it. A major question with respect to this proposal is the effect the higher prices will have on production and consumption. How much the surplus will be increased depends of course on the rate of response of production upward, and of consumption downward, to higher prices. Analysis to determine such rates does not give altogether certain results because of the varied factors that affect the results. The time period allowed for the response is highly important, especially for production response.

One analysis that has been made in the USDA is that 90 percent of parity will decrease consumption and increase production enough so that presently the surplus over domestic commercial consumption will be more than doubled—up to 8 billion pounds of milk. A projection made by Dr. Dorris Brown, of the Mutual Federation of Independent Cooperatives of New York State, on the basis of a very conservative set of supply and consumption elasticities, is that at the 90-percent-parity prices to producers, and retail prices of milk, cream, and manufactured dairy products to match, production in the second year will have risen and consumption declined to the point that 9 percent of total marketings, or 10.5 billion pounds of milk, will be in surplus. A less conservative set of elasticities raises the 9 percent to 11 and the 10.5 billions to 12.8.

To find outlets for any more surplus seems very difficult. There will have to be more dumping abroad or more diversion to lower value uses in the United States, except possibly as the Government increases its giveaway in the 5 or more uses listed under 4. It is easily conceivable that the losses on this surplus will increase per unit of milk as well as with volume, and to a point where the 90 percent of parity, less the taxes on surplus, will yield very little additional net return to the producers, and further expansion of output will slacken a good deal. Given this outcome, the situation will be simply one in which the dairy industry and the consumers are subsidizing cheap milk outside of the regular marketing channels but getting no more net per

hundredweight for milk than now. Of course, regular consumers will also be contributing to this subsidy in the form of higher retail prices.

Pertinent in this connection are analyses made both in the USDA and by Dorris Brown that a price at 75 percent of parity would bring production and consumption into balance within a few years, so that no taxes would need to be collected, and the producers would get the full support price on all they produced. Worth considering along with this is a program during the transition of very modest direct payments.

Two changes in the proposed dairy program are now being considered. One is to limit the program to years in which the surplus is more than 3, 4, or 5 percent. These years, however, would never come under a 90 percent of parity program, except because of war or a prolonged drought.

Another proposal is to exclude the smaller dairy farms—say with milking herds of less than 10 to 15 cows. This will simply bring to pass sooner the point of no larger net return, and to the larger producers only. And it will be they alone who are subsidizing the cheap milk for outsiders.

The primary object of this analysis of this particular proposal is to show how necessary it is to make a careful analysis of any proposal for a separate commodity program before it is written into law. There is great danger that the proponents of it will see mainly the superficial aspects of it and fail to see how it will really work out. In this case, the higher support price for milk, plus "more effective influence by the producers on the level of milk and dairy product prices," to quote from the Grange committee's statement, is what has activated the thinking of the proponents, and they have not looked much beneath the surface.

The proposed wheat program is called a "domestic parity" program. It proposes to require purchasers of wheat for domestic use to buy marketing certificates that will make up the difference between the free market price for the rest of the wheat and the parity price set by the Secretary of Agriculture. In fact, it is nothing more than the domestic allotment plan first presented under this name in chapter X of a book which I published in 1929 under the title "Agriculture Reform in the United States." It was not my idea. I merely worked out some of the details of it and gave it a name. It was first presented to Congress in 1929, and was embodied in the Hope-Norbeck bill of 1932. Processing taxes were substituted for the marketing certificates in the Agricultural Adjustment Act of 1933, but these were declared unconstitutional in 1936. The act which Congress passed following was called "The Soil Conservation and Domestic Allotment Act," but it did not really provide for the domestic allotment plan of the Hope-Norbeck bill. Under such a plan, each producer receives an allotment and marketing certificates equal to his share of domestic consumption.

There are several advantages of this plan. One is that all wheat in excess of domestic consumption as food can be sold in the export market at free-world prices. Another is that it costs the Government nothing except administration. The average price the producer gets for his wheat is somewhere between parity and the world price depending upon his excess of production over his allotment.

The principal shortcomings of the plan in the present situation are three. First, the average price so determined is likely to be still so high as to induce an expansion of production and cause a larger volume of export in a world market already swamped with wheat. Second, foreign countries will still be able to say that production for export is being subsidized. The higher parity prices on the domestic quota will pay most of the overhead or fixed costs of producing the export wheatland, buildings, equipment—so that the additional outlays involved in keeping more of the land in wheat and getting higher yields will be clearly less than the export price of wheat, and wheat-growers can increase their net incomes by producing more for export. Third, the extra price paid growers on their domestic quotas will be added to the price of flour, bread, and bakery goods. No more than 20 cents added to the price of the domestic quota will cost consumers around \$100 million.

In spite of these shortcomings, this plan could be better than the present program for wheat, if one major change is made in it, namely, if the support level for the domestic quota is set of some percentage of parity that is not too far above the export market level—say, not over 10 percent above. This also assumes that overall marketing quotas will be continued for the time being as now and made as effective as possible. These two specifications, however, probably would not fit the ends that the proponents of this plan have in view.

Speaking in general, however, the domestic allotment plan should be given consideration for any commodity which this country produces significantly for export. But it needs careful adaptation to the conditions under which the commodity is produced and may not fit some of them.

A similar general statement has been made in part I for the direct payment procedure. It can be used to advantage, if properly adjusted to conditions and needs, as explained in part I, more widely than at present.

We are now ready for some general statements about price-support and related procedures. Few if any of the procedures described as now used with the different commodities do not have a useful contribution to make to the orderly production, marketing and consumption of some farm product, and along with this a better structure of prices and income. But as now used with the different commodities, they fall far short of making their best contribution. The general consequence of this is our present combination of surpluses and inadequate incomes.

The big question before us is how to get a better adaptation of procedures to commodities and commodity situations. It is not my task, however, to answer this broad question. It is instead to indicate whether a commodity by commodity approach can be made to furnish the answer.

My general answer is that it frequently will not do so because (1) it will not recognize sufficiently the interdependencies and interrelationships of different commodities upon each other; (2) it will not recognize sufficiently the national interests involved; (3) in consequence of the foregoing, the decisions will be based on too narrow considerations; (4) they will also tend to be too superficial and shortsighted.

The proposal suggested by the dairy group for a special advisory committee for each commodity that will review the program proposed by the producer board for that commodity and suggest alternatives if needed for the reasons just named, and final reference to a specially created committee of Congress, is not well conceived because it will tend to bring to the fore sharp cleavages between narrow and short-sighted producer group proposals, and what is in the broader national interest, and then to make political issues of these cleavages.

Consideration should be given instead to combining the producer board and advisory committee in one board; also to setting up in the Department of Agriculture one general advisory board, appointed by the President, for all commodities, this to replace the present CCC advisory committee, and to have a broader function, production as well as marketing adjustment, and a staff continuously at work. It is also suggested that instead of having a set of separate commodity boards making day-to-day decisions as to implementing programs agreed upon by the commodity boards and the general advisory committee, the implementation of the programs be handled by the existing action agencies of the USDA including the CCC, but subject to review and redirection by the general advisory committee working with the special commodity boards. This is necessary if the needed unity of action is to be achieved.

As for the proposed self-help feature of commodity programs, this should be authorized by Congress, but left to be worked out and agreed to commodity by commodity with the proposed general USDA advisory board.

As for final reference to Congress in case no agreement can be reached in the manner indicated, it is suggested that there should be one general committee of Congress for this purpose, and that its membership should be broad enough so that other interests than those of agricultural producers receive due consideration.

It is also suggested that such a program be developed somewhat gradually, for a few commodities at the start so as to learn by experience how to organize and operate such programs before setting up more commodity programs.

Finally, if Congress enacts any legislation along these lines, it should follow the pattern established in setting up commissions like the ICC, FTC, etc., and spell out carefully the general principles that are to be followed in decisions to be made by the boards or committees that it authorizes. This will be highly important in this case, for at present a very mixed set of principles is written into the different acts. The application of these principles must be worked out, however, to fit each commodity and situation—just as are the railroad rates set by the ICC. The commodity situations that must be taken account of are analyzed in a special report now being prepared by Prof. James Bonnen and myself, for publication by the National Planning Association. Professor Bonnen may have reviewed these in his panel B statement.

DIRECT PAYMENTS TO FARMERS ARE NOT THE ANSWER

W. E. Hamilton, American Farm Bureau Federation

Practically everyone agrees that there are some serious disadvantages to the loan, purchase, and production control programs which the United States Government has been operating in recent years in an effort to support farm prices and income. Under such programs:

Production has been encouraged at home and abroad.

The use of synthetic and other substitute products has been expanded.

Important markets have been lost.

Supplies of some commodities have accumulated to burdensome levels.

The right of the producer to plan his own farming operations has been restricted by acreage allotments and marketing quotas. The value of allotments representing the right to produce certain crops for guaranteed prices has been capitalized in higher land prices.

Other production inputs have been substituted for much of the land taken out of the production of specific crops.

Acreage taken out of controlled crops has been shifted to the production of other commodities, including livestock.

Surplus disposal programs have reduced the markets for current production at home and have created ill will among foreign producers of competitive products.

Farm income has declined in a period of general prosperity.

Accumulated costs have been sufficient to be of concern to all who sincerely believe in governmental economy.

In the face of the difficulties that have been encountered under existing programs, it is not surprising that many people have been searching for a workable alternative.

Certain groups have long believed that the answer is to be found in direct payments to farmers. In general two types of payment program have been proposed. Under both approaches, direct Government price support measures, such as loans and purchases, would be eliminated and farm prices would be allowed to seek their level in the market place. Under one approach, farmers would be given payments based on the difference between market prices of individual commodities and governmentally established support levels, such as parity prices, or a percentage thereof. Under the other approach, payments would be made in such a way as to raise total agricultural income or the income of individual farmers to some governmentally determined "fair" level.

Payments have been held out as a means of channeling money into agriculture without impairing the operation of the market place,

without regimenting farmers, without creating burdensome surpluses, and without disrupting foreign markets. If, as has sometimes been suggested, all of this could be accomplished at a moderate cost, and without leveling per farm income, we would, indeed, have a greatly improved Government farm program.

In the opinion of the writer, the idea that the payment approach constitutes a simple cure-all for our present agricultural difficulties is a delusion for two reasons:

(1) Many of the proponents of payments have ignored or minimized the economic consequences of the payment approach; and

(2) The proponents generally have ignored the political implications, which can be expected to prevent realization of the alleged economic advantages of going the payment route.

Direct payments to farmers are not new. This device was first used in a British wheat-subsidy scheme during the 1920's.¹ Benefit payments, financed by processing taxes, were made under the Agricultural Adjustment Act of 1933. "Parity" payments were made for a number of years under the Agricultural Adjustment Act of 1938. Payments under the 1933 act were terminated when the processing taxes were declared unconstitutional. Parity payments were abandoned when prices rose above parity during World War II. Incidentally, the original 1938 authorization for parity payments is still on the statute books although it has not been used for many years.

Public controversy over the use of the direct-payment approach is largely a post-World War II development. Legislation enacted during the war required the Government to support prices of a long list of commodities at 90 percent of parity or a comparable price for the duration of hostilities and 2 years thereafter. It is generally assumed that this legislation was enacted to stimulate production for war purposes; however, a war-engendered willingness to engage in Government price fixing appears to have been a factor. As the end of the war approached, many people began to develop recommendations for post-war agricultural policy.

ECONOMISTS RECOMMENDED LIMITED USE OF PAYMENTS

Economists recognized that continuation of wartime incentive level farm-price supports into the postwar period would lead to serious difficulties. Consequently, they set to work to develop programs to ease the transition from war to peace.

In October 1944 the committee on postwar agricultural policy of the Association of Land-Grant Colleges and Universities suggested the possible use of direct payments in the early postwar period and in case of "a long and severe depression." Pertinent parts of the committee's report are quoted below:

A second alternative would be to make equivalent payments to farmers instead of supporting market prices directly. These payments would be based upon the difference between the current market price and the legally designated price. Under this program, the farmer would market his product

¹ Brandt, Karl, *Farm Price Supports—Rigid or Flexible?* American Enterprise Association, Inc., 1954, p. 12.

through regular market channels at the going price. But for each unit sold, he would receive a payment from the Government which would represent the difference between the price at which he had sold and the price level which is now authorized as a standard. In the second and third postwar years, the standard level would be less than in the preceding year.

* * * * *

A third alternative is like the second in that payments would be made to farmers and the determination of actual prices would be left to the market. In this case, however, the authorized price would remain the same for 3 years. The farmer would be paid each year for the difference between current market prices and the price levels now authorized; but the payment would apply to a decreasing proportion of his output. In the second and third years, for example, the payment would be made on only 80 percent and 60 percent of the amount which he sold on the market.

Whichever method is employed, it is doubtful if the program should extend more than 3 years beyond the cessation of hostilities in Europe * * *.

* * * in the case of a long and severe depression, certain income payments to farmers as well as other groups may be advisable * * *.

* * * A sound method of making supplemental income payments to farmers will need to be adapted to varying farm conditions by taking account of family living expenses and cash outlays for maintaining production capacity. Also, there should be a maximum limit to the amount that any one producer might be paid. Some comparable system of payments to nonfarm enterprises would aid in restoring production and employment in other lines and in maintaining markets generally.²

In February 1946 the parity concepts committee of the American Farm Economic Association suggested the use of payments as follows:

3. * * * in some cases payments to farmers may be necessary in order to cushion the shock of making needed production adjustments and of bringing them about more quickly than would otherwise occur.

4. In order to give the farmer the orientation and incentive to make shifts in the proper direction and to assure him against drastic declines in the return from specific commodities, the Government should announce in advance a support schedule of prices for each agricultural commodity. The support schedule for any year should be fixed within a range of 70 to 90 percent of the average price of the commodity for the previous 3 to 5 years, adjusted for changes in the Index of Prices Paid by Farmers for Articles Used in Living and Production. The lower part of the range is intended to apply to commodities which are in surplus, the upper part to commodities which are in short supply relative to demand.

² Postwar Agricultural Policy, report of the committee on postwar agricultural policy of the Association of Land-Grant Colleges and Universities, October 1944, pp. 23-28.

5. The Congress should authorize a flexible program to carry out the support commitments. Main reliance should be placed on direct payments to farmers of the difference between the announced support schedule and the market price. * * * *³

It will be noted that both of the above recommendations were directed toward the problem of cushioning anticipated postwar agricultural adjustments and that both contemplated a gradual reduction in Government-support payments. The land-grant-college group specifically recommended a program of decreasing payments. The American Farm Economic Association Committee, in effect, recommended that the standard for price support be based on average market prices for the previous 3 to 5 years and that the support level be 70 to 90 percent of this moving standard. Under such a formula, support prices would tend to decline whenever average market prices for the preceding 3 to 5 years showed a downtrend.

Since these early reports were issued, many economists have advocated the use of payments to inject income into agriculture in periods of depression when consumer buying power is being reduced by unemployment. With relatively few exceptions, economists who have advocated the use of payments to make up deficiencies in the prices received for individual commodities have been talking about the use of payments to implement low-level or highly flexible support programs.

In 1952 the Farm Foundation published a report by a group of 13 outstanding economists which proposed the use of direct payments in periods of general depression, as follows:

To safeguard the national economy in its agricultural sector in times of depression, supplementary income payments to farmers will be most effective and economical. Such payments in times of emergency growing out of general depression would make for stabilization. A program of curtailing production or marketings when farm-product surpluses accumulate because the industrial and consumer market has been contracted by business depression introduces an unstabilizing factor. * * *

* * * We have reached the conclusion that free market-clearing prices are likely to do a better job of pulling the economy out of business depression than a program of Government price supports and the production limitations which they call for.

* * * The income-supplement program we are recommending is proposed only for times of general and severe depression.

* * * * *

If deep depression develops, we should be prepared, if necessary, to provide income supports in substantial amounts

³ One member of the committee indicated that he would "restrict Government price supports for agricultural products generally to periods of severe business depressions." This individual and one other member of the committee also said that they would "give precedence to programs to improve the diets of undernourished groups" and that they believed "that in many cases direct payments would be a more expensive and less effective way of supporting prices than Government purchases or loans."

⁴ Committee on Parity Concepts, Outline of a Price Policy for American Agriculture for the Postwar Period, Journal of Farm Economics, February 1946, pp. 395-396.

for a short time in order to prevent demoralization of our \$30-billion agricultural industry. * * *

* * * * *

It is inherent in our analysis of the problem that no program of supplemental-income payments should be undertaken in the midst of inflation, or even under conditions of moderate prosperity. It is only when major "economic indicators" show substantial decline and when the prospect is for further general contraction that direct income payments to farmers should come into the picture.⁵

Some economists have proposed the use of payments to implement a program which they have called "forward pricing." The following excerpts from a statement by D. Gale Johnson of the University of Chicago illustrate this approach:

One of the major difficulties with the present price-support programs has been the inflexibility of the methods used for establishing support prices. While modernized parity is decidedly superior to the old parity, the modernized parity still does not allow much adjustment from year to year. Some agricultural economists believe that most of the disadvantage of the present price-support program would be overcome by a system of forward prices, as first proposed by Theodore Schultz about 15 years ago.

During periods of full employment, such a price policy would not be designed to influence the level of farm prices. The objective would be to present farmers with as accurate forecasts as possible of anticipated prices prior to the time most production decisions are made. Except when the estimates of anticipated prices were in error, no price-supporting operations would occur * * *.

There are two main ways of handling the price variability that would result from yield variations. For the storable crops (corn, wheat, cotton, tobacco, rice, and many feed grains) the Government could adopt a storage program that would reduce market offerings from large crops and increase market supplies when crops are small. If the objective of the storage policy were to stabilize use of the products rather than to stabilize prices, the storage program would not be inconsistent with relatively free trade in the major exported and imported farm products.

For the crops which cannot be stored except at high cost, the forward prices should be not a single price, but a schedule of prices that would approximately stabilize total revenue. The forward price would be an estimate of prices if yields were average; the schedule would translate the expected total revenue from an average crop into a series of prices for relevant yields.

* * * Major reliance should be placed upon direct payments to producers if the forward price were higher than actual market price * * *.

⁵Turning the Searchlight on Farm Policy, The Farm Foundation, 1952, pp. 69-73.

During a depression, if one should occur, it would be advisable to establish forward prices at a level above that which would be an estimate of market prices.⁶

The above quotations make it clear that many of the economists who have advocated the payment approach have been thinking about a limited use of this device to implement low-level supports, or inject income into agriculture in periods of general depression. They have assumed that it is to be public policy to transfer income from other groups to agriculture, at least in periods of adjustment or depression. Recognizing that it is the function of market prices to balance supply and demand in the market place, economists generally have felt that the interference of payments with normal economic processes would be less than that of Government loan and purchase programs. In effect, economists apparently have attempted to treat payments as a method of extending aid to agriculture and to separate the method from the important questions of how much aid is to be extended and who is to get it. As a practical matter, however, it is impossible to maintain such a separation in the public mind so long as both the method of extending aid to agriculture and the amount of such aid must be determined by political processes.

THE BRANNAN PLAN COMBINED PAYMENTS WITH HIGH SUPPORTS

Although the early recommendations of economists for the use of payments in postwar farm programs aroused some opposition, the real controversy over the payment approach began on April 7, 1949. On that date the then Secretary of Agriculture, Mr. Charles Brannan, proposed what has since been known as the "Brannan plan." Prior to that time, there had been considerable controversy relative to the level at which farm prices were to be supported in the postwar period. The Department of Agriculture, the American Farm Bureau Federation, and numerous other groups had recommended that a system of flexible price supports be substituted for the fixed 90-percent-of-parity supports which had been in effect during the war. Congress had approved the principle of greater flexibility in price supports by enacting the Agricultural Act of 1948, but had directed that most support prices be kept at wartime levels during 1949.

Mr. Brannan's proposal included the following principal features:

- (1) An extension of price supports to additional commodities;
- (2) A new method of determining support levels, which in a number of cases would have resulted in support prices in excess of the 90 percent of parity level then in effect;
- (3) The use of production payments as the principal method of support for perishables and as a supplementary method for storable commodities; and
- (4) A limitation on the amount of payments that could be made to any one producer.

By combining a proposal for direct payments with proposals to raise support levels and extend the support program to additional commodities, Mr. Brannan took payments out of the context in which they previously had been advocated by economists. The Bran-

⁶Johnson, D. Gale, *The Role of Farm Prices in Agricultural Production*; a paper published in *United States Agriculture: Perspectives and Prospects*, The American Assembly, Graduate School of Business, Columbia University, 1955, pp. 51-52.

nan plan was not a proposal to provide temporary aid to agriculture during the postwar readjustment, or periods of general depression—it was a plan which would have made farmers completely dependent on Government in good times and bad. The apparent objective was to forge a farmer-labor political alliance by promising high supports to farmers and cheap food to labor.

The payment issue has been considered by the Congress on a number of occasions since the Brannan plan was first proposed. On all such occasions payments have been considered as a device for implementing 90 or 100 percent of parity supports. The Congress has never given serious consideration to the use of payments in the context in which this approach has been advocated by the economists quoted above. Thus, payments often have been advocated by those who favor a maximum of Government planning and the maintenance of rigid, high-level farm price supports, while they generally have been opposed by those who believe that price supports should be set at moderate or low levels as a means of providing farmers a measure of protection without substituting Government regulation for the natural operation of economic forces.

In a way, it is rather ironical that the payment approach, which has been advocated by economists as a means of reducing interference with natural economic forces, should be accepted by those who are most willing to support Government intervention in economic matters and rejected by those who believe that such intervention should be held to a minimum. This perverse development is a direct result of the political implications of the payment approach. Notwithstanding the fact that Members of Congress have consistently associated the payment approach with fixed supports at 90 to 100 percent of parity, many economists have continued to insist that the level at which prices are to be supported is a question apart from the method that is to be used to make the support program effective.

PAYMENTS CAN HAVE SERIOUS CONSEQUENCES

The economic effects of any program to support farm prices or farm income will vary with the level of prices or income that is supported. This is true whether the program is implemented by loans, purchases, production controls, market controls, or payments. This fact is often obscured in public debate over the payment approach. Many economists have tended to minimize the economic consequences of payments because they favor the use of payments in conjunction with moderate, or low level supports. People who have advocated payments in conjunction with high level price supports have minimized the economic consequences of this approach by emphasizing statements made by the economists in defense of payments as a means of implementing low level supports, and by disregarding the relationship of the support level to the economic consequences of any support program.

Since legislative proposals for the use of payments have generally contemplated high support levels, let us look at the economic and political consequences of a program under which direct payments would be used to make up the difference between market prices and 90 or 100 percent of parity.

GUARANTEED RETURNS STIMULATE PRODUCTION

In the case of most farm commodities a guaranty of 90 to 100 percent of parity would insure an operating profit for many producers and materially reduce the risk of loss for all.

A guaranteed profit per unit provides a strong incentive for producers to increase the number of units produced. Such a guaranty also makes it easy for producers to finance the production aids (such as improved livestock, better seed, lime, fertilizer, insecticides, machinery, and supplemental irrigation), which have been playing a major part in the expansion of agricultural production. A Government support program can be a powerful stimulus to production even though it falls short of guaranteeing the producer a profit, provided it materially reduces the risk of loss and leaves the producer free to benefit from such possibilities as increased yield, improved demand, or a short crop in other areas. Experience with the basic crops has clearly demonstrated that 90-percent-of-parity supports are an incentive to increased production. The incentive effect of 90- or 100-percent supports would not be reduced materially if at all, by shifting from Government loans or purchases to direct payments. As a matter of fact, the incentive to increased production probably would be more universal with a payment program since there are certain qualifications relative to quality and storage that restrict the availability of Government loans and purchases.

The proponents of payments argue that this does not constitute a problem, because the payment approach would permit market prices to drop sufficiently to clear the market; however, the effect on program costs must be considered. It is generally contended by economists that the demand for most farm products is inelastic—at least in the short run. This means that, other things being equal, a given increase in the supply of many farm products will cause a more than proportionate decline in the market prices of such products. Thus, in the absence of production or marketing controls, a payment program which promised producers a profit, or materially reduced their risk of loss, could be expected to stimulate production to the point where market prices would be forced far below the levels that would prevail in the absence of any program. If, as appears to be true, the farmer's capacity to increase production is greater in the long run than in the short run, the cost of the payments necessary to maintain a fixed level of support could be expected to rise almost continuously.

PAYMENTS DO NOT PERMIT PRICES TO FUNCTION

Contrary to the argument that has been made by some of its proponents, the payment approach does not permit market prices to perform their normal functions. In a free market, prices not only function to clear the market after goods have been produced; but also help to guide the allocation of resources to the production of the things that the market wants. While a payment program would permit prices to function to clear the market, it would seriously impair their capacity to allocate resources. Additional resources would be drawn into agriculture—an industry which already is suffering from overcapacity. Some people—particularly low-income marginal farmers,

who otherwise would move into nonfarm work to supplement or improve their income—would be encouraged to remain in agriculture. Thus, in time there would be more people to share total agricultural income; so per capita farm income could fall despite the program unless support levels were raised and additional funds made available for payments.

Payments based on a flat percentage of parity for all commodities would tend to unbalance the production of various commodities. The present parity formula is based on past conditions. No mathematical formula yet devised can provide a reliable guide to the relative quantities of the various farm products that are needed in any current period. In time the Government would find it desirable to discourage the production of some commodities through reduced payments or quota restrictions and to encourage the production of others. Thus, an ever-increasing amount of Government planning and regulation would become necessary to make a payment program work.

PAYMENTS WOULD BE CAPITALIZED

One of the disadvantages of Government loan and purchase programs is the fact that the value of such programs tends to be capitalized into land values. This is fairly easy to see in cases where the support program has been accompanied by restrictions on the acreage that may be used to produce for the guaranteed price. For example, a 1-acre tobacco allotment is said to add from \$1,000 to \$2,000 to the market value of a farm. Although the effect of price supports on land values is less clear in the case of other crops, there is every reason to believe that some capitalization has taken place even in cases where commodities have been supported without acreage controls.

There is no reason to believe that the value of a payment program would not likewise be capitalized into land values if the payments in any way guaranteed a return from specific crops or a specific acreage. Even if there should be no quotas or allotments, an individual would have to acquire control of a farm to qualify for payments, and land values would soon reflect this fact.

The capitalization of farm program benefits creates a windfall for the people who own farmland when the capitalization takes place. In the long run it increases the capital costs of producing farm products, cancels out much of the benefits of Government assistance, and puts the farmer in a position where a substantial part of his capital can be wiped out by a change in the rules governing the program.

PAYMENTS WOULD SUBSIDIZE EXPORTS

It has often been said that payments are preferable to direct support through loans and purchases because payments would not disrupt foreign trade. This may be true in the short run. In the long run it can only be true if we assume that other countries would stand by without taking countermeasures while we subsidized production for export on a continuing basis. In the case of export crops, a payment program which assured United States producers of a return substantially above the world market would be considered unfair competition by foreign producers, because it would induce United States

producers to increase the supplies available for export without regard to the trend of world prices. Regardless of the method used, exports are subsidized whenever a commodity is exported at a price less than that which the producer received for it. The fact that we have some rather substantial export subsidies now does not mitigate the fact that subsidies are an interference with foreign trade and undesirable from a long-run standpoint.

SUPPORT WOULD BE EXTENDED TO ADDITIONAL COMMODITIES

One early political consequence of going the payment route would be the broadening of Government support programs to cover all of agriculture. In 1956 commodities receiving mandatory price support accounted for only about 39 percent of cash receipts from farm marketings; commodities receiving price support at the discretion of the Secretary of Agriculture accounted for another 7 percent of farm income, while unsupported commodities—including hogs, cattle, sheep, poultry, fruits, and vegetables—accounted for 54 percent of farm marketing receipts. Despite some bad years, unsupported commodities generally have fared as well or better than price-supported commodities in the postwar period. For example, in the 10 years, 1947-56, unsupported livestock prices averaged 110 percent of parity for beef cattle, 99 percent for hogs, and 112 percent for lambs; while corn averaged 89 percent, wheat 89 percent, and cotton 101 percent of parity with price supports.

At the present time price-support operations are largely confined to commodities that are readily storable. Adoption of the payment approach would erase the need for distinguishing between storables and nonstorables. Producers of every commodity would feel justified in demanding payments. Every commodity group would be tempted to join in the competition for the largest possible share of the payment total. Efforts to reduce payments on commodities that were being overproduced or were losing consumer favor would be fiercely resisted. As long as its products were clearing the market, any group could argue that it ought not to be discouraged from continuing full production. As a consequence of extending supports to all commodities, Government regulation and planning eventually would have to be extended to all farm products and all farmers. As the cost of the payment program mounted regulation undoubtedly would be extended to processors and distributors in an effort to squeeze margins. With the Government paying a substantial share of the farmer's return, processing and distribution costs would really loom large relative to market prices. In the case of highly processed products it might be difficult for consumers to see the effect of the payment program on retail prices. But, if the Government is going to pay large sums directly to farmers, the Government may well find itself under pressure to see that retail prices are reduced.

RIISING COSTS WOULD BRING LIMITATIONS

Unless we are to assume that the general public, through its representatives in Congress, is willing to support unlimited expenditures for agriculture, we must assume that an upward trend in the cost of a payment program eventually would result in the adoption of meas-

ures to limit the Government's liabilities under the program. Three types of limitations come to mind—a limit on the total amount that may be paid to any one producer; a limit on the total amount that may be paid out, with a consequent scaledown in the payments made to at least some classes of producers; and quota limits on the production eligible for payments.

As a practical matter, any of these approaches could be expected to include some sort of a ceiling on the payments made to all except the smallest producers. As a matter of fact, the idea of including a limit on the payments that may be made to any one operator comes up almost immediately in any serious discussion of the direct-payment approach.

As early as 1944, the Land-Grant College Committee on Postwar Agricultural Policy said “* * * there should be a maximum limit to the amount that any one producer might be paid.”⁷

The Brannan plan proposed to limit eligibility for support through a unit approach which was designed to provide support for gross sales of about \$25,000.

More recent proposals have included limitations of varying size on the amount that might be paid to any one producer. One fairly recent proposal would have limited payments to \$2,000 per farmer per year.

Some people have assumed that a limitation on the amount that might be paid to an individual producer would be of small consequence, because most of the limitations thus far proposed have been high enough to include most producers. A few proposals have even omitted payment limitations.

The history of other Government programs, however, suggests that limitations on payments to individual producers are inevitable in a payment program and that any initial limitation would be progressively reduced to the point where a substantial proportion—and probably a majority of the producers—would be affected. The politics of numbers is on the side of a low limitation on payments to individual farm operators. After all, farmers are only 13 percent of our total population, and many of the people who are classed as farmers produce very little. The 1954 census of agriculture reported that only 43.9 percent of all farms had gross annual sales of \$2,500 or more, and that only 27 percent had sales of 5,000 or more in 1954.

The initial limitation of \$10,000 on payments under the Soil Conservation and Domestic Allotment Act was gradually reduced to \$1,500.⁸ When the soil bank was under consideration in 1956, Congress considered proposed payment limitations of \$25,000 and up. All such limitations were rejected on the grounds that the purpose of the soil bank was to reduce the production of surpluses and that the cooperation of the larger producers was needed. Yet, 1 year later the Congress limited acreage reserve payments to \$3,000 per farm, which is only a fraction of the lowest limitation seriously considered when the Soil Bank Act was being developed.

A good case can always be made against unlimited Government handouts to individuals; consequently, there is an inevitable tend-

⁷ Postwar Agricultural Policy, report of the committee on postwar agricultural policy of the Association of Land-Grant Colleges and Universities, October 1944, p. 23.

⁸ This limitation has been raised to \$2,500 for 1958, in order to bring it more nearly in line with the initial limitation of \$3,000 on the payments that may be made on any one farm under the acreage reserve program.

ency to restrict such handouts to some legislatively determined concept of need. After all, why should the Government take tax money, some of which has been collected from people with relatively low incomes, and give unlimited amounts to individuals who already have above average incomes? Despite the fact that agricultural income currently is at an unsatisfactory level, there are many people engaged in agriculture who do have above average incomes. For example, there are part-time and hobby farmers, who are not dependent on agriculture, as well as some highly successful farmers.

There is every reason to believe that restrictions on payments would be progressively tightened as the desirability of making such payments to various groups was brought into public question by the inevitable newspaper stories on the operation of the program. Eventually, the program could be expected to degenerate into a "one share-one vote" proposition, or a dole restricted to those operators who could prove their poverty by passing a means test—although this might take some years.

The more efficient farm operators—that is, those with a high production per unit of input—would be squeezed between low market prices, resulting from heavy production induced by guaranteed returns for qualifying producers, and limitations on the amount that might be paid to any one individual. The production induced by a payment program at 90 to 100 percent of parity would force market prices of some commodities so low that no producer could afford to produce more than the amount eligible for payments. Thus, payment limitations would lead to a leveling of per farm production and income. This would place a ceiling on opportunity in agriculture, impair efficiency, and eventually increase the real cost of farm products although a part of this cost would be paid through taxes.

Farms would be subdivided and efforts made to conceal their true ownership in an effort to avoid payment limitations. If rigorously enforced, each reduction in such limitations would reduce the number of farmers who could stand on their own feet in a free economy and increase the number needing Government subsidies. This would destroy the independence and self-reliance which have caused many people to regard agriculture as a foundation stone of responsible self-government.

PAYMENTS WOULD MAKE FARMERS DEPENDENT ON APPROPRIATIONS

The payment approach would make farmers dependent on congressional appropriations for their net income and possibly for a part of their costs. In effect it would put farmers on the Government payroll without civil-service status. Thus, farm income would become highly vulnerable to changing political tides. Congress might be willing to provide the funds required for a payment program for a period of years, but economy waves do develop from time to time.

The Department of Agriculture recently made a study of the potential cost of payments to implement price supports at 90 percent of parity—the level of support currently being advocated in Congress in conjunction with a payment proposal on cotton. The Department's study was focused on 1962 to allow time for the effects of the payment program to manifest themselves. This study indicates that payments to implement 90 percent of parity supports on all farm

commodities would cost \$10.7 billion annually by 1962 if made on unrestricted production and \$7.3 billion if restricted to quantities equal to 1952-56 average disappearance.⁹ Net farm income was only \$12.1 billion in 1956.

Incidentally, the Department ignored the question of limitations on payments to individuals and the effect such limitations, politically determined, would have on per family net farm income. This is a very important consideration to the individual farm family.

It may well be that Congress would never take the drastic step of terminating a payment program without providing for a transition period. But it is entirely possible that appropriations would fall short of the amounts needed to meet announced program goals. The record shows that the Congress was never willing to appropriate the full amounts authorized for parity payments under the Agricultural Adjustment Act of 1938.

The recent vote in the House to deny funds for the 1958 acreage reserve program and the eventual restoration of two-thirds of the funds authorized for this program illustrate what could happen.

Since a payment program which promised producers a profit would induce a high level of production and thereby depress market prices, any congressional cut in the funds needed for payments would subject farmers to a real squeeze.

UNIONS ARE INTERESTED IN "CHEAP FOOD"

The reason that appropriations for a payment program are more likely to be restricted than eliminated is to be found in the fact that a payment program would attract powerful political support from non-farm groups. Some businessmen apparently believe that a payment program would enable them to sell more goods to farmers. Others tend to favor this approach in the belief that it would reduce Government interference with the functions of the marketing system. Some large labor groups have long supported the use of payments in conjunction with support goals which would assure a high level of production. From their standpoint this means cheap food. Heavy production would depress market prices and a part of the cost of producing food would be transferred to the taxpayers. It is true that most laboring people pay taxes, but income taxes are progressive, and the unions that favor payments also favor proposals which would greatly reduce the taxes paid by their members.

Once a payment program were in effect we could expect to have great political campaigns fought over the issue of lower payments to farmers and reduced taxes versus an increase in the workers' cost of living.

A payment program would teach the average consumer to expect to buy farm products at less than their true value. This would create real consumer resistance to the increase in farm prices that would be needed if the payment program should be terminated or reduced in scope.

The seriousness of the consequences of the payment approach could be reduced by setting payment goals at low, stop-loss levels, or by setting up a system where small supplemental income payments would be

⁹ U. S. Department of Agriculture, *Estimates of the Cost of Programs for Price Support by Direct Payments*, Washington, W. C., October 10, 1957.

made only to those groups of farmers experiencing the greatest difficulty in a particular year. The political history of the controversy over payments provides little basis for believing that either approach is likely to be adopted.

Since farmers—including the part-time, residential, and subsistence groups that produce little for the market—are only about 13 percent of our total population, farm programs need nonfarm support to endure. Labor constitutes the largest nonfarm group favoring the payment approach. Unions favoring payments have recommended support levels that would induce a high level of production. Unions that take this position apparently are interested in getting cheaper food by shifting a part of the cost to the taxpayer. They probably would like to encourage a maximum number of farmers to remain in agriculture—and out of the industrial labor market. It may also be that they would like to destroy the traditional independence of farmers by making them dependent on the Government for their net income. If farmers were dependent on Government payments, and continuation of the payments were dependent on union support, the political power of the unions obviously would be enhanced. The farm groups that favor payments generally favor high, fixed support goals. The recommendations of economists for the use of payments attracted little public support until former Secretary of Agriculture Brannan proposed that payments be used to implement high supports rather than the low supports proposed by many of the economists in connection with their recommendations for payments. Payment proposals introduced in Congress during the last several years almost universally have proposed 90 to 100 percent of parity supports.

THE WOOL AND SUGAR PROGRAMS ARE NOT PRECEDENTS

No discussion of the payment approach would be complete without reference to the present wool and sugar programs, which sometimes are cited as evidence that payments will work. Both wool and sugar are deficit commodities that must be imported in substantial quantities to meet domestic needs. The implications of making payments on a commodity that farmers historically have been unwilling to produce in adequate supply are decidedly different from the implications of taking this approach with commodities where production normally has equaled or exceeded domestic demand. Aside from this it should be noted that the sugar program does not use payments to bridge the gap between market prices and a support price.

The Sugar Act supports sugar prices through a quota system which limits the amount of sugar that domestic and foreign producers can market in the United States. Payments are made to producers at fixed rates to facilitate administration of restrictive features of the program and to redistribute income within the sugar industry. Regardless of the merits or demerits of these payments, they are decidedly different from the compensatory payment schemes which would pay farmers the difference between the market price and a support price.

The wool program was adopted by Congress for the announced purpose of encouraging the production of 300 million pounds per year as a national defense measure. There is, as yet, little basis for considering this program a success. Costs greatly exceeded expectations

during the first 2 years that it was in operation. Annual payments are still running ahead of the funds which Congress earmarked from the tariff receipts on wool to pay program costs. There are few, if any, other farm commodities where a payment program could be financed out of tariff receipts on imports of the commodity. In the 1956-57 marketing year producers received \$40 from the Government for every \$100 they received from the sale of shorn wool. Thus 29 percent of gross income from shorn wool came from Government payments. On the basis of 1956 cash receipts from farm marketings, a comparable program for all agricultural commodities would cost \$8.8 billion which happens to be approximately 73 percent of 1956 net farm income. Agriculture would indeed be a political pawn if any such percentage of net farm income were dependent on Government payments.

SUMMARY

In summary it should be clear that direct payments are not a cure-all for the difficulties that have been encountered under existing agricultural programs. The economic consequences of rigid, high level supports are not entirely dependent upon the method that is used to make supports effective. If we are going to guarantee producers of any commodity a profitable return, we must be prepared for serious economic consequences regardless of the method used. The undesirable economic consequences of any support program can be reduced by decreasing the support level.

Programs that would add materially to the stability of farm prices and income can be carried out without using direct payments to supplement farm prices or income. On the basis of the record there is little reason to believe that payments are likely to be used for any purpose other than to implement rigid, high level supports. By the time experience had proved that such a program is unworkable and intolerable, it might be very difficult to turn back. As a matter of fact, the nature of the payment approach and the political support it would attract from nonfarm groups make it likely that the regimentation and disruption of our agricultural economy would proceed further and faster under the payment approach than it has under present programs.

The committee on parity concepts of the American Farm Economic Association concluded in 1946 that:

2. In allocating productive resources and people, the only alternative to relative prices that we have available is the direct order of the Government. Political command cannot fail to result eventually in decrees as to who can farm, and where, and how, and who must leave the farm.¹⁰

In the opinion of the writer this basic conclusion is just as true of a payment program as it is of loan or purchase programs designed to provide the same degree of support to farm income.

The payment approach cannot be justified by pointing out the undeniable fact that existing farm programs have had serious economic consequences. We are not forced to choose between present programs and the payment approach. We still have the opportunity to review

¹⁰ Outline of a Price Policy for American Agriculture for the Postwar Period, Report of the Committee on Parity Concepts, *Journal of Farm Economics*, February 1946, p. 391.

the whole agricultural situation, to decide what can and what cannot be done, and to develop programs that will meet the legitimate needs of agriculture without creating more problems than they solve.

As a first step toward the development of a sound farm program, we need to recognize that prices have a function in guiding both production and consumption. Then, we need to recognize that dependence on Government guarantees is not the road to a sound and prosperous agriculture and that this basic fact cannot be changed by substituting direct payments for loans and purchases. When we have done this, we will have created a basis for developing a sound farm program out of the things that will work to improve the opportunity for farmers to earn and get a high per family income.

X. ADJUSTING PRODUCTION THROUGH
ADMINISTRATIVE CONTROLS

(PAPERS FOR PANEL J)

ADJUSTING PRODUCTION THROUGH ADMINISTRATIVE CONTROLS

AGRICULTURAL PRODUCTION CONTROL

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QUESTIONS AND ANSWERS IN BRIEF

1. *Allotments and marketing quotas*—where have they succeeded? And where failed? And why?

(1) Allotments without marketing quotas have been effective when accompanied by substantial payment incentives or the privilege of obtaining nonrecourse loans substantially above market prices.

The first test of the use of allotments was in the substantial rental and benefit payments on an individual voluntary contract basis in the emergency programs of 1933-35. Allotments were accepted by most of the growers of the crops to which they were applied and compliance generally met requirements.

Low prices in 1932 and 1933 undoubtedly contributed to the general acceptance and compliance with allotments. The Bankhead Cotton Control and the Kerr-Smith Tobacco Control Acts introduced supplementary pressure in 1934 on the growers of those two crops, adding somewhat to the effectiveness of the voluntary contracts upon adjusting the total production in line with national goals.

The conservation allotments with payments offered in 1936 and subsequently as inducements to reduce or divert acreage from the basic soil-depleting crops to soil-conserving and improvement crops failed to hold in check or to reduce production to any significant extent. The most significant result of the soil-conservation programs has been to increase yields and thus to maintain production on acreage otherwise reduced.

Effectiveness of adjustment allotments without marketing quotas under the act of 1938 depends primarily upon the level of price supports in relation to market prices. Some wheat growers comply in seasons when no quotas are in effect to qualify for loans when they are at or expected to be above current market prices, but as a rule except in response to low prices wheat adjustment allotments are ineffective without marketing quotas. Many cash corn growers in the Corn Belt comply with allotments to qualify for loans when market prices are low in relation to price-support levels. But such compliance usually has little effect upon the total corn crop. Most of the corn is grown for feed on the farms where grown.

(2) Marketing quotas with penalties for noncompliance are generally effective in obtaining compliance with acreage allotments.

They fail to control production, however, on account of variations in seasonal weather conditions and the ability of the grower to increase the yields per acre.

The effectiveness of market control over production is also limited by the extent to which a crop may be grown for home use as food or feed. It is practically impossible to administer the controls except through market channels. It is on this account that marketing quotas have not been extended to feed crops.

2. *What are the possibilities of retiring or diverting land from intensive production through Government payments?* This was in effect tried through the soil conservation and adjustment payments without any marked success.

The experience with the soil bank to date indicates that significant results may be obtained through substantially higher payments.

3. *Is it feasible to adjust production by compulsory controls not involving Government payment?* It is possible as demonstrated by the emergency control acts applied to cotton and some types of tobacco. Some degree of control can be obtained through the privilege of nonrecourse loans. Continuous production control probably would not be accepted unless there is an apparent advantage to the growers in terms of higher prices and incomes.

4. *Will farmers accept stringent production controls?* Some have and others doubtless would accept stringent controls for the prospect of substantial gains.

The need of export subsidies would depend upon the position of the crop in the market and whether or not an export position was to be maintained.

The need of protection to consumers would depend upon the extent to which restrictions in production were to be undertaken. In the past consumer protection devised has been ineffective and not really required.

5. *What impediments to efficient production may controls create?* Control imposed on the basis of past records tend to prevent or slow up adjustments in the direction of more efficient production. They may retard or prevent shifts in acreage to more productive land and the application of more efficient methods of production requiring more land or a shift in areas. These impediments have been overcome to a considerable extent in the past in connection with several crops by interruptions in controls for a few years permitting the readjustments necessary for increasing efficiency in the use of resources. The war and postwar break in the controls upon the production of cotton and wheat permitted and really stimulated significant readjustments.

6. *What has experience shown about the feasibility of allotments and payments to large numbers of producers?* There is ample evidence that the administrative machinery of the Government is adequate for the job. The real problem is to make efficient use of funds and programs to obtain the desired results.

7. *Are there important changes that would make such programs more effective?* Yes.

(1) Production control could be made more effective by placing all marketing quotas on a quantity basis. The shift to this basis would initially require some change in the administration relating to production in excess of quotas but it could be managed so as to increase significantly the degree of control.

(2) Marketing quotas should be transferable to permit readjustments in production among growers. This would reduce one of the significant criticisms of the use of controls. It would add to the problems of administration but once established the significance of the gains in efficiency would more than offset any additional cost of operations.

(3) Legislative and administrative provisions with reference to controls, price supports, and soil conservation should be revised to coordinate the several programs more closely toward common objectives. For example, legal minimum allotments and marketing quotas should be eliminated. Conservation and control programs should be developed for each farm so as to be in harmony with national objectives.

(4) Control programs designed for a major crop should be extended to or adjusted in relation to other crops closely related in use. For example, a control program for corn should include or take into account the position of other feed grains.

EXPERIENCE WITH CONTROLS

Briefly summarized, the use of acceptable allotments and marketing quotas has been only partially successful in holding production in line with goals. Controls imposed under emergency conditions with prices very low have been effective to a significant extent in reducing the production of the crops upon which they have been imposed. But with prices advancing or at relatively high levels the effectiveness of controls has diminished. The conclusion is that the effectiveness of controls depends to a considerable extent upon marketing conditions for the specific crops and for alternative products. Profitable price levels provide incentives for producers to find ways and means to offset allotment restrictions.

Why Government aid in controls?

Before proceeding with a review of experience with controls it seems desirable to consider briefly the basic reasons for undertaking national production control programs in agriculture. Outside of agriculture final production waits upon order. This condition keeps production fairly well in line with consumer requirements. In agriculture on the other hand the producers with few exceptions do not receive direct orders for their goods and in many cases the weatherman intervenes to a significant extent to limit the farmers' control over production. Furthermore, the national economy outside of agriculture is largely controlled by large business organizations, laborers, and consumers and with some aid from the Government these controls are effective. Private cooperative efforts to control farm production have failed.

Production control was introduced by the Agricultural Adjustment Act of 1933 because of the failure of a program designed to stabilize prices and farm income through Government aid to cooperatives without any control over production. At this time the controls were provided for use in checking continued surplus production and adjusting the use of agricultural resources more nearly in line with the prospective demands for farm products. The primary concern in 1933 was to raise prices and incomes to farmers from the great depression.

The emergency experience, 1933-35

The most significant experience in production controls under the Adjustment Act of 1933 was that with cotton and some types of tobacco. The national adjustment programs were offered to farmers on a voluntary basis. Farmers were invited to participate under contracts in which they agreed to reduce plantings or production in return for rental or benefit payments and the prospect of higher prices for their products.

Cotton.—The most successful reduction program in 1933 was that applied to cotton. A high percentage of farmers voluntarily signed contracts in 1933 to plow up or to plant less cotton. In 1934 legislation was added in the form of the Bankhead Cotton Control Act to prevent nonsigners from gaining the benefits of reduction in production without reducing acreage. This act provided for taxing cotton at the gin but with exemption certificates representing marketing quotas for noncontract as well as contract producers. The act resulted in an increase in the number of cotton producers entering into contracts and in effect tightened the production controls to a considerable extent. Growers accepted it and approved its extension for 1935 and 1936 crops but the act was repealed after the Supreme Court decision invalidated some features of the Adjustment Act.

The cotton-control program operated through the years 1933-35 reduced cotton acreage and production by about one-fourth. This reduction was sufficient to have a significant effect upon the accumulated stockpile of cotton. The Government had on hand a considerable stock acquired by the Federal Farm Board and nearly all of this had been moved into the market by 1936.

A significantly unique feature of the Bankhead Control Act was the provision for the sale or transfer of exemption certificates in case a producer received certificates for a larger volume than he ginned. He could offer surplus certificates to a grower who had production in excess of his allotment assigned to the Secretary of Agriculture, or carry them over for use the following season.

Tobacco.—The emergency adjustment programs for some types of tobacco were also effective in reducing production. Tobacco-reduction programs in 1933 were limited to some cigar types which were substantially reduced. Growers harvested record crops of the principal cigarette tobaccos, the flue-cured and burley types, in 1933. Prices in the early flue-cured auctions fell to such low levels that all auctions were closed pending negotiations with buyers and the signing up of growers in contracts for reductions in production in 1934. The 1933 market was strengthened significantly by the prospect for the reductions in 1934. Most of the flue-cured and burley growers signed contracts and the production of these types of tobacco were reduced substantially in 1934.

Contracts with growers of some other types including fire-cured were used primarily to prevent increases in plantings resulting from improvements in market conditions and prices on account of reductions already made by producers and the general improvement in market conditions.

A supplementary control measure, the Kerr-Smith Tobacco Control Act, also was enacted in 1934 to make the voluntary tobacco programs more effective. This supplementary control measure provided for taxing the sale of tobacco with marketing-quota-exemption certificates

for both contracting and noncontracting growers. They were not transferable.

Grain crops.—Surplus production of corn, wheat, and rice had contributed to depressing the prices of those grains to low levels in the great depression.

Corn and hogs were linked together in a program to reduce the production of corn and hogs in 1934. The signers of corn contracts were to be required to reduce acreage by at least 20 percent from their bases. Droughty conditions, however, reduced the acreage harvested and yields, thus greatly reducing production. The drought was much more significant than the adjustment program in reducing production. Contract signers for 1935 were requested to reduce acreage but adverse weather conditions forced many growers to plant less than they had intended and unfavorable conditions in the growing period in some areas again resulted in a crop below the average level of production.

The program for reducing the number of hogs on farms was carried through. However, the reduction of the 1934 and 1935 corn crops on account of weather conditions also contributed significantly to adjustments in number of hogs.

Weather conditions also affected significantly the production of wheat by reducing acreages harvested and yields. In 1935 contract terms were relaxed and in effect winter wheat growers were allowed to harvest whatever remained for harvest of the wheat they had sown and spring wheat growers were free to sow as much as they chose. Under these conditions wheat production was reduced to a significant extent and the accumulated stocks were used up. The adjustment was effected primarily by unfavorable weather conditions.

Rice production had been reduced in 1933 significantly below the average of the previous 5 years. The rice control programs were designed in part to prevent rice acreage from increasing from the level of these years and they were successful in preventing any very significant expansion of acreage and production in the years 1934 and 1935.

Thus, the experience of the 1933–35 programs indicates that when farm prices and incomes are very low, most growers of crops for market will voluntarily participate in programs for reducing acreage and production in view of prospects that such a program will result in higher prices and incomes. In this period incentives in the form of rental and benefit payments were added inducements for accepting allotments. The supplementary acts relating to cotton and tobacco were designed to increase compliance but probably had little effect. It seems unlikely that a voluntary program without specific payments as inducements to compliance or penalties for noncompliance would hold long beyond the first stages of recovery from a depression.

Soil conservation and control

The first step in the direction of developing a continuing soil conservation service was taken in 1935 in an act to provide for the protection of land resources against soil erosion. This was amended early in 1936 to broaden the scope of considerations to include economic conditions affecting soil use and to provide for control of use by the allotment of crops to be grown. Payments were offered to growers for compliance with allotments and associated conservation practices.

Participation was entirely voluntary. Any grower could obtain an allotment by presenting an acceptable crop plan for the season. He was subject to no penalty for noncompliance except the denial of the payments available for compliance.

The conservation programs for 1936 and 1937 offered payments for diverting land from soil-depleting crops, including wheat, corn, cotton, tobacco, peanuts, and rice to soil-conserving and soil-building crops, including pasture, hay, and cover crops. Many farmers participated in these programs for which they received substantial payments. But these programs were not effective against expanding production in response to the advance in prices from the low level of the depression.

The conservation program of 1937 covered about 65 percent of all cropland and the participating farmers reduced soil-depleting acreage about 13 percent. However, the total acreage of these crops was increased. The amount of fertilizer and lime used increased and a favorable season contributed to the production of large crops.

Cottongrowers freed from the effective controls of 1935 and encouraged by the support of prices at relatively high levels increased the area in cultivation from 28 to 34 million acres in 1937. Record yields produced a record crop which provided surplus stock to be carried through many years. There were corresponding developments in the production of the most important types of tobacco. Large crops harvested in 1937 and 1938 resulted in the beginning of an accumulation of surplus stocks and low prices. The failure of the voluntary conservation allotment programs to hold production in line with requirements and the decline in prices stimulated action to provide for more effective controls.

The Agricultural Adjustment Act of 1938 and control programs

The large crops of 1937 resulting in low prices and the prospect of again beginning the accumulation of surplus stocks stimulated legislative action to provide for control programs that would be more effective than the soil conservation and allotment programs. The act passed early in 1938 provided for allotments and marketing quotas for the basic crops—tobacco, cotton, wheat, corn, and rice. This legislation provided for an ever normal granary of adequate reserve stocks and soil resources and methods of control intended to guard against wasting resources in accumulating surplus stocks.

Tobacco.—The two most important types of tobacco, burley and flue-cured, have been subject to control under the act of 1938 every year excepting 1939. The fire-cured and dark air-cured types also have been under control in most years. The experience with burley, flue-cured, and the fire-cured types is presented briefly as examples of effective control under significantly different conditions.

The demand for burley and flue-cured types has been increasing with the increase in demand for cigarettes until recently. The demand for fire-cured types used in other tobacco products has been decreasing, on the other hand. The control problem in the case of tobacco grown for cigarette use has been to prevent expansions in production in response to satisfactory prices at a rate more rapid than

required for consumption. The problem in the case of the fire-cured, on the other hand, has been to cut back production in the face of accumulating stock and adjust to reductions in domestic consumption and exports.

Marketing quotas were first applied to these 3 types of tobacco in 1938. In 1939 growers rejected quotas and were freed to plant as much as they chose. Conservation allotments remained in effect, but without any penalty for noncompliance with the allotments. The growers of flue-cured responded by increasing acreage by about one-third, while burley growers held acreage about in line with the allotments and marketing quotas. The acreage of burley and flue-cured types of tobacco were held quite stable through the war and postwar years until 1953. Production increased through increasing yields to supply the increased requirements for those tobaccos used in cigarettes. Yields per acre about doubled. Under these conditions it was necessary to hold the acreage stable to avoid increasing production at a more rapid rate than requirements.

With the demand for fire-cured tobacco declining and yields increasing, it was necessary to cut back acreage allotments. The allotted acreage of fire-cured was reduced by two-thirds, from 160,000 in 1940 to 51,000 in 1955. The continual reduction of the size of acreage allotments consequently reduced the volumes that growers could market. With limits in the reduction in the size of allotments the burden of adjustments has fallen heavily upon those who have had the larger allotments.

The growers of burley and flue-cured tobaccos are now faced with the prospect of no growth and possibly a declining demand for their tobaccos, with yields continuing to increase. A reasonable balance between supply and consumption for flue-cured tobacco was maintained through the 1953 crop, with annual allotments exceeding a million acres. Increases in yields together with some decline in domestic consumption beginning in 1953 have resulted in an increase in the quantities of those tobaccos being placed under loan and in increasing stocks. The use of the filter tips and significant changes in the character of demand for cigarette tobacco seems to be reducing the demand for the lighter milder grades, resulting in a reduction in the volume of these types of tobacco used in cigarettes. The demand for burley tobacco is being affected in the same manner as that for flue-cured.

In the case of tobacco as in the case of cotton the allotments to growers on an acreage basis are contributing continual pressure to increasing yields and when the demand is not increasing this becomes pressure for reducing allotments. It is believed by some that changing allotment from acreage to poundage would be beneficial by relieving the pressure to increase yields per acre and also would result in a shift in production to lighter tobaccos, more in line with the quality preferred in the production of cigarettes.

Cotton.—Upland cotton has been subject to control under allotments and marketing quotas during 15 of the last 20 marketing seasons beginning with 1938.

The first application of marketing quotas with allotments in 1938 reduced the area harvested from 34 to 24 million acres and production from 19 to 12 million bales. The acreage harvested was substantially below the national allotment and continued below allotments until they were discontinued in 1943. The increasing war demands for other crops grown in the Cotton Belt and relatively low prices for cotton contributed to holding production below allotments and quotas.

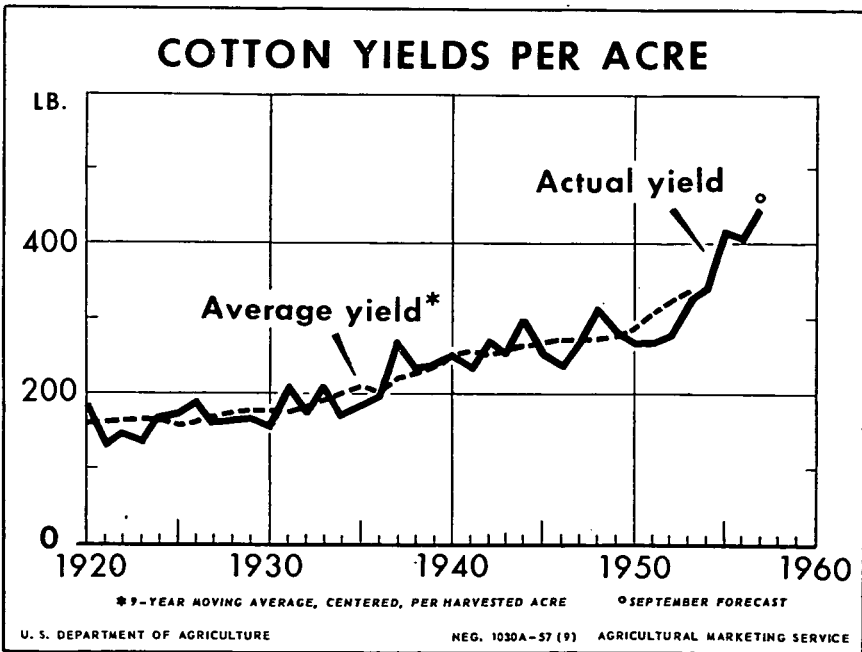
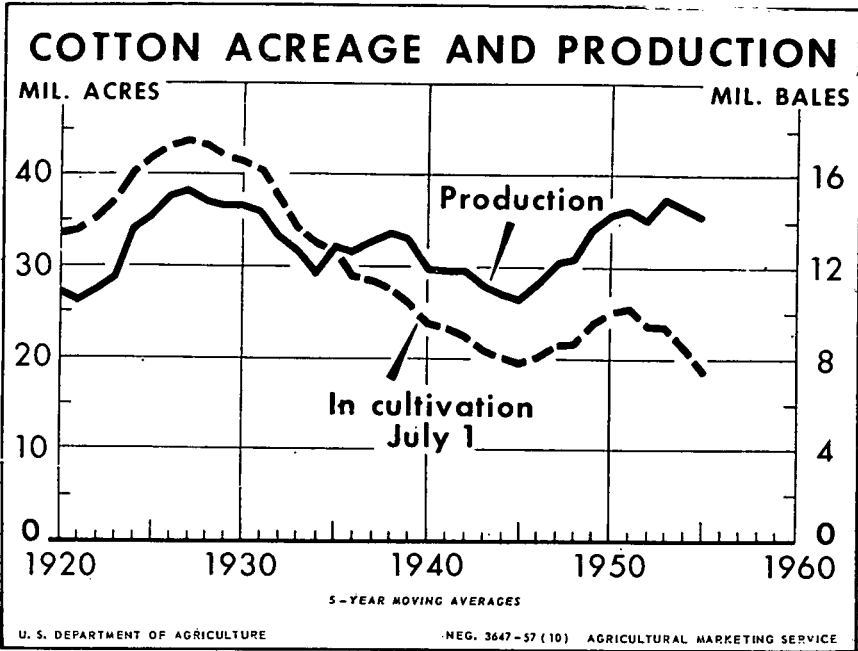
The second test of upland cotton control was in checking postwar expansion in response to high prices. The average farm price advanced from around 20 cents in the 1944-45 season to over 30 cents per pound for the 1947 crop. Prices continued at about that level through three marketing seasons. The area harvested increased from 17 to over 27 million acres from 1945 to 1949. Production increased from 9 to 16 million bales and stocks began to accumulate. The application of a cutback in acreage and production to about the level from which the increase started in 1945 again proved the effectiveness of the control machinery.

Conditions associated with the Korean war increased the demand for cotton and control was discontinued until in 1954. The area harvested returned promptly to near the high level of 1949 and then declined nearly one-third without control. Increased yields, however, maintained production and surplus stocks began to accumulate. The return to controls in 1954 reduced the area harvested to less than the national allotment but production continued to exceed requirements.

With an effective instrument of control in use why did production continue to exceed requirements after the end of the Korean war until stocks increased to 14.5 million August 1, 1956? The answer is to be found in legislative limitations on controls and administrative practices. The basic legislative limitation on control, that the national marketing quota shall not be less than the smaller of 10 million bales or 1 million less than the estimated quantity consumed domestically and exported, may not appear to be a significant limitation. Production was cut to the minimum allotment level of 10 million bales in 1938 and 1950. But in the more recent seasons of control, production has not been pressed to the minimum level. A significant factor in holding production above the minimum level has been the increasing yields which have not been fully reflected in determining acreage allotments.

Finally, the act of 1956 pegged the minimum acreage allotment at 17.4 million acres which at current high yields would continue to produce surpluses.

The methods prescribed for converting national allotments and marketing quotas into State and farm quotas encourage growers to try to increase yields and the increasing yields hold production above the national allotments and quotas. This is effected by the use of 5-year average yields per acre in translating allotments to States and farms and by the provision that the farmer may market whatever quantity is produced on the acreage allotment.



The soil reserve program has pulled the acreage below the minimum allotments provided for the 1956 and 1957 crops but production continues above the minimum national marketing allotment. Production has been reduced to about the level required for domestic consumption and unassisted exports. If stocks were reduced to a normal level, effective production control would still be required to hold production in line with requirements at an acceptable price level.¹

Wheat.—The Adjustment Act of 1938 provided for acreage allotments and for marketing quotas on wheat. The conservation allotment program was continued through the 1943 season but probably had but little influence upon wheat acreage. National adjustment allotments were announced first for the 1939 and 1940 seasons without marketing quotas. Since compliance with these allotments was required to obtain loans, they became somewhat more effective than the conservation allotments alone, the area seeded was reduced from 79 to 63 million acres between the 1938 and 1939 seasons. Marketing quotas were added for the 1941 crop with the national allotment remaining the same as for the previous crop. The area seeded was reduced 1 million acres but the area harvested was greater, the yield was higher and a larger crop was harvested. Acreage allotments and marketing quotas at the minimum acreage level were announced for the 1942 and 1943 crops but were suspended by the Secretary. Growers were reducing seedings below the legal minimum of 55 million acres, this in response to the relatively low prices for wheat.

All provisions for the control of wheat were suspended on account of the war and postwar conditions until the 1950 season. A series of large crops and the beginning of an accumulation of stocks signaled danger ahead for that crop. A national allotment was announced. This with prices declining from the very high level of the 1948 season induced growers to cut plantings from a total of 84 million to 71 million acres, somewhat below the national allotment. The outbreak of the war in Korea produced another emergency justification for terminating allotments for the next season.

Marketing quotas were invoked in 1954 and the national allotment was reduced to the legal minimum of 55 million acres in 1955. While seedings exceeded this the total acreage harvested was reduced below the minimum level.

Wheat stocks reached a record level in 1955 as a result of maintaining a high level of production, with domestic consumption and exports declining. A seeded area of only 19 million acres would be required to produce the wheat needed from the 1955 crop. This indicates the extent to which the 55-million-acre minimum fixed in 1958 is obsolete. It also points to the importance of the soil-reserve program as an instrument for pulling acreage below the legal minimum allotment.

The soil-reserve program has contributed to reducing the wheat area seeded to 49.7 million acres. Record yields, however, continue to produce a crop in excess of current requirements and maintain a high level of surplus stocks. More pull or force will be required to bring wheat production to a level that will provide an opportunity for clearing the surplus accumulation. After that is done, control

¹ See U. S. Department of Agriculture, Various Methods of Supporting the Price of Cotton, 85th Cong., S. Doc. No. 12, January 17, 1957.

without this obsolete legal minimum will be required to hold production in line with current requirements and the maintenance of adequate stock reserves.

Rice.—The rice crops were subject to acreage allotments in 1938–43 and in 1950 without marketing quotas. A marketing quota program became effective in 1955. The allotments may have had some effect but the areas harvested exceeded allotments in all years until 1955. A reduction below allotment was effected by the acreage-reserve program. About 243,000 acres were placed in the reserve program in 1957. The area seeded was reduced to 1,375,000, 14 percent below 1956 and 29 percent below the average.

Corn.—For corn the Adjustment Act of 1938 provided marketing quotas and acreage allotments in commercial producing areas. Marketing quotas were never offered to growers, the several secretaries using the discretion provided in the act to avoid a test of their use in controlling the marketing of corn. The provision for quotas was repealed in 1954.

Allotments were in effect for the crops of 1938–42, 1950, and 1954–55. Compliance with the allotments was required for obtaining full support of nonrecourse loans.

The Soil Bank Act of 1956 provided for base acreages instead of the allotments for the crop of that year. This was done to raise the level of the corn acreage for the soil-reserve program above the allotment level. Growers failed to approve the change by the required two-thirds vote and the allotment base was restored for the 1957 crop.

The effectiveness of corn-acreage allotments is very difficult to determine. The areas included in the commercial corn area change and the relation of the production outside of this to that subject to control changes. When allotments are reduced, some growers in the area comply and reduce while others ignore the allotments and may increase plantings. In all the years in which allotments have been in effect the actual plantings in the commercial areas have exceeded the acreage allotted.

The ineffectiveness of corn-acreage allotments is indicated by changes from 1953 to 1955. Corn allotments were reduced by 9 percent. The total harvested acreage was reduced only 1 percent and increased yields offset this reduction.

The commercial area produces more than two-thirds of the total crops but many of the growers in that area are producing primarily for feed and are governed by livestock and product prices more than by corn prices.

It might be expected that if the corn allotments actually reduced acreage to a significant extent in the commercial areas concentrated in the Corn Belt, the effect would have been reflected in an expansion of acreage outside the Corn Belt and possibly also in the expansion of feed crops in the Corn Belt itself that were not subject to allotments. The record, however, indicates no significant shifts that can be related to the corn-control program. The eastern Corn Belt has maintained acreage and production while acreage has been reduced to some extent in the southern and the western Corn Belts. The feed-grain acreage excepting that of sorghums has remained remarkably stable. Expansion of sorghum grain acreage in recent years is ob-

viously related to the reduction of acreage in wheat and cotton rather than to the corn acreage allotment program.

The allotment programs do not appear to have had any significant effect upon corn yields. Average yields have increased more than 50 percent since the beginning of the use of allotments. It is to be noted, however, that yields outside of the areas in which allotments were applied have increased along with the yields of the area under allotment. Obviously, the great increase in corn yields is attributable primarily to the effect of the extension of hybrid seed, extending the use of fertilizers, soil-conservation practices, and other technological improvements in corn cultivation.

In the beginning of the agricultural adjustment programs it was thought that the adjustment and stabilization of corn production would be effective in adjusting and stabilizing livestock reduction to market requirements. While the allotment programs together with the loan programs have been effective to some extent, they have not been adequate to accomplish the desired results since the programs have been optional and have been applied to only about one-fourth the corn production. A more extensive and effective use of the programs would be required to accomplish the desired results. Furthermore, since corn is becoming a smaller proportion of the total feed supply, effective control of feed supplies would require the extension of controls to the other feed crops including barley, oats, and grain sorghums. A recent report of the Department of Agriculture suggested this as one approach to a more effective stabilization and adjustment of feed and livestock production.²

² U. S. Department of Agriculture, Possible Methods of Improving the Feed-Grain Program, 85th Cong., S. Doc. No. 55, 1957.

THE SOIL BANK AS A SOLUTION TO THE FARM PRICE AND INCOME PROBLEM

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A soil-bank program can be set up which will reduce farm output and increase farm income if the people of this country, Congress, and the administration desire it, and if Congress will pass and the administration will administer a program that meets certain fundamental requirements. The 1956 and 1957 soil-bank programs did not meet these requirements.

THE PROBLEM

Ever since the beginning of the 1920's, with the exception of the period dominated by World War II, farm surpluses have characterized the American agricultural scene. During much of this period, agricultural supplies have been at levels that would not permit movement in the free market at prices generally acceptable to the people of this country, a dilemma expressed many times in actions taken by Congress.

Since 1952 the United States agricultural plant has been geared to produce 4 to 6 percent more total agricultural products than the market would take at generally acceptable prices.¹ Without effectively adjusting the aggregate supply or increasing the aggregate market, we attempted to maintain more acceptable prices than would have prevailed in the free market during this period. The result was large storage holdings by the Commodity Credit Corporation despite the heavily subsidized disposal programs.

Most studies indicate that when total agricultural production is varied 1 percent, farm prices change at least 2 to 4 percent in the opposite direction.² Thus, a small change in the aggregate or total output has a large influence on price and income. This accounts for farm prices being severely depressed currently with rather moderate increases in supply.

ALTERNATIVE SOLUTIONS

Some have proposed bringing about the adjustment by expanding markets; others have proposed adjusting output. Expanding the market takes the form of (1) increased exports, (2) increased use of agricultural products by industry, or (3) increased human consumption at home. These are all worthy goals and should be pursued. However, in the main they are long-run propositions. It is difficult to get quick short-run changes. In the export area, the problem of disrupting established markets is encountered even in giving food away, except where there is a crop disaster in some country.

¹ John D. Black and James T. Bonnen, *A Balanced United States Agriculture in 1965*, Special Rept. No. 42, National Planning Association, Washington, D. C., April 1956.

² Schultz, T. W., ch. 5, *The Economic Organization of Agriculture*, McGraw-Hill Co., 1953.

Reducing marketing margins falls into the same category. Opportunities for gain are here, but they are long-run gains when we consider the total agricultural income.

Thus, the real drive from the short-run standpoint has been aimed at adjusting production. Three alternatives here take the spotlight: (1) Let lower prices shrink production, (2) use some form of production or marketing controls across the board, or (3) draw land out of crops by making payments either for nonuse or a lower economic use—commonly referred to as soil-bank approach.

Some might wish to add transfer payments to agriculture or price supports as a panacea. While these may ease the income situation for agriculture, they are like aspirin: they ease the pain but are not a cure.

Low prices will adjust agricultural production in the long run, but the process is slow. We know that when a supply of one commodity is large and the price is low relative to others, the farmer will adjust more quickly than when he has to adjust total production. This is the problem of shifting resources within agriculture.

However, if all commodities are in oversupply and there is no commodity to shift to, there is a problem of shifting resources out of agriculture. This is a much more difficult shift and takes longer. Some marginal land and some farms must shift out of crops as a result of unprofitable returns. This shift requires several years. The question is, Does agriculture and society want to go through the price and income hardships of this course of action unaided as compared to the other alternatives?

If the control route is taken and it proves effective, then controls must limit production or marketing of all major commodities or at least of all major harvested crops. We have had enough experience with controls to know the problem of setting up individual crop limitations. Too much substitution is possible in agriculture to solve the overall supply problem by reducing only certain crops. The total problem must be treated.

The third alternative involves drawing certain acres of harvested crops out of production and shifting them into grass, fallow, or trees through rental or acreage reserve payments. In most cases, the land will go to grass. The grass may or may not be used, depending upon the plan. A fixed percentage of land taken out on each farm would adjust production, but like any other control program it would not correct the long-time production problem unless the acreage were held out of production indefinitely.

Nearly any rational approach to decreasing or slowing down the rate of increase in agricultural output means some decrease both in manpower and harvested crop acreages. This same situation is involved whether output is controlled in some form or free prices are allowed to operate. Therefore, if we are to have a farm program, it makes economic sense to develop one which eases this adjustment of putting cropland to other uses and aiding the transfer of more farm youth into areas of greater opportunity. Thus, it appears to me that this is how the soil bank fits into the present situation. An immediate program more like the present acreage reserve may be justified, but the longer run program should take on more of the features of the conservation reserve. A companion program would be one which aided farm youth in shifting into areas of greater opportunity.

A more appropriate name might be a "Federal land reserve program." Land might be shifted in and out of the reserve to keep the agricultural economy in balance in somewhat the same manner that the Federal Reserve System operates to stabilize our general economy today.

REQUIREMENTS OF AN EFFECTIVE SOIL BANK

To make a voluntary soil bank work, payments must be large enough and administered so that they will shift some 30 to 50 million acres from grain crops, cotton, and tobacco to grasses, legumes, fallow, and trees. It cannot be made to work by programs which simply bring about shifts from one grain crop to another. Neither can it adjust production if it is used primarily as a crop disaster relief program. It must meet certain fundamental requirements.

Requirement No. 1.—The United States has a total land area of 1,904 million acres. Of this, we have approximately 450 million acres in plowland.³ Approximately 150 million acres of this plowland have been in hay, pasture crops, and fallow. The remaining 300 million acres of plowland have been in other crops, idle and failure. If a 4- to 6-percent adjustment in supply is desired, this involves a shifting of 30 to 50 million acres out of the 300 million acres now in grain, cotton and tobacco, into grass, fallow, idle or trees. This would mean a 10- to 17-percent shift in the 300 million acres now cultivated in grain crops. For a soil-bank program to be effective, this is the kind of an adjustment involved. The question might be raised: Why is a 10- to 17-percent adjustment required to obtain a 4- to 6-percent adjustment in supply?

First, grass, legumes, and fallow are, to a certain extent, complementary in crop production. Some increase in the acreage devoted to these uses on many farms will increase the total quantity of grain produced if the land is rotated. Preliminary research studies at Purdue indicate that increasing these acreages of grass and fallow by 10 percent (15 million acres) would not reduce total production if the roughages produced on the grass acreages were used by livestock.⁴ If they are not used, it would appear that something like a 10-million-acre adjustment would still be required before any reduction would show up if the land were rotated.

Second, we can expect new farm know-how will continue to be applied in agriculture with or without a soil-bank program. Therefore, if agricultural production is reduced, some 5 million additional acres of harvested crops will have to be shifted to the soil bank each year to equal the additions coming from new technology in an average year.

Third, the lower than average producing acres of land will be shifted into the soil bank, and since there is always some slack in establishing bases and compliances, another 5- to 10-million acres will have to be shifted before we realize any reduction.

Thus, we might have a soil bank of 25 to 30 million acres and still not see any noticeable effect on aggregate production, but a further shift of 10 to 15 million acres out of the nonroughage crops might provide a significant adjustment in total agricultural output. To try

³ United States census of agriculture, 1954.

⁴ Dunbar, J. O. An Appraisal of National Forage and Livestock Incentive Programs for Adding Stability to Farm Incomes, unpublished doctor of philosophy degree thesis, Purdue University, January 1954.

to bring about an adjustment by taking out 15 to 20 million acres when a soil bank requires 30 to 50 million is like pushing a modern automobile to get it started at 15 or 20 miles an hour when it takes 30 to do the job. The effort is wasted until you get up to a speed that is effective in turning over the motor. A soil bank does not make much adjustment in production until you get up to a certain level; then above a certain level it does reduce production.

Requirement No. 2.—Payments must be large enough to obtain the necessary farmer participation. An interregional study made in the corn, cotton, wheat, and tobacco areas this year indicated that the rate of payment would need to be about 25 percent higher than the 1957 rates if we were to get from two-thirds to three-fourths of the producers to participate.⁵ This was on the basis of starting payments at the farmer's normal level of production and not from a reduced base. If the rates of payment are too low, only the producers operating under unusual situations will participate and the bulk of the producers will consider the program a failure. If, on the other hand, the rate is set high enough to obtain general participation, the program will tend to be considered successful by the producers.

Requirement No. 3.—Either a total harvested grain, cotton, and tobacco crop base or a total plowland base must be established for each farm. Which base is necessary depends upon the type of soil-bank program selected. This requirement is necessary to avoid shifting other land into production as certain croplands are shifted out.

Requirement No. 4.—Any soil-bank program must be announced in sufficient time so that an educational program can be carried on with the producers before they make their planting plans. They must be informed of the program before they have completed their cropping plans and made commitments for feed, fertilizer, and other items of production. This is an essential requirement of any program.

METHODS OF MAKING PAYMENT

Most proposals for making soil-bank payments can be summed up under four general headings:

1. Payments on the basis of the gross value of the particular crop reduced such as was the case under the acreage-reserve program this year.
2. Payments for renting a certain percentage of the plowland acres.
3. Payments for shifting a given percentage of grain and cultivated cropland into grass with no utilization of grass.
4. Payments for shifting total grain and cultivated cropland into grass with the grassland used.

⁵ IR Project 881, unpublished data, agricultural experiment station, Purdue University.

In the interregional study each of these proposals was tested in 1957 in the corn, cotton, wheat, and tobacco regions of the United States. In this study each producer was asked at what price he would shift 5, 15, and 25 percent of his acreage under each of these 4 proposals. The rate asked for shifting 25 percent was slightly higher than for shifting 15 percent. The explanation given for asking more was that 25 percent was so large it cut into their farm operations so that they felt they would need a higher rate. They asked slightly less for a 5-percent shift than for the 15-percent shift.

The rates asked at the 15-percent level for each of these programs are shown in figure 1 for a group of small grain farms in Indiana. Similar charts have been prepared for small and large farms in corn, cotton, wheat, and tobacco-growing areas. There was a wide variation in the rate at which various individuals were willing to put 15 percent of their land in the soil bank. To obtain 100-percent cooperation would require a rate that was impractical. However, a rate about 25 percent higher than that paid in 1957 would obtain from 67- to 75-percent participation in nearly all of the areas studied. These rates were indicated by producers on the basis of the prevailing prices in the early part of 1957, and on the basis that the 15-percent level would be a shift from their normal grain and cultivated crop acreage or from their normal plowland acreage.

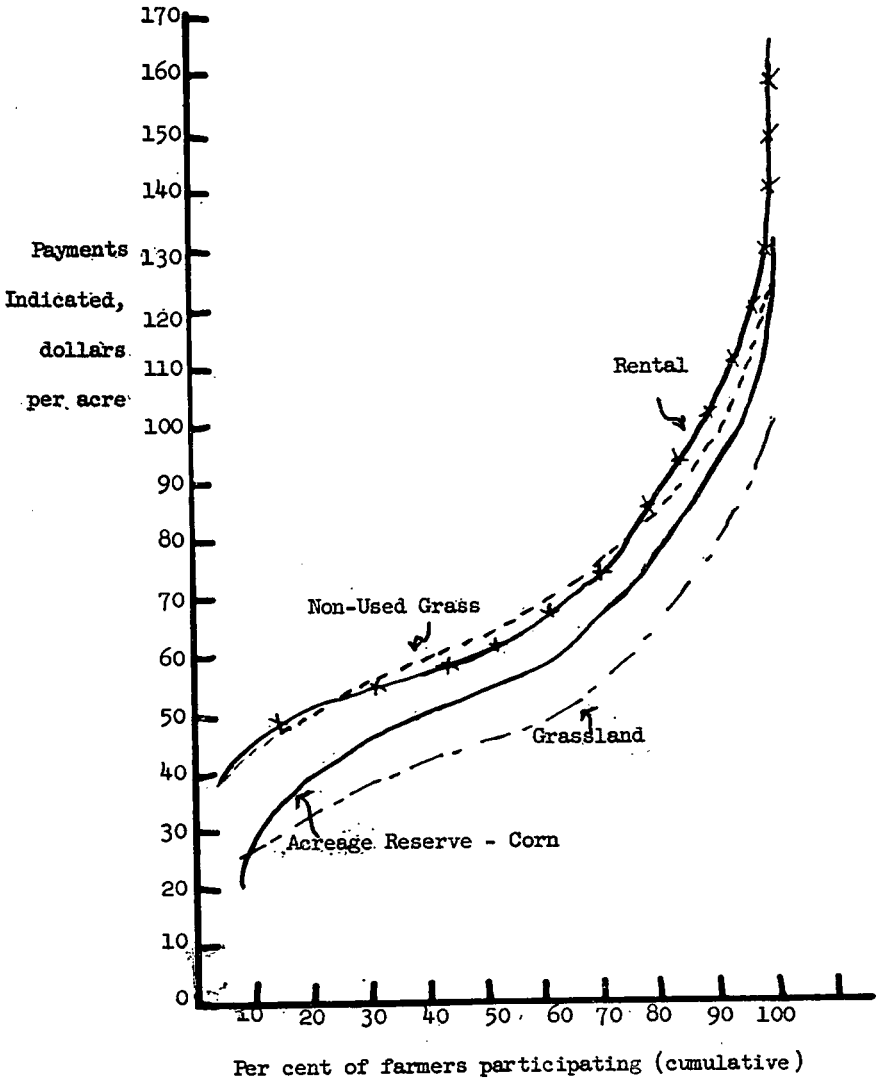


FIGURE 1.—Indicated farmer participation with various rates of payment on different programs for 25 central Indiana small grain farms, 1957. (Assumes shifting 15 percent of total grain cropland to indicated use, except that the rental program is based on 15 percent of total plowland.)

Project IR 881 would indicate that farmers would shift their land, where the grass was used, at a sufficiently lower rate of payment in most areas to almost offset the reduced production that would be obtained where the grass was not used. In other words, if producers were allowed to use the grass, more acres would have to be shifted to get the same reduction, but they could be shifted at a sufficiently lower rate to get about the same reduction for the same dollars expended.

If the payment is made on the basis of the first proposal, the adjustments will be relatively uniform throughout the country. They will tend to be uniform between the most productive and the least productive areas. The amount of money required for a given shift in national production will be highest under this plan. However, it will distribute the adjustments and the payments uniformly throughout the country. When payments are withdrawn, the land in the most productive areas will be that most quickly shifted back to corn, cotton, wheat, and tobacco. Therefore, from the standpoint of attaining longtime adjustments in land use, the first proposal will likely be least effective.

The second proposal would also likely bring about somewhat uniform adjustments, if payments were made from area to area on a productivity basis. If, however, they were relatively higher in the high-cost crop area, the adjustments could be shifted more heavily in these areas. No historical base would be involved in this plan. This plan is easiest to explain to farmers. The lower producing land and lower value crops would be the land and crops taken out and probably more acres would have to be involved than in plan 1. But the cost would not be much different, the study would indicate.

Proposal 3 would be similar to proposal 1, except it would allow the farmer more flexibility in his cropping. It would avoid his having to split fields and allow him to plan his crop program within the overall limitations of his grain and cultivated crop base. Both proposals 3 and 4 might be modified so that payments were made on the basis of the use to which the land was being shifted, rather than on the basis of the present use of the land. A proposal along these lines was set forth by the Purdue Agricultural Experiment Station.⁶

Under proposal 4, when the payments are withdrawn or reduced, much of this land would probably stay in grass, once the grass was reestablished. It would be the best economic use for the land with peacetime prices. The land-use adjustments brought about would be most nearly in line with the kind of shift that would occur if free prices were allowed to bring about the adjustment. More of the money would tend to flow to the marginal grain areas and more adjustment would take place there. The high producing and low cost corn, cotton, wheat, and tobacco areas would make some adjustment, but they would continue to grow more nearly the normal acreages. They would receive their return in higher prices if the program were effective.

Economic analysis shows that to get a farmer to shift 1 acre of 50-bushel cornland into grass, fallow, or trees costs more than to get a farmer to shift 2 acres of 25-bushel cornland into grass, whether the grass is used or not. With 50-bushel cornland, the margin of return above operating costs tends to be more than on the 2 acres of high-cost land. This is equally true for other crops.

Proposal No. 4 would be similar to proposal No. 3, except that the grass would be used and more acres would have to be shifted in order to get the same reduction in total agricultural output. Studies in the Corn Belt indicate that if cornland is shifted to grass and the

⁶ Dunbar, John O., J. Carroll Bottum, *Agricultural Economics, Economic and Marketing Information*, June 24, 1954, Purdue University.

grass is pastured, about two-thirds to three-fourths as much reduction can be obtained by pasturing the shifted land as by keeping it idle. Studies in the Great Plains area also show about two-thirds as much reduction if acreage is shifted from grain crops to grass or pasture. As indicated previously, the interregional soil bank study indicates that the cost of a program where grass is used would be nearly the same as the cost of a program where the grass is not used. Obviously, more acres would have to be shifted to grass to obtain the adjustment, but farmers indicated their willingness to shift into grass at a substantially lower figure if they could use the grass. The majority of farmers favored this proposal.

If the grass in the soil bank were used, dairy and sheep production would increase slightly, but the increase would go mostly into beef production. Beef supplies might increase perhaps by 10 percent, if the program were successful and carried on over a period of time. Such a program, however, would decrease total meat supplies; therefore, beef producers would benefit from the reduced supplies of competing pork and poultry products. Poultry and pork producers would lose some of their market to beef producers and beef prices would gain less than pork and poultry prices.

Retiring entire units.—If, in certain areas, whole farms could be put into the soil bank, the cost of the soil-bank program could be reduced and more effective adjustments would be attained. Many farmers expressed a desire to place their entire acreage in the soil bank. The placing of the entire acreage in the soil bank enables the farmer to shift not only his land resources, but also his other resources. The reduction of variable costs due to partial shifting of the land resources is only a small part of a farmer's total cost. He could shift for considerable less payment under a program which would allow him to put in his whole farm.

COST OF PROGRAM

To obtain the necessary adjustment under the various proposals applied uniformly to all areas and all farms, would require from \$1.5 to \$2 billion annually. If proposals 2, 3, and 4 were geared marginally toward the individual farms in areas of highest crop cost or to the marginal crop areas, the total requirements might be reduced to \$1.25 to \$1.75 billion annually. It is impossible to set forth the exact costs without setting up specific programs. Payments under the acreage reserve phase of the soil-bank program in 1957 averaged \$28.75 per acre. Payments of \$36 or one-fourth higher would require \$1.8 billion to shift 50 million acres. This represents about the increase that farmers indicated would be necessary under present conditions to bring about a uniform shift.

AN APPRAISAL OF THE CURRENT SOIL-BANK PROGRAM

The soil-bank program did not become available until late in the 1956 planting season. The first year of operation resulted in 12.3 million acres being put in the acreage reserve program. This participation included corn, 5,450,000 acres; wheat, 5,654,000 acres; cotton, 1,113,000 acres; peanuts, 43,645 acres; rice, 28,003 acres; and tobacco, 31,671 acres. In addition 1.3 million acres were put in the conservation reserve.

Much of this land that went into the soil bank in 1956 was land in the drought sections of the country. Thus, the reduction from the program was only minor as compared to what it would have been without a program. Total farm output was actually one index point higher in 1956 than in 1955.

In 1957 approximately 20 million acres were put into the acreage reserve. This consisted of 12.8 million acres of wheat; 4.5 million acres of corn; 3 million acres of cotton; 204,000 acres of rice; and 80,000 acres of tobacco. In addition, nearly 7 million acres were put in the conservation reserve, making a total of 27 million acres taken out of crops. However, the July 1, 1957, crop production reports show the 5 basic crops reduced only 16 million acres below 1955, while the acres of other cultivated and grain crops were up 4.5 million acres. This was then a reduction of only 12.5 million acres in all cotton, tobacco and grain crops: less than half of the 27 million acres put into the soil bank.

The acreage reserve program did not set up a total cotton, tobacco, and grain crop base for the farm, which resulted in each farmer substituting his next most profitable crop for the crop reduced and then taking his idle acres from the least profitable land on the farm. In the areas, for example, where summer fallow is practiced, the soil-bank acres were taken out on summer fallow and in many cases barley, grain sorghums, or some other crop was substituted for wheat; to reduce the total grain crops in these areas was thus unnecessary. In the Corn Belt soybeans were substituted for corn and in the hard winter wheat areas it was sorghums.

The wheat, cotton, rice, and tobacco producers were already at their allotment levels because of the mandatory features of the control and support programs for these crops. Therefore, the producers of these crops already being at allotment levels were eligible for acreage reserve payments for any further adjustment. A low percentage of the corn producers planned to stay within their allotments with the corn acreage allotment and support program optional. Therefore, corn producers who wished to go into the acreage reserve program had to make a substantial adjustment in order to get within their allotment and be eligible for any acreage reserve payments. Data from an interregional⁷ soil-bank study in the grain and livestock areas of central Indiana indicated that they would have had to reduce their corn acreages by 36 percent from their normal or planned acreage in order to stay within their allotments in 1957. Since much of the corn is grown on livestock farms where it is fed, the producer, by making the first adjustment to his allotment, was at a disadvantage.

In summary it must be said that the 1956 and 1957 acreage reserve programs have not been effective in materially reducing the agricultural output. Neither has the program been fully effective in distributing the funds appropriated for this purpose. It would appear that both the acreage and conservation reserves in 1957 have reduced the 1955 levels of cultivated and grain crops by about 12.5 million acres. This reduction should have some modest effect upon production. However, when we recognize that this reduction has been made on the lower producing acres and that some of it must be credited to

⁷ IR Project 881, unpublished data, Agricultural Experiment Station, Purdue University.

the conservation reserve, it is evident that the acreage reserve will not make a substantial reduction to our surplus problem. A program with the level of payments a little higher and coupled with the soil base acreage for the cultivated and grain crops covering the entire farm as was used with the conservation reserve, would have been more effective. In the Corn Belt the reduction of the allotment in the commercial corn areas to the 27-million acre level likewise decreased participation substantially.

OTHER CONSIDERATIONS

A question often posed in connection with making the soil bank effective is, Wouldn't farmers under an acreage reserve program apply more capital and labor in the form of fertilizer and other ways and offset the adjustment resulting from the reduced acres in grain crops? This may be true over the longer run if farm incomes are kept high or if grain prices are kept high by the program, but in the very short run it appears that this may be overemphasized. In the central grain and livestock area of Indiana, the fertilizer use on 68 farms in the acreage reserve program in 1957 was compared with the fertilizer use on 68 matched farms not in the acreage reserve.⁸ Statistical analysis shows no difference in the amount of fertilizer used on a per acre basis in the two groups of farms. A study made in Indiana in 1955 comparing fertilizer use on farms in the corn control program and those not in the program gave similar results. Paulsen, Arnold, Heady, and Baumann⁹ at Iowa State College, on the other hand, found that those farmers who complied with their corn acreage allotments increased fertilizer use more than those who did not comply with acreage allotments. This may vary some between areas. However, this point is overemphasized for any given year or two within the limits with which prices might be changed. Improved technology will continue with or without a program. At any given moment each farmer always tries to maximize his income within the framework of his resources and knowledge.

The question may be raised, If agriculture were to be brought into balance by an acreage-reserve program, where would it end? Will technology make it necessary to have an ever-enlarging acreage-reserve program with a growing cost to the Federal Government? Or will demand catch up with supplies and make it possible to release the acreage-reserve acres back into production?

The balance of evidence indicates that the withdrawal problem is likely to be a serious one if land is taken out uniformly on all farms. For this reason, making the payments to areas which can most economically shift to grass might be the most economically sound. Eventually, the grass might be used and eventually the payments might be reduced or withdrawn without too much of the land shifting back to grain crops at peacetime prices.

Some have proposed that about 10 percent of the soil-bank payment each year be considered as a lien against the land if it is brought back into crop production without Government approval in following years. This might be particularly effective and desirable if entire

⁸ IR Project 881, unpublished data, Agricultural Experiment Station, Purdue University.
⁹ Paulsen, Arnold, Earl O. Heady, and R. V. Baumann, What Can Corn Allotments and Soil Bank Do, Iowa Farm Science, vol. 12, No. 2.

units or large tracts are retired. Of course, in times of emergency, the Secretary would have the power to revoke these liens.

The soil-bank approach leaves the agricultural economy relatively free except for the adjustments brought about by soil-bank payments. Carried on within reasonable limits, it avoids the complications in international trade that arise from production controls and high supported prices.

The soil bank will require tax dollars and if effective will raise food prices slightly. However, this is the very purpose of the soil bank to adjust output so that farmers may receive returns for their resources more in line with those received by the rest of our society.

The soil-bank approach moves agricultural production patterns in the direction of more soil conservation. It does not preclude programs for increasing the market for agricultural products. In general, if we are to have a program which adjusts supply, it appears to be more in line with our accepted American goals and values than does a direct production or marketing limitation program. It does require the appropriation of Federal funds or the granting to some governmental organization, in order to raise funds, the right to tax marketed, agricultural products.

SUMMARY

If a market cannot be found for our expanding supplies of farm products and the free economic forces are allowed to work, some of our high-cost grain crop producing areas will shift to other uses. The movement of human resources out of agriculture alone is not enough to bring supply and demand into balance. An intelligent and properly administered soil-bank program can ease this shift. Eventually, it should be directed toward shifting the marginal cropland to other uses. In the early stages more emphasis may be given to uniform shifts throughout the country to obtain more immediate, but temporary, adjustments. In developing farm programs in our dynamic economy, the adjustments that the normal economic forces are bringing about should be recognized and farm programs should be developed to facilitate these adjustments rather than to retard them or maintain the status quo, if we accept economic progress as one of our goals.

THE CASE FOR PRODUCTION CONTROL RESTATED^{1 2}

Willard W. Cochrane, University of Minnesota

The case for production control in American agriculture rests, not upon the wishful thinking of farmers, the socialistic dreams of college professors, or the nefarious schemes of politicians; it rests upon the economic organization of American society. It rests upon what I have described as the agricultural treadmill. The average farmer, the representative farmer, is running on a treadmill; the faster he runs in the quest for increased returns the faster goes the treadmill, turning out more farm products for consumers. On this treadmill the average farmer, the representative farmer, is not gaining incomewise; if anything, he is losing. He has become the instrument through which cost-reducing, output-increasing technologies are passed for the benefit of consumers generally. He has become the principal instrumentality of a low food-price policy.

THE GENERAL THEORY OF THE AGRICULTURAL TREADMILL

The average farmer is running on a treadmill because his capacity to command good and stable prices, and good and stable incomes in the market, is weak—because his power position in the market is weak. And this weak market position grows out of three related circumstances: First, the high value that society generally in the United States places on technological development and application; second, the market organization within which farmers operate; and, third, the extreme inelasticity of the aggregate demand for food.

Point 1.—The American people have not singled out agriculture to carry the burden of technological advance; American prize technological advance highly, expect it, and demand it in all segments of the economy. And, valuing technological advance highly, Americans have been willing to support research and development efforts all along the line—in manufacturing, in marketing and distribution, and in agriculture.

With few exceptions, businessmen believe that it is good business to develop new products and better products, and to this end they spend vast sums in research and development. In fact, competition in the nonfarm sectors commonly takes the form of product competition; in this common situation firms do not compete through price; they compete through product differentiation—by an improved product or a different product. And, as we all know, society, acting through the National and State Legislatures, has been generous, if

¹ The case was first presented by the author in the little article, *The Case for Production Control*, the *Metropolitan Milk Producers' News*, Syracuse, New York, December 1954.

² The case presented here is adapted from the forthcoming book by Willard W. Cochrane, *Farm Prices—Myth and Reality*, University of Minnesota Press. The estimates and the analysis upon which many of the conclusions of this paper rest are to be found in this forthcoming volume.

not lavish, in financing research and development work in agriculture. Our society has paid for and has experienced a rapid rate of technological advance in most lines of endeavor, including agriculture.

Point 2.—The farmer operates in a sea of competitive behavior; each farmer is a tiny speck on this competitive sea; and the output of each farmer is a tiny drop in this sea. With rare exceptions, each farmer operates in a market so large, that he, the single farmer, can have no perceptible influence on the market. In this situation, known to economists as a perfect market, the farmer must take as given the prices generated in the market.

Confronted with this situation, the farmer reasons "I can't influence price, but I can influence my own costs. I can get my costs down." So the typical farmer is always looking for some way to get his costs down. And by definition a new technology is cost reducing (i. e., it increases output per unit of input). Thus, the farmer is on the lookout for new, cost-reducing technologies. Built into the market organization of agriculture is, then, a powerful incentive for adopting new technologies—the incentive of reducing costs on the individual farm.

Point 3.—If the demand for food were highly elastic all would be sweetness and light in agriculture. If the aggregate demand for food were elastic, the bountiful and expanding supplies of farm food products that farmers want to produce would sell in the market at only slightly reduced prices, and gross incomes to farmers, in the aggregate and individually, would increase. But the aggregate demand for food is not elastic; it is inelastic and extremely so. Hence, a little too much in the way of total output drives the farm price level down in a dramatic fashion, and reduces the gross incomes of farmers in a similar fashion. And the persistent pressure on each farmer, hence all farmers, to adopt new technologies and thereby reduce unit costs has the effect of continuously putting a little too much output on the market. The peacetime tendency for aggregate supply to outrace aggregate demand keeps farm prices relatively low.

To summarize this part of the argument: the high value that society places on technological advance guarantees a continuous outpouring of new technologies. The incentive to reduce costs on the many, many small farms across the country guarantees a rapid adoption of the new technologies. Widespread and rapid technological advance drives the aggregate supply relation ahead of the expanding aggregate demand relation in peacetime; and given the highly inelastic demand for food, farm prices fall to low levels and stay there for long periods.

THE HARD POLICY CHOICES

Too much production in each peacetime year since 1948, the capacity to produce too much currently, and the promise of too much in the foreseeable future have made a shambles of agricultural price and income policy in the United States. Secretary of Agriculture Benson in a recent letter to Senator Ellender describes the situation in forlorn terms; he writes:³ "A technological explosion is occurring on American farms. Production per farm worker has doubled in the last 15 years. This creates a new dimension in farm policy and makes it virtually impossible to curtail agricultural output with the type of

³ Washington, May 2, 1957, USDA 1377-57.

controls acceptable in our society." In short, farm technological advance has become a monster on the loose, which politicians and administrators despair of taming.

The key to the problem is perhaps to be found in one phase of the above quotation from Secretary Benson—a new dimension in farm policy. Perhaps a new way of looking at agriculture, involving a new conception of the place of agriculture in an industrial economy with new institutions of management and control, is called for. At least this is the thesis of this paper; the technological explosion, the technological monster, in American agriculture requires a new dimension in agricultural policy. But, if this is the case, some hard choices confront society in general, and farm people in particular.

The first choice.—The first choice is not for farmers to make; it is a choice that all of society must make. It grows out of the circumstances that since 1933 the money costs of supporting farm prices and incomes have been met by all of society, and since 1951 the out-of-Treasury costs of these supporting actions in agriculture have increased greatly. And it is concerned with the question, Should all of society continue to underwrite the money costs of price and income support in agriculture, or should all of society bring this policy to an end? The issue can no longer be avoided; the magnitude of income transfers into agriculture from the Federal Treasury (i. e., from all of us) in the middle 1950's forces the choice.

The net Treasury costs of the 1957 program of price and income support in agriculture (the program beginning July 1, 1957) are estimated in the President's budget request to Congress to amount to \$3.8 billion: \$2.5 billion for price supporting and surplus disposal operations, and \$1.3 billion for the soil bank. (Gross Treasury expenditures are estimated to be considerably larger—running up to \$5 billion). The decision to transfer funds of this magnitude, and lesser but still large amounts in past years, into agriculture has been a tacit one—a tacit one based upon the hocus-pocus that those funds were not lost, but were recoverable from the sale of Government-owned stocks of agricultural commodities at some indefinable time and place. And two wars made this hocus-pocus come true.

But the decision by society to cover the Treasury costs of price and income support in agriculture can no longer remain tacit. First, because wars have gotten out of hand; war is more likely to exterminate all life than to raise the level of farm prices. Second, because of the rapid rate of aggregate output expansion, powered by farm technological advance, has made even moderate levels of price and income support in agriculture terribly expensive. An annual net expenditure of \$3.8 billion, which is more likely to increase than to decrease in future years, has forced out into the open the debate, and the decision, as to whether society should continue to cover these costs of price and income support in agriculture.

Now it is possible that society acting through its political representatives will decide that it should continue to meet the costs of price and income support in agriculture. The rationale might run as follows: (1) We want a rapid rate of technological advance in agriculture to insure abundant food supplies at relatively low prices; but (2) we recognize that the farmer, operating in the competitive market in which he finds himself, is in a weak bargaining position (that is, is running on a treadmill); hence (3) we should in the interest of

fairness pursue a course of action designed to yield him a reasonably good and stable income. This is a possibility; it is what we are doing in 1957, and we may pursue this policy into the indefinite future. But the decision to pursue such a course of action can no longer be a tacit one—be hid under the hocus-focus of recoverable costs—the annual expenditures are too great.

If society chooses to defray indefinitely the money costs of price and income support in agriculture, one approach and a reasonable one is the income payments, or compensatory payments, approach.⁴ Many agricultural economists and leaders have advocated this approach,⁵ but George E. Brandow has perhaps presented the general idea in its most modern and appealing form. Brandow outlines the main features of a modified income, or compensatory, payments program as follows:⁶

The program described here calls for assigning marketing allotments on historical bases to producers. With certain exceptions, the total producer allotments for each commodity is to be about 75 percent of total marketings in a base period. Market prices are not to be supported nor production controlled. If market prices fall below intended prices, direct, compensatory payments are made on marketings not in excess of each producer's allotment. Quantities in excess of allotments may be marketed but return only the market price to the producer. The total marketing allotment for each commodity is fixed, but the total is distributed among producers according to sales over a 3- or 4-year period; consequently, allotments can shift slowly among producers.

Thus, the attempt to use price for both income and resource allocation objectives is made by dividing each producer's output of each designated commodity into a major portion receiving income support and a residual portion on which the market value of marginal production is realized. The program is to include as many commodities as economic and administrative considerations permit. Twenty products are suggested for inclusion initially. The proposal is inherently an industrywide program, and the allotments, unlike current marketing quotas, are not voted "in" or "out" by producers of individual commodities.

With regard to the level of intended (or fair) prices and cost and returns under the program as of 1954, Brandow has this to say:⁷

Income considerations are of particular importance in establishing the average level of intended prices. The amount of money that Congress and the public are willing to see spent

⁴ Where society underwrites the money costs of price and income support in agriculture, there are, of course, other alternatives. The 1957 farm program is one, although a not too attractive one. Domestic demand expansion among the 60 million low income people in the United States is another. But there are real human value and supply response problems in this approach. In short, there are more blind alley approaches to the price-income problems of commercial agriculture than most folks appreciate.

⁵ Perhaps the two men with whom the idea is most commonly linked are T. W. Schultz and Charles F. Brannan. For the Schultz version see *Agriculture in an Unstable Economy*, McGraw-Hill Book Co., 1945, pp. 221-235; for the Brannan version see statement by Secretary Charles F. Brannan at a joint hearing of the House Committee on Agriculture and the Senate Committee on Agriculture and Forestry, April 7, 1949.

⁶ A Modified Compensatory Price Program for Agriculture, *Journal of Farm Economics*, November 1955, pp. 717-718.

⁷ *Ibid.*, pp. 729-730.

on farm income support imposes some upper limit on how ambitious the program can be, and indirect efforts on resource allocation will also be of some importance. It would seem reasonable to try to keep the purchasing power of net income of farm operators from falling much below the 1954 position. As data presented later suggest, setting intended prices at 90 percent of modernized parity might have approximately this result * * *.

Total income from marketings might be expected to decline from \$30 billion in 1954 to \$26.4 billion under the program. Direct payments [of \$3 billion], however, would pull cash income up to within \$0.5 billion of the 1954 position; and reduced expenditures for feed because of lower prices might equal this amount. Income from meat animals and eggs would increase; income from food grains, cotton, and tobacco would decline materially. The nonfarm public would pay to farmers via the market and direct payments about the same amount as farmers received under price support in 1954, and in return consumers would obtain a larger volume and more desired combination of farm products.

This is the rational approach to income protection for agriculture. The need for income protection in agriculture is openly recognized, income payments are distributed in an effective and equitable manner, and the advantageous aspects of a free market pricing system are retained.

In the setting of the 1950's the approach does, however, have one important weakness. Guaranteed prices at 90 percent of parity for 75 percent of each farmer's production would trigger a rapid expansion in aggregate farm output. At the reasonably good, and guaranteed, incomes that such prices would generate, farmers would have a strong incentive to adopt new technologies as they become available, and they could finance them too, with the result that aggregate output would surge ahead of aggregate demand. And, as aggregate output outraced aggregate demand, the farm-price level would fall and the money costs to the Government of the compensatory payments would increase. A program involving payments to farmers of \$3 billion, as of 1954, might well increase to \$6 billion within a few years.

But what has been said above with respect to the workability and limitations of the modified compensatory payments approach has assumed that all of society was willing to underwrite the continuing Treasury costs of price and income support in agriculture. It has assumed that all of society acting through the Federal Government was willing to transfer into agriculture some amount, ranging from \$3 billion to \$6 billion, year after year into the indefinite future. This is a large assumption indeed.

In the judgment of this writer, it is something that society will not choose to do. The strength of Secretary Benson's policy position in recent years derives, in large measure, out of the unhappiness, the tiredness, of society with the continuing and costly aspects of price and income programs for agriculture. Society wants to get out of the continuing and costly business of supporting farm prices and incomes; this is abundantly clear.

The second choice.—If the national society is unwilling to underwrite the Treasury costs of price and income support for commercial agriculture, then all farmers comprising commercial agriculture are confronted with a decision of the most basic kind. The decision is concerned with the following question: What course of action shall commercial agriculture pursue where it receives little or no income support from the rest of the economy? How is commercial agriculture to organize itself to live and prosper in an economic world in which it receives little or no income support from the rest of the economy?

Basically the alternatives are two. The first policy alternative is: Return to the free market (or a drastic version of the flexible price-support approach, which is really a free market with price steps in it). More precisely, pursue a policy in which each individual farmer is free to plant, produce, and sell what he wants, and each individual farmer accepts the prices and incomes generated in such a market. The second alternative is: Control production. More precisely, restrict entry into agricultural production and adjust supplies to demand, commodity by commodity, year after year, to yield reasonably good and stable prices and incomes. These are the alternatives which agriculture must choose between: Where agriculture "goes it alone" there are no others. This is the hard choice confronting commercial farmers.

After reaching the conclusion that nothing that the Democrats or the Republicans have developed in the way of a price and income policy for agriculture has "worked," Secretary of Agriculture Benson in the previously mentioned letter to Senator Ellender issued agriculture an invitation to return to the free market (or a flexible price-support program where prices would flex downward until those prices cleared the market, which again is no different from a free market except that the price slide has steps in it). Secretary Benson argues as follows:⁸

We are in the midst of great scientific changes. Agriculture is able to produce abundantly, and appears amply capable of meeting our needs for food, feed, and fiber as far into the future as we can see with confidence. No production controls acceptable to American farmers appear capable of choking off this abundant flow.

Since we apparently cannot legislate scarcity, we must learn how to live with abundance.

If any product is abundant, it cannot long be priced as if it were scarce.

If farm products are abundant, the need and the challenge is to build markets so that this abundance can be used. We cannot build markets by pricing ourselves out of them.

Secretary Benson obviously finds the restrictions to individual decision making that must be a part of effective production and market controls more distasteful than the low farm incomes that a free market would generate. Or stated positively, he values, he prizes, freedom of individual decision making in farming above good and stable incomes from farming. And in appraising the value systems of farmers, he finds that farmers generally share his system of values. Perhaps Mr. Benson is right in this; perhaps farmers generally do value inde-

⁸ Op. cit., Washington, May 2, 1957, USDA 1377-57, pp. 6 and 7.

pendence of decision making in their farm operations above good and stable incomes from those operations. But if this is the case, farmers generally must be prepared to follow the Benson logic and accept a free-market policy. Farmers cannot have the best of two different economic worlds, unless the rest of society is willing to pay for this luxury.

But this writer is inclined to doubt that farmers generally value independence of decision making in their farm operations more than they value good and stable incomes from those operations. This writer is inclined to believe that farmers generally would be willing to restrict the management decision area to realize higher and more stable incomes for that management function.

Sugar producers in the United States, for example, operate within the framework of a controlled industry, and they don't seem to be terribly unhappy, or restive, under the burden of those controls. In fact, sugar producers give every evidence of liking their program of supply control. Fluid-milk producers, too, who have lived through the chaos of free-market pricing for fluid milk, seem to like the partially controlled markets in which they typically operate (i. e., the Federal and State order markets). And although all is not perfection in the tobacco industry, tobacco farmers have given no indication in recent years that they would like to give up a rather rigid quota system. In sum, whenever and wherever farmers have become convinced that reasonably good and stable incomes were absolutely dependent upon production controls, they have come to approve and accept those controls.

The policy problem in agriculture in the 1950's is that farmers, generally, and urban people as well, don't know what to believe or who to believe with respect to the economic position of agriculture. They are thoroughly confused with respect to the facts and the relationships of the agricultural situation, and are even more confused with respect to the price-income-quantity consequences of alternative courses of action.

Farmers have lived so long under the myth of a self-adjusting or easily adjusted agriculture, whereas in fact agriculture is always out of adjustment, that they are unable to rationalize theory and fact, myth and reality. Political leaders of both parties, most farm leaders, and most white-collar farm experts have told farmers so many times that agriculture is basically sound, but only a little out of adjustment (which a little tinkering with the price mechanism, or the imposition of some temporary controls would correct), that farmers generally do not know what kind of a fix they are really in. Farmers generally do not know that they are running on the agricultural treadmill, hence they do not appreciate the desperate nature of their situation.

Certainly few economists have tried to explain to farmers the reasons for the feast-and-famine aspects of their industry, and only very recently have farm leaders come to appreciate the output expanding force of farm technological advance. Thus, farmers have not been convinced that adjusting supplies to demand, commodity by commodity, year after year, was essential to good and stable prices and incomes. Farmers generally have followed the lead of their spokesmen and tolerated temporary controls, while such cures as advertising, increased efficiency in marketing, and a modest flexing of price supports were going to restore the health of a basically sound agriculture.

But this much is clear—if farmers, generally, choose the supply control route, they must do more than tolerate production and marketing controls. They must come to accept production and marketing controls in the same way that they do driving on the right-hand side of the road, paying their taxes, and sending their children to school. For the supply control approach to the price-income problems of commercial agriculture cannot succeed unless the overwhelming majority of commercial farmers approve and accept it.

Now it is a distinct possibility that farmers generally would come to accept production and market controls, comparable, say, to those in the sugar industry if (1) they recognized clearly the price-income implications of a free-market course of action, hence were convinced that good and stable prices and incomes were dependent upon conscious and continuous collective action designed to adjust supplies to demand, and (2) farm leaders would exercise some leadership and show farm people different ways that supplies might be adjusted to demand, and the implications to farmers of those different ways.

In other words, it is contended here that once the fog of the automatic myth is lifted, and farmers are able to realistically appraise the price-income-quantity consequences of this increasingly productive machine of which they are a part, they may want to place some effective production and marketing controls over that machine. They may want to control it, by regulating themselves, and thereby convert low incomes into high ones.

SOME IDEAS ON PRODUCTION AND MARKETING CONTROLS

Although most farmers in the United States have in the past viewed, and continue to view, production and marketing controls as a nuisance, three producer groups have come to accept controls over supply as a regular and continuing way of doing business. They are fluid-milk producers, tobacco producers, and sugar producers. The supply-control programs of fluid-milk producers and tobacco producers will not be discussed here, because in the typical case each lacks the first and basic requirement of a successful control program, namely, the annual determination of the quantity of a commodity that a given market will take at a price defined as fair to producers and consumers alike.⁹ This determination of the quantity that the market will take at some defined fair price is the indispensable first step in a control program, a step which if not taken usually leads to failure, and a step which by accident, or design, the sugar program contains.

In 1933 sugar was in trouble along with most other farm commodities. But it had troubles peculiar to itself. It was then, and probably is today, a commodity that could not be produced in the United States without some protection.¹⁰ And in those far-off days

⁹ Economists like to joke about a fair price, because, they, in their finite wisdom, cannot define a fair price. But the idea of a fair price, or a fair return, is terribly important and terribly real in the body politic, where the police power of government is invoked to assure fair prices and fair returns. Thus the determination of a fair price is generally reserved to the legislative branch of government, and is arrived at through compromise and conciliation among legislators. For a discussion of this most important concept see the article by the author, *An Appraisal of Recent Changes in Agricultural Programs in the United States*, *Journal of Farm Economics*, May 1957.

¹⁰ The question as to whether sugar should be raised in the United States, and how much, is not germane to this discussion. Assuming that the collective decision has been made to produce sugar in the United States, and in a specific amount, we are discussing the control programs under which it is produced.

of the 1930's pressure developed to remove the tariff protection on sugar as a means of expanding world trade and expediting economic recovery. But mounting world sugar supplies in the 1930's would have engulfed domestic producers if all protection to domestic producers had been removed. Thus, a special program was developed under the Jones-Costigan Act to reserve a part of the domestic market for domestic producers, and to share the rest of the market with foreign producers duty free. The principal instruments for dealing with the sugar problem under this act were:¹¹

* * * * (1) the determination each year of the quantity of sugar needed to supply the Nation's requirements at prices reasonable to consumers and fair to producers; (2) the division of the United States sugar market among the domestic and foreign supplying areas by the use of quotas; (3) the allotment of these quotas among the various processors in each area; (4) the adjustment of production in each area to the established quotas; (5) the levying of a tax on the processing of sugarcane and sugar beets, the proceeds of which to be used to make payments to producers to compensate them for adjusting their production to marketing quotas and to augment their income; and (6) the equitable division of sugar returns among beet and cane processors, growers, and farm workers.

In 1936 the Supreme Court ruled that the tax on processors of agricultural commodities was unconstitutional when used as a device to control production. Thus, provision 5 above was supplemented by an authorization to the Secretary of Agriculture to make payments out of the Federal Treasury from funds appropriated for that purpose. But aside from that change, and the to-be-expected continuous quota revisions, the sugar-control program of the 1950's is the program of the 1930's.

Now it may be argued that domestic sugar producers accept these industrywide controls because they know that they would perish without them. And this is probably true. The interesting point to be made here, however, is not that a producer group accepts controls rather than extinction, but that the position of farmers generally is similar to that of sugar producers.

Sugar producers and farmers generally are in the same fix—available and potential supplies would collapse prices and incomes in a free-market situation. In a free market many producers in both groups would perish. But there is one difference: sugar producers know this—farmers generally don't. The price-income structure of the farm sector of the economy has been supported so long by the nonfarm sector that farmers and their spokesmen have little comprehension of the income consequences of a free market for agricultural commodities in the 1950's and 1960's. Some first-hand experience with a free market might, however, convince a majority of farmers in a hurry that effective production and marketing controls were not such bad things.

Since sugar is atypical in American agriculture in that about one-half of it is imported, and further since the complex system of quotas in

¹¹ The United States Sugar Program, Agricultural Information Bulletin No. 111, USDA, July 1953, p. 8.

the sugar program might prove unmanageable when applied to all of agriculture (i e., it would prove difficult to integrate these commodity quota systems where every important commodity was controlled), let us look at a supply control approach that may be better adapted to the American scene in that it provides more flexibility at the farm level. Basic to this approach is the idea that agriculture be viewed as a public utility—a giant public utility composed of many, many small producing units acting in concert with the aid and consent of Government to produce the quantities of food and fiber required by consumers, at a fair return to the producers involved.

In this view, Government establishes the institutional machinery for, and grants the power to, agriculture to enable the many, many producers involved to produce those quantities of farm products demanded by consumers at a fair price. For this grant of market power, Government reserves to itself, as in the case of any enfranchised public utility (e. g., the railroads, telephone companies, and gas and electric companies), the right to determine and fix rates and prices, hence the right to determine fair returns to the producers involved.

Where competition has led to ruinously low prices and returns, or poor service, or injury to certain persons or groups, Government has historically intervened to regularize that competition, to equalize the bargaining power among contending parties, and to redress inequities (Government was performing in this role when it brought the railroads under the control of the Interstate Commerce Commission, when it gave unions the right to bargain collectively, and as it has tried to provide commercial agriculture with price and income support). And where the continuous and uninterrupted provision of a product, or service, was deemed essential to the well-being of the community, Government has traditionally granted certain firms the exclusive right to supply the needs of consumers with that product, or service, under the supervision of Government with respect to such things as rates, safety, quality, and so on (i. e., created public utilities). Now it is proposed here that the Government adopt this general policy with respect to agriculture to insure producers of reasonably good and stable prices and incomes in the first instance, and perhaps in some later period, when circumstances require it, to insure consumers of an adequate food supply at reasonable prices.

The main outlines of this monopolistic approach to agriculture along the lines of a public utility were sketched by the author at a joint meeting of the American Farm Economic Association and the American Economic Association in December 1956. They are:¹²

1. It would be the responsibility of Congress to determine and set forth fair, or parity, prices for agriculture, as it does now. But in this scheme of things the role of parity prices has changed. No longer would parity prices serve as pegs on which to support farm market prices; rather they would serve as guides in the setting of national sales quotas. Thus, in the determination of parity prices for agriculture, the Congress would in fact be determining fair prices for both consumers and producers, and the needs and interests of both groups would have to be considered.

¹² See the article *An Appraisal of Recent Changes in Agricultural Programs in the United States*, *Journal of Farm Economics*, May 1957.

2. The United States Department of Agriculture would set national sales quotas for each principal agricultural commodity in amounts which the USDA had estimated would clear the market at the predetermined fair, or parity, prices. In practice this might mean the establishment of national quotas on each principal farm commodity moving into the marketing channel destined for human consumption (say 15 to 25 commodities). And these national sales quotas would, of course, vary from year to year as demand conditions changed, or as Congress redefined parity prices. To avoid, or to minimize, the difficult problem of integrating production controls vertically, national sales quotas would not be established for commodities typically consumed on farms, sold among farms, or sold to farms (e. g., feed grains, feeder cattle, baby chicks).

3. Each farmer at the inception of the program would receive a market share, his pro rata share, of the national sales quota for each commodity, based probably on his historical record of production. The farmer's share might be received in small denominational units, to which, for purposes of exposition, we give the name, marketing certificates. And once the program was in operation it would be illegal for a farmer to market any commodity having a national quota except insofar as he had marketing certificates to cover the quantities involved. The number of marketing certificates would not be increased, or decreased, from year to year with changes in the national sales quota for a particular commodity. Rather each farmer could market an announced percentage of the face value of each of his certificates—a percentage in accordance with the national sales quota for the year. By this device the awkward problem of issuing and confiscating marketing certificates would be avoided for the bulk of agricultural production.

4. Each marketing certificate would be negotiable. Each farmer would be free to buy or sell marketing certificates as he saw fit. By this device freedom of entry and exit would be maintained within a controlled agriculture; by this device the individual farm operator would be free to expand production, or contract it, in light of local conditions, as total output was adjusted to demand at a defined fair price. The value of operating in a stabilized agriculture where product prices and returns were relatively certain and relatively good, and where long-range production plans could be formulated with reasonable assurance of materializing would, of course, get capitalized into these marketing certificates. The price of these certificates would become the cost of doing business in a stabilized agriculture.

Many side programs could, and possibly should, be linked to the above skeletonized proposal. To illustrate, the United States might for a variety of reasons (e. g., human welfare, international collective security) wish to subsidize food exports to needy nations to help

finance their long-term programs of economic development. Thus, the national sales quota for any one year would equal domestic demand, plus any commercial exports plus subsidized exports. And if the decision were made to establish and maintain a strategic food reserve, the requirements of such a reserve would need to be taken into account each year in the determination of national sales quotas.

In another direction, it might prove beneficial to both producers and consumers for the United States Department of Agriculture to operate a purchase, storage, and disposal program in connection with the general control program, where in years of below average yields Government-held stocks were put on the market to hold prices at the defined parity prices, and in years of above average yields marketing quotas were increased by a few percentage points and the excess supply was purchased and placed in storage. This type of bona fide storage program would serve to stabilize marketable supplies, and ease the production problems of farmers arising out of weather uncertainty.

The question may be asked: Would this supply control approach provide farmers with good or satisfactory returns? Obviously an unqualified answer to this question cannot be given. But we do know this: (1) Congress sympathizes with the plight of the farmer; (2) enlightened monopolistic action of this public utility type is in the American tradition; and (3) the demand for most farm products is highly inelastic. Thus, it seems likely that the Congress, reflecting the views of the national society, would be willing to grant farmers the kind of monopoly powers outlined here, and permit them to use those powers to restrict supply; hence, enable farmers to drive prices upward and gain returns above those obtainable in a free market.

But it also seems likely that Congress would be unwilling to grant farmers complete, unregulated monopoly powers; food is a necessity and the interests of consumers must be protected as well as those of farmers. In the last analysis what we are talking about here is giving the many small producers in agriculture the necessary bargaining power to live in a world where bargaining power counts, but not giving them the power to starve the rest of us into submission.

Lastly, the question may be asked, Under the supply control approach are not the costs of providing farm people with good and stable incomes simply transferred from the Public Treasury to the market place? And the answer is, of course, "Yes." But the further question must then be asked, Are not the good and stable incomes received by management, workers, and investors in the steel industry, the automobile industry, the chemical industry, the medical profession, and many, many others realized through the market place where supplies are consciously and continuously adjusted to demand to yield good and stable prices? And again the answer is, of course, "Yes." So there is really nothing strange about society covering the costs of good and stable incomes to various industries through supply-controlled markets. It just seems strange to some people that farm people should want, and should realize, good and stable incomes through supply-controlled markets.

THE INESCAPABLE CHOICE

Intriguing as program mechanics may be, it would be misleading to end this discussion on the mechanics of supply control. In the first place, farmers generally may not choose the supply control route. In the second place, if they do, controls may develop along different lines than those suggested here. And, in the third place, the particulars of production and marketing control must vary with the physical and institutional characteristics surrounding each commodity.

The key ideas of this paper are to be found in the general theory of the agricultural treadmill. The constituent parts of that theory—the high value that society places on technological development and adoption, the incentive to farmers to adopt new technologies and reduce costs in a competitive market, and the inelasticity of the aggregate demand for food—related in a causal sequence explain the downward pressure on farm prices and incomes in the 1950's and the foreseeable future. The propensity for aggregate supply to outrace aggregate demand, and the dire price and income consequences of that persistent peacetime development, find an explanation in the general theory of the agricultural treadmill.

Given the general situation in agriculture described by the theory of the treadmill, and the decision by all of society to discontinue, or reduce materially, the Treasury costs of price and income support in agriculture, commercial farmers then are confronted with an inescapable choice: The choice of either choking off the rate of aggregate output expansion through widespread losses and business failure under the free market approach, or bridling the rate of aggregate output expansion through the widespread use and acceptance of production and marketing controls. These are the alternatives; this is the hard policy choice confronting American farmers.

ADJUSTING PRODUCTION THROUGH ADMINISTRATIVE CONTROLS

By L. H. Simerl, University of Illinois

The general topic assigned to this panel is, it seems to me, too broad and too vague to indicate the real problem that the committee has in mind. I would, therefore, like to restate the subject in more specific terms. I believe that the real topic under consideration might better be stated as follows:

RAISING FARMERS' INCOMES BY PRODUCTION CONTROLS

I commend the Congress, and especially this committee, for attempting to obtain basic facts about production controls for agricultural products. Congress, at the urging of many farmers, put such controls into operation nearly 25 years ago. The results have been unsatisfactory to farmers, to Congress, and the public, even though the production control programs have been revised many times since the original act of 1933.

Farmers, Congress, and the public want to know why production controls have not been more effective in raising farmers' incomes. They want to know how such programs are likely to work in the future. To get answers to these questions we need to consider our problem from several different angles.

First, we need to X-ray our problem. We need to analyze the competitive position of our agriculture as a whole. We need to consider the competitive position of individual farm families.

Second, we need to analyze our beliefs or assumptions about the working of production controls, and to examine their validity.

Third, we need to consider the methods or procedures of production controls, and to appraise their effectiveness.

Fourth, we ought to consider the results of production control upon United States agriculture as a whole in both the short run and in the long run.

Finally, and most importantly, we should analyze the effects of production controls upon the individual farm families, in both the short run and in the long run.

Admittedly this is a large undertaking. Certainly it is too great to be treated adequately in this small space. But we must do the best that we can with the time and space available.

COMPETITIVE POSITION OF UNITED STATES AGRICULTURE

Basically American agriculture as a whole is in a very strong competitive position. Congress has seen to this. Congress has provided funds for research to find highly efficient methods of production. It has provided educational programs to help farmers to learn about and adopt these efficient production methods. Congress has

helped our farmers to produce abundantly for our own national needs and for large exports to help raise living standards in other countries.

The efficiency of American agriculture is the envy of every other nation. The living standards of our farmers are envied in every other country. Other countries know and respect the tremendous competitive power of our agriculture. If American agriculture is allowed to produce efficiently and to price its products competitively it cannot be pushed out of either domestic or foreign markets.

The competitive position of individual farm families is more difficult to analyze and describe.

Farming is now a highly competitive business. It was not always so. There was little competition among farmers when farming was a way of life, and when every farmer followed exactly the same practices as his neighbor, and when each generation followed exactly the same practices as the previous one.

In those days land was not freely bought and sold, but was passed along from one generation to the next. The privilege of farming a piece of land also was often inherited.

The settlement of America coincided with a great advance in the sciences and industry. Many of these new developments forced workers, businessmen, and farmers to change occupations. If they strongly resisted changing, they often had to accept a lower income than they could have made.

MACHINES SAVE LABOR

The development of new farm machinery forced many farm laborers to seek other employment. It is reported that such laborers burned some of the first mechanical reapers. Laborers in industry reacted similarly to new laborsaving devices. Even today some labor groups oppose the use of improved machinery. Some farmers also resist making the changes that are required if our people are to gain the advantages of hard-won scientific advances.

As recently as a generation ago 80 acres of tillable land operated as a general farm provided 1 man with a full-time year-round job. A 160-acre farm was a 2-man business.

Today 1 man can easily handle 240 acres or more with modern machinery in our Corn Belt and general farming areas. Unfortunately, however, a great many of our farms are little or no larger than they were 30 years ago.

Probably around half of our real farms—the so-called commercial farms—are too small to provide a modern income for a family.

Many of our younger farmers are beginning to realize that the farm that they have is too small to provide profitable full-time employment for even one man. They realize that they have only a part-time farm job, and that it can provide only a part-time income.

Many other farmers are in similar positions, but do not understand their problem so clearly.

UNKIND TO HOLD OUT FALSE HOPE

It seems to me to be an unkindness to these families to lead them to believe that Congress can and will provide them with a modern income while they are working at much less than a full-time business.

This is, in my opinion, the major farm problem today. It cannot be solved satisfactorily by production controls, by high- or low-price

supports, or by flexible or rigid supports. Neither can it be solved by 2-price systems, 3-price systems, direct payments, or any of the many similar schemes under discussion yesterday, today, or tomorrow.

The only satisfactory way to solve this basic farm problem of today is to help these families to obtain part-time or full-time employment off the farm, or to obtain enough land so that they can have a farm that will, with good management, provide an income that is competitive with that provided on more efficient farms and with that provided in successful industrial and commercial employment.

FALSE SUPPOSITION AND THEORY OF PRODUCTION CONTROL

Most of those who advocate production control for a farm product base their advocacy upon the supposition that a small cut in supply will bring a big rise in price. Economists describe such a market condition by saying that the demand for the product is inelastic.

Many economists who advocate production controls for a farm product cite figures, use elaborate statistical procedures, and present impressive charts to prove that the demand for the product is inelastic.

I believe that these economists are mistaken. They have been misled by their own statistical creations. They have, I believe, misled many farmers and farm leaders. They have misled many members of past and present Congresses on both sides of the aisle.

The basic fallacy of production-control thinking is the belief that a short-run condition will persist relatively unchanged over several years. We have tried to build a long-term program upon a short-term situation. We have tried to erect a house of stone upon a base of sand.

We need to examine the theory of production control, to determine why it has failed, and to what extent it might succeed. We need to find out what is true and what is false about the theory that "a small cut in production makes a big rise in price."

Casual observation leads many people to believe that this statement is true, at least under certain conditions. They have observed that a small change in the production of eggs, for example, from one year to the next often is accompanied by a big change in price.

Prices of other farm products often appear to respond similarly to changes in supplies.

Some research, using scientific statistical procedures, seems to verify our common observation that a small decrease in supplies will bring a large increase in price.

But this is only in the short run, as from one year to the next. In the long run—as over a period of 5 to 10 years or more—the theory of production control is invalid. The facts are that in the long run a large change in our production makes only a small change in price. And a production-control program is usually a long-run program, not a 1-year deal.

One of our agricultural industries clearly illustrates that in the long run large changes in supply make little change in prices. For many years prior to 1947 the supply of lamb and mutton averaged nearly 7 pounds per person per year. This year there will be only slightly more than 4 pounds per person. The per capita supply has been reduced nearly 40 percent in 10 years. Yet the price of lambs

is only slightly more favorable than the price of cattle, and less favorable than the price of hogs.

Business sales managers recognize this principle, and always strive to gain customers rather than to lose them. All manufacturers know that in the long run—and not very long at that—reducing the supply of their product will soon be followed by a reduction in the demand for it.

Another classic example in agriculture is butter. Before World War II the average consumption of butter was about 17 pounds per capita. During the war butter production was greatly reduced. Now only half as much can be sold, even though the price is relatively lower than it was before the war.

From these and other facts I have been forced to the conclusion that the basic theory, or premise, upon which production-control programs are based is invalid and erroneous.

We now move to an examination of the methods of technique of production control.

THE METHODS, OR TECHNIQUE, OF PRODUCTION CONTROL

So far as I know, no actual control of agricultural production has ever been attempted in this, or any other, country.

What we call production control is in fact only an incomplete rationing of one of the resources of production.

To ration means to allot. During the war the Government rationed or allotted sugar, meat, gasoline, steel, building materials, and almost all other consumer and producer goods.

In our so-called agricultural production-control programs the Government rations land, or the privilege of using acres for the production of certain crops. Note first that the rationing system is not tight. Anyone can grow up to 15 acres of wheat. There is no penalty, except the loss of the privilege of obtaining price-support loans, for overplanting corn allotments. Rationing of acres for growing the smaller acreage crops—cotton, tobacco, rice, and peanuts—is tighter but still not absolute.

While the privilege of using acres, or land, for the production of certain crops is loosely rationed, no attempt is made to ration or limit the use of other productive resources such as fertilizer, seed, machinery, labor, or chemicals for the control of insects, weeds, and plant diseases. Neither is there any attempt to ration water for irrigation. On the contrary, we have public projects to increase the use of water for irrigation.

Land, or rather the privilege of using it for the production of controlled crops, is rationed partly on the basis of historic precedent and partly on political advantage. At first much attention is given to historic precedent, or crop history. A farmer who had been growing 100 acres of wheat got about twice as large an allotment as his neighbor who had been growing only 50 acres. However, there is usually some minimum ration or allotment, and no farmer's allotment is reduced below this minimum. This is done for political, not economic, reasons. The minimum acreage allotment for burley tobacco, for example, is one-half acre. About 60 percent of the growers have this half-acre allotment.

DIVIDING PRIVILEGES

Some provision is usually made for new producers. Here again, this is a matter of political expediency. There may be no need for new producers, but they must be allowed, or the control program would become too unpopular to be sustained. Allotments for new producers are taken from the farmers who have been growing the crop.

Finally, when acreage limitations really begin to pinch, producers go to Congress, demand and usually get, a minimum national acreage allotment. The total of the allotments distributed among farmers then cannot be reduced below this figure, regardless of how big the surplus gets, or how low market prices fall. In this way, there is now a minimum acreage allotment of 1,610,000 acres for peanuts, and 55 million acres for wheat.

RESULTS OF PRODUCTION CONTROL UPON AGRICULTURE AS A WHOLE

Rationing of the privilege of using land for growing crops has brought little reduction in the production of crops. It has, very likely, restricted the rate of increase in the production of the crops whose control was attempted. Before the war, when price supports were low, acreage restrictions and cash inducements did, I believe, restrict or reduce the normal rate of increase in agricultural production. Since the war, the stimulus of higher price supports probably has offset any restriction on overall production. Let's look at some of our experiences with production controls.

In the 1920's, before acreage controls, we planted 40 to 45 million acres of cotton, and harvested about 14 million bales of cotton. This year we planted two-thirds less cotton, and still got over 12 million bales.

Before controls we planted 100 million acres of corn and our average production was $2\frac{1}{2}$ billion bushels. This year we harvested 25 percent fewer acres of corn and 35 percent more bushels.

Our average production of wheat has increased from about 850 million bushels to 1 billion bushels.

Production control has not proved to have the price-stabilizing or price-lifting force that it was expected to have. Production control and price support for corn were promised to lift and stabilize hog prices. However, the past 3 years has brought the most violent hog price fluctuations on record. In December 1955 hog prices were lower on the parity ladder than any other listed farm product—except grapefruit!

LOSES EXPORT MARKETS

Production control, and price supports together, caused American farmers to lose most of their greatest export market. Before controls we exported about 8 million bales of cotton annually. Without large export subsidies, our exports in the 1955 crop year were only about 2 million bales. Our exports declined three-fourths while total world exports about doubled. Henry A. Wallace, when he was Secretary of Agriculture, warned that this would happen if high price supports were established. The cottongrowers of that day paid no heed to Henry. Intelligent cottongrowers of today know that Henry was right.

In the Yearbook of Agriculture, 1935, Wallace wrote on pages 40 and 41 as follows:

Ordinarily we sell more than half our crop abroad. Loss of this foreign market would force cottongrowers to cut their acreage to less than half its normal size * * *. More than 50 foreign countries grow cotton, and their producers react to price changes just as ours do * * *. There are possibilities for substantial cotton-acreage expansion in India, Africa, Russia, China, and South America, and the extent of the expansion which occurs will depend to a considerable extent upon prices.

Restricting the supply of cotton also encouraged the production and use of many substitutes for cotton. These include rayon, nylon, and other synthetic fibers, plastics, sponge rubber, Fiberglas, and many others.

By restricting the acreages of corn, and supporting its price, we have encouraged the production and use of other feeds. In the past 10 years sorghum grain production has increased from 100 million bushels to over 500 million.

In the past 4 years we reduced wheat acreage 24 million, cut cotton 10 million, and trimmed 8 million from the corn acreage. While cutting these crops we increased soybeans 8 million acres; sorghum grain 12 million; barley 6 million; and flax, hay, and oats 3 million acres. This left only 13 million acres of diverted land, and most of it was pastured, or was low in productivity.

Today the agricultural industries that have had the most help are the most dependent upon Congress—meaning the taxpayers. They have become weak, not strong, as a result of Government aid.

Often the tobacco industry is cited as an example of what good can come from a control program. Two observations may be made:

1. The great increase in the number of women smoking has been the greatest factor in the apparent success of the tobacco program.
2. Never have I heard of the tobacco grower being envied for his high income.

Our tobacco is losing out in foreign markets just as our cotton did. Now our domestic tobacco industry is developing substitutes for traditional tobacco leaf.

RESULTS OF PRODUCTION CONTROL UPON COMPETITION WITHIN AN INDUSTRY

Production controls change the rules under which producers must compete, but they do not materially reduce competition. There is some evidence that acreage limitations have actually speeded the pressure upon farmers to leave the farms for cities.

Limited acreages of wheat have enabled one farmer to farm what formerly was two or more farms. Some of the smaller wheat farmers have told me that the allotment program encouraged big operators to seek out landlords and offer premium rents. The landlord sees a good deal because he is relieved of the expense of maintaining a set of buildings.

Something of this same nature apparently has happened in some areas of the old cotton South.

In tobacco, maintenance of small acreage allotments is apparently just enough inducement to keep many young people on the farm growing tobacco who would be much better off if they went into industry.

Whenever a privilege has value, that privilege develops a price. The privilege of legally growing tobacco apparently is a valuable one. In many cases the entire value of a farm in the tobacco areas is determined by the size of the tobacco allotment on the farm. Some allotments are reported to be worth about \$2,000 an acre. On numerous occasions a farmer buys one or more additional tracts just to obtain the tobacco allotment. This, of course, tends to reduce the number of tobacco growers.

SUMMARY

1. The basic premise upon which production control is based is fallacious. Prices of United States farm products cannot be substantially raised over any extended period of time by production control.

2. The usual method of production control, acreage restriction, is not an effective method of control, especially when accompanied by price supports as in recent years.

3. Production control puts United States farm industries at a disadvantage with their competitors. Their competitors are agricultural producers in other countries and industrial producers in our own country.

4. Production control does not eliminate, nor even materially reduce competition within United States agriculture.

5. The major farm problem in the United States today is that many hundreds of thousands of families are trying to earn a living on farms that are too small to provide enough profitable work for one man and thus are too small to provide a modern income. The problems of these families cannot be solved by any overall approach such as production control, price supports, or direct payments. They can be solved only by a program that will help these families to make more profitable use of their labor and other resources.

THE PLACE OF PRODUCTION AND MARKETING CONTROLS IN UNITED STATES FARM POLICY

Robert K. Buck, Waukeee, Iowa

In view of the growing confusion about our national agricultural policy, it is encouraging to note that this joint committee of Congress is taking a "new look" at the farm situation.

There is general agreement that agricultural production, unless checked, will continue to expand faster than demand for the next several years. This can only mean downward pressure on farm income. If this excess production runs into a softening demand for farm products, then farmers are in for serious trouble.

Those of us in the Midwest are especially concerned with the dark prospects for the feed grain-livestock situation. The new high-yielding hybrids will take over the grain sorghums in a year or two. There is no end in sight to the improved crop varieties, the increased use of fertilizers (especially nitrogen), the expanding use of chemicals to control insects and pests, and now the rush to irrigation.

The total feed supply for the year beginning October 1957 will be up 6 percent from last year and nearly one-third larger than 1952. This is literally an "explosion" in production. Even with a substantial increase in hog numbers as now appears certain, a further increase in grain carryover October 1, 1958, is in prospect. This outpouring of feed grains, if forced through the market, may very well wreck a lot of livestock producers. By the winter of 1958, we may be selling hogs locally for 10 cents per pound.

Though becoming more acute in recent years this problem is a chronic one. Year after year we produce more than the market will take at prices that are satisfactory to farmers. The margin of excess is small—only 5 or 6 percent of our total production. But, with the relatively inelastic demand for farm products, this 5 or 6 percent excess production cuts a far greater percentage off farmers' net income. The discouraging aspect is that farm income declined in recent years in spite of vigorous efforts to expand exports and in spite of diversion of large supplies to CCC stocks under the price support programs.

Some people talk as if our major problem is the stock of accumulated surplus farm products now in Commodity Credit Corporation storage. If these Government-held stocks were suddenly to vanish, the heart of the problem would remain—farm production expanding every year faster than our markets are growing.

This situation causes farmers to face the future with a great deal of apprehension. They are hearing a wide variety of suggestions as to what direction our farm policy should take. I should like to discuss briefly a few of the approaches that are being considered. But first let's take a look at some of the things we have learned in our relatively brief experience with production controls.

A look backward.—Actually we have had only a relatively short experience—roughly 25 years—with attempts to hold farm production in line with demand. This experience was complicated by a “quick shifting of gears” during two wars.

Our overall record of accomplishment, especially with corn, wheat, and cotton, has been disappointing. This should not be surprising because we have worked much harder (individually as producers and in our National and State programs and policies) expanding production than we have worked at holding it in line with demand.

I would suggest these lessons from our experience with control programs:

1. Acreage allotments are almost useless as a method of production control. This is especially true for cotton, wheat, and corn. Really serious efforts to control production must be related to volume of products (in pounds, bushels, bales, et cetera) not in acres harvested.

2. To be effective, a control program must have a high percentage of farmer participation; as a rough figure I would suggest two-thirds to three-fourths. Incentives must be placed high enough to obtain this participation.

3. The program must have enthusiastic and determined leadership at all levels. Farmers can administer a program. One of the important results of the pioneering efforts in this area has been the development of the farmer committee system and methods of operation consistent with our democratic traditions.

4. There must be an intensive educational effort carried on with farmers in connection with the program. The most soundly conceived program will fail if farmers are not fully informed on the objectives, procedures, and requirements.

It is generally agreed that farm production has outrun markets in spite of the control program in operation because of the technical revolution that took place in American agriculture in the past 15 years. In the face of a continuation of rapid introduction of new technology, what should we do? Should farmers try to adjust to this new situation individually and forget about group action? Or does the technical revolution make it more necessary than ever for farmers to develop effective production and marketing controls?

No programs: Control by the free competitive market.—Some argue for “letting nature take its course,” abandoning farm programs and letting prices fall in the market place to a level that will bring about the necessary adjustments. It is argued that free competitive market prices would eventually bring a balance between supply and demand and those farmers who survived the adjustments would earn a good income.

I know of no evidence indicating that if the number of commercial farmers were reduced to 2 million the cost-price squeeze would not still be severe. There is no reason to suppose that such a reduction in number of farms would lead to any appreciable reduction in the amount of land used in farming, or in the amount of machinery, equipment, and fertilizer used, or in the use of new production-increasing technology.

In view of the high fixed-cost overhead in modern farming, I believe that such a policy of “let nature take its course in the free, competitive market” would be disastrous to American farmers. Those who

press this argument do not, in my opinion, consider sufficiently the consequences of such a policy. I wonder if they consider what would happen to farm prices and farm income if the \$2 billion to \$3 billion worth of farm commodities now being taken over each year by the Commodity Credit Corporation were forced through the free market.

In a recent paper before the annual meeting of the American Farm Economic Association, Dr. Walter W. Wilcox stated that net farm income, in the next year or two, will decline another 20 to 25 percent if price supports are lowered to levels that will permit all current production to move through commercial markets.

There is a great deal of talk about keeping farmers "free." In my opinion such activity only clouds the basic issues. I do not know any farmers who are not basically rugged individualists. I don't know one who likes controls or farm programs as such any more than he likes to stop at every red light on the highway in order to stay alive. The farmers I know are practical folk. Over the years they have made complex choices, giving up freedom of action at one point in order to obtain greater freedom at another point.

Farmers are not about to give up their basic freedoms. They always have been and always will be one of the bulwarks of freedom in this country. But I am confident farmers will continue their long-time efforts to develop effective production and marketing controls. At the same time, they will hold on to their basic values.

An immediate step—revision of the soil bank.—Our recent experience with this method for controlling production is too short to permit much of an appraisal. One of its strong points is that it takes land completely out of production avoiding the problem of cross-compliance. One of its weaknesses is that it takes out of production only one resource—land. Fertilizer is a fine substitute for land and we have great forces at work, both public and private, to get farmers to increase their use of fertilizer. This will make it necessary to "bank" a substantial acreage of land in order to make a rather modest decrease in production.

Better programs may emerge in the years ahead, but we need one right now. The soil bank is on the books. It is a useful tool and it can be made more effective. I would suggest these revisions:

1. Drop acreage allotments entirely, substituting a soil-conserving base for each farm as a percentage of total cropland. Based on good land use, this SC base should include fallow land or land in sod or close growing grass and legume crops. For the United States, this SC base might need to be as high as 35 percent of the cropland.

2. Set price support loans at moderate levels. Corn should be included as one of the feed grains. Eligibility to receive price support loans should require maintenance of the required base acres in soil-conserving crops.

3. Reduce annual production of surplus crops by much greater use of the soil bank program. Increase incentive payments to farmers for retiring additional cropland to soil-conserving crops—over and above their regular SC base.

A substantial acreage of cropland could thus be taken out of production. Incentives should be made more attractive for farmers to leave the land in the bank several years and for whole farms to be put in the bank. In the latter, rights of tenants should be protected.

For the United States we should aim at retiring an additional 40 to 50 million acres of cropland to the soil bank over and above the SC base acreage mentioned earlier. Allowing for more intensive cultivation of remaining acres and for poorer land being placed in the bank, such a shift should result in as much as 5 to 8 percent reduction in feed grain production.

There is widespread agreement that feed-grain production must be kept within reasonable bounds. This is in the interest of both the grain and livestock farmer. As suggested here, the support level on grain would be kept at a moderate level so as not to offer an inducement for excessive grain production and to avoid large supplies going into Government storage already filled to overflowing. The key to the success of such an approach would depend on the effectiveness of the soil-bank program. Lowering the levels of price supports alone, if not accompanied by substantial soil-bank payments and actual reduction in feed-grain production, would, in my opinion, lower farm income sharply and cause it to fluctuate more widely from year to year.

This would be an expanded but simplified soil-bank program. It should be more effective because participation would be much higher. It would not be a cure-all, but it would be a step in the right direction. The shift in incentive payments to a positive basis to increase soil-conserving crops would have appeal to nonfarm people. There would not be the problem of cross-compliance because every area would be putting some cropland in the soil bank. On the remainder of the cropland every farm and every region would grow the crops best adapted to that farm or area.

For the soil-bank program to be effective, funds for its support must be increased greatly. Some who have studied the problem say that \$2 billion would be required. Some funds now used for other purposes could be shifted to the soil-bank program. If we make the soil bank work, then its cost would be more than offset by savings to the Government in taking over and disposing of surpluses.

What of the livestock farmer? There would be an increase in supply of forage and pasture crops, with some tendency to increase roughage-consuming livestock on that account. This would be more than offset by the reduction in grains. Total feed units should be less. However, we should begin now to consider what action could be taken to prevent a collapse of livestock prices if feed supplies continue to increase.

Take a hard look at programs that intensify the surplus problem.—Among the major reasons for our disappointing record in holding farm production in line during recent years are the numerous Government policies and programs which have the direct effect, if not the basic objective, of expanding farm production. These production-increasing efforts have much more than offset our meager and sometimes half-hearted efforts to adjust production downward.

Following are two examples of programs which I would urge the Congress to reappraise in view of the crisis facing American farmers in their chronic overproduction.

1. Agricultural conservation program. Millions of dollars of ACP funds have been and are still being spent on practices which increase farm production substantially. Among them are liming, land leveling, drainage with tile or surface ditches, land reclamation, farm-pond construction, and so forth. Consider also the fact that under the cost-

sharing or matching requirement these ACP funds result in large amounts of private funds being invested in these production-increasing practices. Under the present circumstances, much of these ACP funds are doing more harm than good, and should, in my opinion, be shifted to an expanded and revised soil-bank program to hold land out of production.

2. Government programs of reclamation and irrigation. These large Government investments intensify and enlarge the income and price problems of American farmers. Does it make sense at this time for the Government to create new farms in one region with huge investments in reclamation and irrigation and thereby add to income depressing surpluses—and, worse still, force farmers off the land in another region? I should like to see the Congress reexamine all Government projects for reclamation and large scale hydroelectric dams. Where possible, the irrigation and new farm development aspects should be postponed until a time in the future when such added production will be needed.

For the longer pull.—A few of the issues of farm policy, such as strengthening the soil-bank program or dropping acreage allotments, may be settled fairly soon. However, some of the approaches being considered will be under analysis and appraisal for quite a period.

Some farmers and farm leaders argue for very tight production control programs with mandatory participation. I am sure that the farmers in my area would not accept such a program now. But, if we fail to make effective use of voluntary programs such as to the soil bank, if production continues to outrun markets, and if farm income gets considerably lower, then I wouldn't be so sure.

Consider the impact on farm production (1) when all fertilizer plants, now building and planned, get into full production of nitrogen and other fertilizers, (2) if large amounts of outside capital are pumped into agriculture through the route of vertical integration as it developed in the broiler industry, (3) when grain sorghum is shifted entirely to hybrid seed, (4) if research now underway in livestock breeding, nutrition, and health greatly increases livestock production efficiency, or (5) suppose our national foreign policy requires a reduction in the disposal of our excess farm production in foreign markets.

I'm not pessimistic about these possibilities, but I do think we ought to be thinking now on what kind of programs would make sense if production gets clear out of hand and if farmers face economic strangulation on their overabundant production.

In my opinion the vital issue for the long pull is this: What kind of production and marketing controls must commercial farmers have in order to earn wages for their labor and returns on their capital comparable with that earned in the rest of our economy? Our primary problem is how to acquire and maintain essential bargaining power in the sale of our products—bargaining power similar to that achieved by corporate business when the basic corporate legislation was passed many years ago.

I urge examination of possibilities for a basic enabling act authorizing producer groups to apply production, quality, and marketing controls as feasible; to raise funds for administrative expenses by such means as checkoff or processing tax; to set sharply lower prices for that part of production which is in excess of market outlets at stable prices; and to develop foreign markets for their products. Such

a basic enabling act should set limits and safeguard the interests of other producers and the public. Insofar as possible the framework should be set so it is a producer program, not a Government program.

It is needless to say that this chronic problem of commercial agriculture—the expansion of productive capacity at a faster rate than markets—is one of our great unsolved national problems. It is a challenge to farmers, to farm leaders, to politicians, and to social scientists. The suggestions I make are offered in considerable humility because I am not sure that I have the answers.

What we need most are careful analyses of problems and evaluation of alternative solutions to these problems. Those who present the alternatives as “either-or,” or who deal in emotionally charged symbols such as “creeping socialism,” or “rationed opportunity” are doing more harm than good.

Our scientists and educators must give greater attention to the critical problems of American agriculture. In this connection we are proud in Iowa that our own land-grant college at Ames has established an Agricultural Adjustment Center and is expanding research and educational efforts in this field.

FARM MARKET PRORATION—ESSENTIAL SEGMENT OF COMPREHENSIVE FARM INCOME PROGRAM

Glenn J. Talbott, North Dakota Farmers Union

The problem of falling farm income is a complex one. One's views respecting one segment of the problem and its solution, such as market proration or supply adjustment, can adequately be considered only within the broad framework of all segments of a comprehensive program.

So that my views on the essential role of farm market proration or supply adjustment in the needed comprehensive family farm income improvement program can be considered in the proper perspective, I shall present briefly my understanding of the total farm income problem and my opinions concerning the comprehensive many-phased system of commodity programs and supplemental activities required to strengthen farmers' bargaining power in the commodity and money markets of the Nation and the world and thereby to enable farmers to earn a parity of income.

Briefly, a farm market proration or supply adjustment program can effectively perform either or both of two essential economic functions in a workable system of farm commodity programs and valid farm income improvement measures:

1. Preferably, farm market proration or supply adjustment can be utilized to reduce the Federal Treasury costs of fully adequate commodity income improvement programs to zero or practically so, and
2. In the absence of otherwise adequate demand expansion and price protection programs, market proration can be utilized by farmers directly to strengthen their bargaining position and improve their price and income situation.

I would hope that whatever expanded authorization and assistance may be made available to farmers might be accompanied by the other essential segments of a comprehensive system of farm commodity programs and other elements of a full parity farm income program for all family farmers. However, even in the absence of the other elements, I would hope and urge that authorization would be given to farmers to use the techniques of market proration or supply adjustment to keep market supply of all farm commodities as a whole, and of individual commodities severally, in reasonable balance with effective demand at prices that will enable farmers to earn a parity of income with people in other walks of life.

The following summary outline of Federal legislative phases of the full parity family farm income improvement program that should be inaugurated for all farm commodities with the program carefully tailored to the specific characteristics of the different individual commodities will indicate my judgment concerning the role of market supply adjustment. The different segments of the total program

would not be applied uniformly to all commodities, but these are the general principles or outline within which I feel a completely adequate policy will be found for application to the different commodities in workable combinations of the several segments.

SEGMENTS OF FULL PARITY FAMILY FARM INCOME IMPROVEMENT PROGRAM

I. Income protection for farm families:

A. Expansion of existing Federal farm price support and related legislation into a comprehensive system of specially tailored commodity programs that will provide mandatory 100 percent of parity income protection for family farm production of all farm commodities by means of workable combinations of parity income supplement payments and price support loans, purchase agreements, and purchases.

B. Revitalize and expand Federal crop insurance program.

C. Continued improvement of social security, old-age and survivors insurance program for farmers.

D. Supplemental programs for low-income farm families in depressed rural areas.

E. Nationwide program of REA-type loans and service assistance to farmers to build or acquire food and fiber processing, storage, and marketing facilities.

II. Maintain national security reserve of food, fiber, and oils.

III. Expand human use and demand for farm commodities:

A. Expand domestic consumption:

1. Expanding full employment economy and reversal of tight money policy.

2. National food allotment stamp plan.

3. Expand school-lunch program to all schools.

4. Federal financing of free milk for all schoolchildren.

5. Credit program to encourage improvements of terminal markets for perishable farm commodities.

6. Better terminal market inspection of perishables.

7. Provide more nearly adequate nutrition standards for public institutions.

8. Increased emphasis on expanding industrial uses of farm commodities.

9. Elimination of poverty in depressed industrial and rural areas.

B. Expand exports:

1. Establish international commodity agreements for all farm commodities that enter importantly into international trade, and improvement and renewal of International Wheat and Sugar Agreements.

2. International food and raw materials reserve bank.

3. Expand and extend Agricultural Trade Development and Assistance Act.

4. Expand and extend Point 4 program of assisting free world economic growth and development.

5. Continue and use Reciprocal Trade Agreements Act and further customs simplification.

6. Trade adjustment aids to United States industries, communities, workers and farmers injured by tariff and import quota reductions.

IV. Keep market supply in balance with augmented demand :

A. Establish workable all-commodity farm marketing goals and conservation acreage reserve program.

B. Revise and extend marketing agreements and orders and provide other legislation to protect farmers in bargaining with buyers of all farm commodities whose producers wish and are able to utilize these approaches.

C. Extend to producers of all individual farm commodities the opportunity to utilize individual-commodity marketing goals programs.

D. Revitalize and expand Farmers' Home Administration into an effective "yardstick" family farm loan agency .

VI. Operation of program by Federal Farm Income Stabilization Board and State, county, and local farmer-elected committees.

INCOME PROTECTION FOR FARM PEOPLE

Almost all family farms today are commercial farms. They must buy an increasingly large part of the services, machinery, and supplies used for farm operation and for modern family living. They sell a very large part of what they produce, averaging over 89 percent. The terms they are able to trade on make a big difference in the standard of living the family can earn.

The prices of things that farmers buy, both production and family living items, are retail prices, like the prices all consumers pay.

These retail prices, and the wholesale prices behind them, are administered prices—prices set by manufacturers, money-market bankers, railroad companies, and others, on the basis of their ability to withhold the supply of goods and services to maintain the set price.

This is because manufacturers and the others protected by tariffs, corporation laws, Government commissions, and many other private and public actions provided through or permitted by State and Federal Governments can hold down production and maintain price partly because of the relatively small number of firms or persons in each industry. They can do so profitably because overhead fixed costs are a small proportion of total costs. Thus, they can make large cuts in costs by reducing production or withholding services.

On the farmers' side of the commodity market bargaining process there are about 3½ million full-time farmers selling farm commodities and buying farm-production supplies in competition with each other and buying family living items in competition with more than 45 million other consumer units.

No one farm family controls a significantly large enough share of the total market to raise prices received by withholding supplies from the market. Nor have they so far been able successfully to band together without the assistance of Government to do so. Moreover, unlike the industrialist, a farmer's fixed costs are a very high proportion of total costs. He cannot reduce total costs much by curtailing production, and may actually increase average per unit costs.

Operating alone, the only out for the individual farmer is to produce more as long as he can to raise gross income by increasing volume of sales. In fact, farmers in 1957 continue to compete against each other;

for example, to get additional land to increase output. As a consequence, farmland values continue to rise, in the face of the drastic drop in farm income.

The increased supply resulting from 3 million farmers each doing this causes a very large drop in prices and income received by farmers. The nature of demand for food and clothing is such that a small percentage increase in supply or decrease in demand for all farm commodities taken together will cause a 5 to 10 times greater percentage drop in prices received by farmers.

Coupled with these chronically adverse terms of trade for farmers, which are associated with the industrial structure sanctioned by Government, is the tendency for improving farm technology to cause farm production to increase faster than population and improving diets even if special governmental consumption-expanding measures are put into effect.

The net result of farmers' adverse terms of trade is chronic farm economic depression when farm income is not specifically protected from the forces of the so-called free market.

Farm family income will continue to drop in an unprotected market until such time as farm families exhaust a substantial portion of their assets and net worth, until they are living in utter poverty and have worn out their capital equipment and exhausted their soil and water resources.

Farm income improvement programs either for farm commodities as a whole and for individual farm commodities taken one at a time are largely meaningless in the absence of specific mandatory price or income goals. The specific goal should be the attainment of that combination of market prices and supplemental income deficiency payments that will enable farmers to earn a full parity of income.

Parity for any farm commodity should be figured as the return per unit of the commodity that would give farm families who produce it an opportunity to earn the equivalent income and purchasing power that can be earned by people in other occupations in an expanding full employment economy.

Family farm volume protected.—Any individual farm operating family should be eligible for protection on their actual sales up to the maximum volume of output of a fully adequate and efficient family farm.

Methods of income protection.—Price-supporting Government purchases of commodities would be used only where required to relieve temporary seasonal market gluts and where either the commodity or its products can be economically stored from year to year or where noncommercial outlets are in sight for the commodities purchased. Price-supporting purchase agreements and nonrecourse price-support loans would be used to maintain orderly marketing and market stability for storable commodities.

Government purchases without reference to need for price support, would also be used where needed to develop and maintain the Nation's safety reserve, strategic stockpile, or ever-normal storehouse of food and fiber commodities.

But primary reliance for farm income protection for commodities marketed would be placed upon use of parity income supplement payments direct to farmers to make up the margin by which market

prices received by producers of that commodity were below the parity level for that commodity. As will be seen later in my discussion, such payments would be necessary only in years of less than full employment or when a forecasting error is made in connection with farm market proration planning and as a part of the needed supplemental income program for extremely low-income farm families.

CROP AND LIVESTOCK INSURANCE

Farm commodity price and income protection programs are effective against unfair economic hazards resulting from farmers' weak bargaining power in the market. They do not protect farm income when the farmer has nothing to sell if his crop or livestock is a failure because of drought, flood, insects, or other natural disaster.

To fill the latter need, I strongly recommend the revitalization and rapid expansion of the Federal crop-insurance program and its expansion to cover farm livestock in workable ways.

SOCIAL SECURITY, OLD AGE AND SURVIVORS' INSURANCE FOR FARMERS

Farm people share the same needs for social security against old age or disability and death of income earner as people in other walks of life.

Existing law now extends to farmers the protection of the Federal social-security insurance public-assistance system against the economic hazards of death, disability, and old age. These programs should be further improved.

SUPPLEMENTAL FAMILY FARM DEVELOPMENT PROGRAMS

In addition to the general comprehensive farm income improvement programs required in the interests of all family farmers, special supplemental programs of credit, technical advisory assistance, and other services are required to meet the problems of family farm development of low-income farm families in widespread disadvantaged rural areas of chronic underemployment.

COMMODITY MARKETING LOANS

I suggest the need for establishment of an agency in the United States Department of Agriculture to extend REA-type loans and services to farmers to enable them to build or acquire facilities to assemble, process, store, and distribute farm commodities and products thereof. Such loans would be extended at an interest rate equal to the average long-term cost of funds to the Federal Government. This would enable farmers to establish privately owned farmer-controlled yardstick "middleman" businesses to keep the profits from such operations in the hands of farmers. This would also help control and dampen down the widening spread between the price received by the farmer and that paid by the consumer.

EXPANDING FULL EMPLOYMENT ECONOMY

The domestic market demand for farm products resulting from increasing farm productivity can be maintained only in an expanding full-employment economy. The economic history of the Nation shows that over the 45 years for which statistical data are available farm family incomes fall in any year when the total national economy grows by less than 10 percent above the previous year. Except in years when total national economic growth is 10 percent or more per year, the terms of trade are against farmers for the reasons I have discussed previously.

Economic growth as rapid as 10 percent a year might in most years bring legitimate inflation in the prices of industrial products. Yet a slower growth rate means falling farm income. Consequently I favor adoption of all needed governmental policies including reversal of the tight money policy required for maintenance of a national economic growth rate of at least 6 percent per year, recognizing, however, that such policies alone will not overcome the adverse market position of farmers.

EXPANDING DOMESTIC CONSUMPTION AND MARKET DEMAND

Effective advertising and merchandising of farm-produced commodities are of some value in expanding domestic markets for farm products. But they cannot be exclusively relied upon to bring about any very large expansion in the total United States demand either for individual farm commodities or for all food and fiber taken as a whole.

The Nation's leading economists are agreed that the only way very greatly to increase domestic consumer demand for food and fiber is through increased purchasing power of groups of consumers that do not now have sufficient buying power to buy the food and clothing they need and want. Increased emphasis upon increasing industrial uses of farm commodities may also help gradually to expand domestic demand in future years.

Adequately financed, the programs listed under this heading in the previous outline would add considerably to consumer demand for farm commodities in the United States. As poverty in depressed areas is gradually eliminated the special low-income consumer subsidy could be reduced in scope.

EXPANDING FOREIGN CONSUMPTION AND MARKET DEMAND FOR UNITED STATES FARM COMMODITIES

An important part of United States produced farm commodities, up to 10 percent of total production, must in normal years find a market outside our national boundaries. This market can and should be expanded.

Additional agricultural attachés and improved advertising and merchandising will help some. But just as in the case of domestic market, the really big increase in market demand for United States produced farm commodities can come only from increased purchasing power in

foreign countries, or from United States Government financing or subsidization of exports.

I am convinced that total farm exports could and should be raised immediately to at least \$4.5 billion annually by the combined and coordinated use by our Nation of the export-expanding policies and programs listed earlier in this paper.

KEEPING FARM MARKETINGS IN BALANCE WITH AUGMENTED DEMAND

Vastly increased domestic consumer and export demand for United States farm commodities could and should be brought about by adoption of the programs I have discussed earlier. However, such increased demand would not in any particular year be evenly spread over different commodities. Nor is it likely that increased or decreased production due to technological development and weather conditions would be spread evenly over all commodities. With output of any farm commodity or farm commodities as a whole expanding faster than augmented demand in any particular year or over a period of years, this is a constantly depressing force upon prices received by farmers and upon farm family incomes.

Parity income deficiency payments and price-supporting loans and purchases must be available for use at all times to keep farmers' returns at the parity level. These are very effective for short periods of time; but will soon become worn out, economically and politically, if used too constantly.

To remove the strain of constant heavy use from the parity payment and price-support program is, in my opinion, the appropriate and essential note of realistic workable programs that farmers can use to keep the market supply of farm commodities in reasonable balance with export and domestic consumer demand as augmented in the ways I have discussed.

Both total national farm production and the production of individual commodities have a constant tendency to exceed effective market (money) demand. Each 1 percent in the absence of a price protection program, by which total farm production exceeds demand at 100 percent of parity income equivalent price brings a drop in prices received by farmers of 5 to 10 percent. Each such 1 percent of market supply above market demand reduces farm family income by at least 12 percent below full income parity.

In my opinion, farmers can use this economic fact as an effective pry-pole with great leverage to raise their incomes to a parity level. Or in the absence of adequate bargaining power this economic fact has and will continue to beat family farmers down to their economic knees.

If a 100 percent supply will sell as it will at 100-percent prices and return 100 percent of parity gross and net incomes to farm people, it is not reasonable to produce a 103-percent supply, sell it at 79-percent prices for an 81-percent gross and 64-percent of parity net family income. Yet under existing laws and policies that is almost universally and exactly what farmers are required to do.

It is here that I find the appropriate and effective role for farm commodity market proration or supply adjustment.

Such programs fulfill these major functions:

- (a) prevent wasteful use of farm labor, capital, and natural resources;

(b) assist farmers to keep market supplies of farm commodities in reasonable balance with market demand and thereby:

- (1) reduce the Government cost of the income protection and price support program, and,
- (2) where needed, can be used directly to raise prices received by farmers above free market levels.

SUMMARY OF FARM MARKET PRORATION

I shall now discuss the farm market proration or supply adjustment programs I feel could be effectively used to solve the total problem in ways tailored to the specific needs of the producers of individual commodities. These include:

1. A workable national all-commodity farm marketing goal and conservation acreage reserve:

2. Extension in workable ways to producers of all farm commodities who wish and are able to use them of the protection and right to utilize private collective bargaining techniques under marketing agreements and orders or similar protective Federal and State legislation;

3. Extension in workable ways to producers of all farm commodities of the privilege of using improved single-commodity marketing goal programs; and

4. Marketing premium payments for sale of hogs and cattle at desirable weights and types.

ECONOMICS OF MARKET PRORATION AND SUPPLY ADJUSTMENT

The desirable results of these adjustment programs would be derived from two facts.

First, no one seriously believes that farmers should waste their time and use up their resources to produce commodities that will not be used but whose presence on the market will reduce farm prices and incomes to the bankruptcy level.

Second, the inelasticity of the demand for farm commodities as a whole and for many individual farm commodities is so severe that increased quantities can be sold only at greatly lowered prices. Or conversely, for all farm food commodities as a group, a 1-percent cut in supply will have a 6 percent, 7, or even 10 percent raising effect on farm prices and an 8 to 12 percent raising effect on farm net income.

For example, a 2-percent cut in total production of farm food commodities at present levels would reduce the Government cost of an adequate income protection and price-support program by more than \$2 billion per year, or in the absence of such a program, would raise gross and net farm income by more than \$2 billion per year.

In any particularly year expansion of the national economy and of farm exports and the scope of the special demand-expanding programs may not, and in the foreseeable future probably will not, be sufficient to provide the expanded effective demand required to keep prices received by farmers at a level that will enable farm people to earn parity incomes or a tolerable percentage thereof. Moreover, while the level of general demand for all farm commodities may be satisfactory one or more individual commodities may at any time run into specific difficulty.

To protect farm income and to improve it in such circumstances requires the use of a comprehensive system of specific protection programs tailored to the needs of different commodities for the fairly farm production of all farm commodities through workable combinations of parity supplement payments and price supporting loans and purchases.

However, such programs quickly become subject to political attack if they must be used in large magnitude continuously.

If annual production increases too fast and exceeds the rate of expansion of augmented annual demand for domestic consumption and exports, stocks pile up, and Government ownership and Government costs for parity supplement payments would mount rapidly. Either or both occurrences soon lead to a political clamor to "lower the high rigid" support level.

To forestall these developments and to attain the advantages of an adequate system of commodity protection programs, I firmly believe that farmers generally will not only accept but affirmatively welcome the opportunity to use such federally sanctioned farm market proration or supply adjustment programs as are required to keep market supplies of farm commodities in reasonable balance with augmented demand.

NATIONAL WELFARE PROMOTED

Considerations of national welfare demand continuous concern in re the income status of farm people.

In the first place, in a democracy within a republic the income situation of any segment of population, particularly one as large as the 22 million-plus people who live on farms cannot and should not be disregarded.

In the second place, the immediate and longer run future welfare of the entire population is directly and intimately involved. By 1975 the population of the United States will be at least 228 million, 35 percent or 59 million more than at the end of 1956. For national safety, the Nation must develop by 1975 a farm productive plant capable of producing approximately one-third more food, fiber, oil, and timber than in 1956.

Third, continuation of national prosperity with full employment, full production, and relatively full consumption is seriously endangered when any large segment of the economy such as farming continues in a depressed economic condition. It is abundantly clear in American history that major national depressions are farm led and farm fed.

Moreover, continued and deepening farm depression acts as a powerful stimulant to the increase of industrialized agriculture, corporate farming, and an increasing prevalence of tenancy. Such trends as these are inimical to the preservation and strengthening of the family farm pattern of American agricultural production which is one of the Nation's major bulwarks of political and social stability and is one of the Nation's best examples of hope and inspiration to the 2 billion of the world's people who live by farming but have not yet made the ultimate choice between democracy and some form of Fascist or Communist totalitarianism.

In terms of general national interest (and that of farm people) in maintaining family farm income, production and marketing adjust-

ment rather than through reducing support levels is the most intelligent action to reduce the pressure of supply on the farm income protection and improvement program.

If a 4-percent "oversupply" is adjusted by lowering support levels, farm family income drops drastically, because the support level must be dropped by 25 percent. If the adjustment is made by reducing the volume of marketings, farm family income falls but slightly.

The arithmetic is as follows:

104 percent (supply) multiplied by 75 percent (prices) = 78 percent gross income	
78 percent gross income minus 52 percent (costs) = 26 percent net income	
100 percent (supply) multiplied by 100 percent (prices) = 100 percent gross income	
100 percent gross income minus 56 percent (costs) = 44 percent net income	
Net income index by cutting production.....	44
Net income index by cutting price.....	26
Difference (69 percent).....	18

Net farm family income would be nearly 70 percent higher by cutting the volume marketed by 4 percent than by allowing prices to drop the 25 percent required to get the so-called free market to absorb the additional output.

NATIONAL WELFARE PROTECTED

Farm commodity supply adjustments should be viewed as supplemental to farm income protection programs and not as income-improving devices in themselves for several impelling national welfare reasons.

First, if such devices are designed to tailor each year's production to what the market will take at prices that will enable farmers to earn full parity incomes, there is an ever-present danger that adverse crop conditions may result in low yields and therefore lead to severe shortages. Moreover, in periods of recession and depression the cutting of the production of farm commodities to the volume that the depressed market will take at fair prices to farmers would so severely reduce supply that starvation and food riots would result.

This is, of course, exactly the principle upon which big industry, big business, private profit utilities, and organized labor operate to maintain prices, wages rates, and profits while cutting production.

In 1932 steel production for the year was cut to only 20 percent of capacity. If farmers had cut their production by a similar proportion, more than 4 out of 5 persons in the towns and cities of the United States would have starved to death. Obviously the Nation as a whole cannot allow farmers to use market proration or supply adjustment as a means of income protection to anything like the same extent that it allows steel producers to use it. But it is patently unfair to sanction and condone enforced scarcity as an economic tool of steel producers, the prices of whose products make up a large share of farm production expenses, and completely deny the use of the same tool to farmers.

In 1954 the steel industry operated at only 71 percent of capacity, average for the year. Total industrial production dropped by 9 percent from 1953 to 1954 although industrial prices were raised. Industrial employment was cut by 7 percent but hourly wages rose 2 percent.

In my opinion, the following limits on the use of federally sanctioned and administered farm commodity market supply adjustments by farmers should be incorporated in the program and compensations to farmers made to adjust for them:

1. Farm marketing adjustments should not be used to reduce the size of already existing carryover of commodities. These should be insulated from the market, and such of them as are not needed for the national security reserve should be disposed of in nonwasteful non-commercial channels.

2. Market supply adjustments should not be utilized to reduce total annual production of any commodity below the volume that the market will buy at prices which will return parity farm income in view of that year's augmented domestic and export demand in a full employment economy.

To reduce production below these levels would be a great deal more serious in the case of food and fiber than in the case, for example, of steel and automobiles.

CONTINUED INCREASE IN FARM PRODUCTIVITY

Since World War II, there have been 7 years when prices received by farmers averaged 100 percent of price parity or more. During these years, farm output per man-hour increased on an average of 3 percent per year (table I). No one knows, of course, whether such increases in farm productivity will continue in future years. But we do know that farm technological improvements already tested, but not yet adopted on most farms, are more than sufficient to maintain the above rate of increasing efficiency for the next 10 or 15 years, if farm income is maintained anywhere at all above the 50 percent of income parity level.

In contrast, population is increasing only 1.7 percent per year and per person consumption is expanding at a rate not faster than three-tenths percent per year. This makes a total growth of demand for farm commodities of approximately 2 percent per year, leaving a 1 percent per year drop or net drag. No one, of course, can predict future demand for farm commodities with exact accuracy.

However, if an adequate 100 percent of parity farm income protection program is to be operated in what appears to be the future situation some means must be used to hold down advancing farm productivity. In the short run this cannot be done by reducing price-support levels as experience of the sliding-scale program was dramatically demonstrated.

In the longer run such a policy can, of course, be effective in halting the increase of farm production, but only by driving down farm prices and income further and further until farm families mortgage their assets to the hilt, lose their net worth, use up their available credit, and wear out their soil, water, and other capital assets and several generations on our farms have gone through the wringer of bankruptcy.

If the preceding estimate of an approximate 1-percent drag per year is correct, and complete reliance is placed in the so-called free market, this mounting excess of farm commodity supply over effective demand would push down prices received by farmers and gross farm incomes by about 6 to 10 percent per year. With relatively fixed costs of production equal to two-thirds of gross income, net farm income would

tend to drop by about 10 to 15 percent per year. If such farm income drop were long continued, farm production increases would, of course, ultimately be stopped. But at what a cost to farmers and the general welfare.

TABLE I.—Parity price ratio and increasing farm efficiency and productivity, 1946-55

Year	Farm price parity ratio	Index of farm output per man-hour in following year	Percent increase in farm productivity above preceding year	Year	Farm price parity ratio	Index of farm output per man-hour in following year	Percent increase in farm productivity above preceding year
1946.....	113	92	1	1951.....	107	120	6
1947.....	115	104	13	1952.....	100	123	2
1948.....	110	104	0	1953.....	92	126	3
1949.....	100	112	8	1954.....	89	130	-----
1950.....	101	113	1	1955.....	84	-----	-----

¹ Average for 7 years.

PROPOSED FARM MARKET PRORATION SUPPLY ADJUSTMENT PROGRAM

To accomplish this objective effectively, it seems to me that we need a complete set of devices to enable farmers to increase their bargaining power in the Nation's commodity markets by adjusting market supply to augmented effective demand. In summary the complete set of devices I suggest, which are described in greater detail in appendix B (p. 834 ff.), are:

(1) A nationwide REA-type loan and technical-assistance program to assist farmer-owned and controlled business enterprise to acquire, build, and operate facilities to assemble, process, market, and store farm commodities and their products;

(2) A workable national all-commodity farm marketing goal and voluntary conservation acreage-reserve program to keep total market supply of all farm commodities as a whole in balance with increasing total domestic and export demand for all food and fiber;

(3) Marketing premium payments on hogs and cattle marketed at desirable weights;

(4) Extension to producers of all farm commodities who wish to use them, of the protection of cooperative bargaining as provided by marketing orders and marketing order legislation;

(5) Improved marketing quotas for "basic" commodities and new national single-commodity farm marketing goal programs for all farm commodities, when needed.

(6) Proposed system to be operated by a Federal Farm Income Improvement Board composed of 11 members, 6 officials of the United States Department of Agriculture, appointed by the President, by and with the advice and consent of the Senate, and 5 members elected from their own number of the farmer-elected members of the State farmer committees; 5-member State farmer committees, 2 including the chairman, appointed by the Secretary and 3 elected from their own number by the county farmer committeemen; and county and local farmer committees elected by farmers.

In my opinion, the situation and need calls for a complete logical set of tools to enable farmers to put their bargaining power in the market on a par with the buyers of farm commodities. This can be done with a combination of tools, each specifically designed for its particular purpose and for specific commodities to work together as a whole in connection with domestic consumption and export expanding programs to make a 100 percent of parity farm-income protection program economically workable, administratively feasible, and politically acceptable.

The REA-type storage and processing loans to farmer-owned and controlled business enterprises would enable farmers to set up their own yardstick operations to measure and regulate the ever-increasing marketing margin or spread between the prices received by farmers and those paid by consumers. Even if such operations did not reduce the spread, at least a part of middleman profits from such operations would go to the farmer-owners of the enterprises.

The basic principle of the proposal is that the farmers will be enabled to tailor the supply of farm commodities that is put on the market to equal the volume that the market will take, with such domestic and export demand-expanding programs as are in operation, at approximately parity-income equivalent prices, assuming that the total national economy is operating at relatively full employment level of prosperity.

The basic principle could be carried out by means of a series of tailored and matched programs as follows:

A. The all-commodity farm marketing goal and conservation acreage reserve program to set up a nationwide all-commodity market supply adjustment program.

Each year, on November 15, the Secretary of Agriculture, on advice and recommendation of the Federal Farm Income Improvement Board, would determine:

(1) The total volume of farm commodities that will move at parity income prices in the next calendar year, based upon the assumption that not more than 3 percent of the civilian labor force will be unemployed. He would then value this full employment volume of farm supply at parity income prices and proclaim the total figure as the following year's national all-commodity farm marketing goal.

(2) Simultaneously with determining and proclaiming the all-commodity marketing goal, the Secretary, with advice and upon recommendation of the Federal Farm Income Improvement Board, would determine and proclaim the national conservation acreage reserve. To determine the national conservation acreage reserve, a calculation will be made as to the number of acres available for commercial production of farm commodities, including hay, pasture and grazing lands. From this total will be subtracted the number of acres expected to be required to produce the national farm marketing goal volume of farm commodities. The resulting figure—the number of acres of farmland not needed in the year ahead for commercial production—will be proclaimed as the national conservation acreage reserve for that year.

(3) The Secretary would offer to make rental payments to farmers on annual contracts to keep their conservation acreage reserve out of commercial production and to make payments re-

quired to cover the cost of putting the land into the optimum conservation condition for that year.

(4) Both the national all-commodity farm marketing goal and the national conservation acreage reserve would be apportioned by the Federal Farm Income Improvement Board, according to standards established in the law, to States; from States to counties, and from counties to farms. By this process each farm family would be awarded an all-commodity farm marketing goal (evidenced by a farm marketing goal certificate) and a conservation acreage reserve eligibility figure.

The all-commodity farm marketing goal certificate would show in terms of dollar value at parity-income equivalent prices the volume of sales for which the family could obtain goal certificate of sales free of charge from the county farmer committee. If the family wished to sell a larger volume than is covered by the all-commodity farm marketing goal certificate, it could do so by purchasing over-goal certificates of sales from the county farmer committee by paying a farm income stabilization fee equal to 75 percent of the parity income equivalent price of the commodities covered. The Secretary of Agriculture would be directed to confiscate any farm commodity or product thereof found to be unaccompanied by a goal certificate of sale or an over-goal certificate of sale in the ownership of anyone except the farm family that produced it.

(5) The family would be eligible to place any acres it desired in the conservation acreage reserve, except if there was not enough to go around, no family could put in more than its pro rata share.

B. With total farm output and market supply as a whole kept in reasonable balance with total domestic and export market demand by means of the all-commodity farm marketing goal and conservation acreage reserve, we must then provide for a series of individual farm commodity market production or supply adjustment programs.

First, the producers of all farm commodities are made eligible, where they so desire, to make use of the marketing order device now used by city fluid milk producers and for some fruits, vegetables, and nuts. As a protection to consumers such producers should not be allowed to use marketing orders, or similar devices, to raise the prices of their commodities above the parity-income equivalent price.

C. For each farm commodity not already protected by a marketing order program a special single-commodity farm-marketing goal program would be established. On advice and recommendation of the Farm Income Stabilization Board, the Secretary of Agriculture would determine for each such commodity whether in the marketing year ahead the expected total supply of the commodity will exceed the "normal supply." The normal supply would be defined as the volume of the commodity that will sell at parity-income equivalent prices in a full-employment economy. If total supply is expected to exceed normal supply, the Secretary would be required to proclaim a national single-commodity marketing goal for that commodity, apportion it out to States, counties, and farm families, and then hold a referendum. If two-thirds or more of the producers voting in the referendum approve the marketing goals expressed in baleage and poundage terms, a producer could obtain single-commodity goal certificates of sale for up to his goal volume of sales and could buy over-

goal single-commodity certificates of sale for any volume of the commodity he wished to sell in excess of his goal. He would be able to purchase the overgoal certificates of sale by paying a farm income stabilization fee equal to 75 percent of the parity income equivalent price of the commodity. The Secretary of Agriculture would be required to confiscate any such commodity moving in channels of trade if unaccompanied by an all-commodity certificate sale and individual commodity certificate of sale.

SUMMARY

In the preceding statement I have gone into considerable detail concerning specific application of farm market proration or supply adjustment programs. I have done so to demonstrate that a fully workable market proration system can be developed for all farm commodities. I am firmly convinced the farmers would not only accept but would welcome the opportunity, right and authorization to utilize such a system.

The important point in what I have said is not the merits of the specific details I have outlined—rather, the important points are these:

1. Farmers suffer from a chronically low disparity of income and income-earning opportunities;
2. The fundamental factor in farmers' lack of parity income is their weak bargaining positions;
3. Farmers' bargaining power cannot be strengthened in a completely competitive farm-market operation in an otherwise administered production and administered price economy.
4. To overcome farmers' weak bargaining position requires the adoption and operation of a comprehensive full parity family farm income-improvement program of many phases and segments.
5. An essential part of such a program is a comprehensive system of farm commodity programs that will be adequate to meet the total problems and tailored to the specific needs and unique characteristics of individual commodities.
6. The needed comprehensive farm commodity protection program should consist of:
 - (a) National security reserve;
 - (b) Mandatory income protection at full income parity for the family farm production of all farm commodities;
 - (c) Farm market proration or supply adjustment programs required:
 - (1) To dampen down total farm sales (I have suggested the all-commodity farm marketing goal and conservation acreage reserve program for this purpose), and
 - (2) Individual commodity programs to enable producers to keep supplies in line with augmented market demand at parity income equivalent prices in a full employment economy.

I. Collective bargaining through marketing agreements and orders and similar devices.

II. Individual-commodity marketing goals, and

III. Incentive marketing premiums for sales of livestock at desirable weights.

These are the principles. Their specific detailed application and the terminology used to describe them can, of course, be varied from these that I have used. The degree or extent of application of the different phases would vary with the situation of each individual commodity. However, the basic fundamental proposition I have stated is that farmers' bargaining power should be strengthened to the extent that farmers are allowed and enabled to place on the market only that volume of each and all farm commodities that will enable them to earn a parity of income under whatever circumstances may exist from year to year.

(Additional details on the proposals are given in appendix B, p. 834 ff.)

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APPENDIX A

FARM SIZE AND THE FAMILY FARM ¹

Several papers in this volume described technological changes in agriculture and their impact upon the size and organization of farms. The changing character of agriculture persistently prompts the question, what is happening to the family farm? Is large-scale, corporation farming taking over? This appendix assembles and comments upon some statistics that bear upon these questions. While the statistics are instructive, they often do not provide answers upon which everyone can agree.

Usually "family farm" means a farm where the operator does ordinary farm work (often aided by other members of the family), makes the managerial decisions, and is not primarily a foreman or employer of hired labor. Sometimes, also, there is a feeling that the family farm is one using traditional production methods and producing only incidentally for the market. On the other hand, many persons think that the family farm should be large enough to provide the family with a decent living in today's terms. There is no way of capturing these vague and divergent ideas in a single definition for the purpose of measuring the status of the family farm. Accordingly, no rigid criteria for the family farm are adopted here. Most of the statistics center on farm size. Emphasis is given to the size of the labor force and its division between family and hired labor because this particular measure probably is especially relevant to most persons' concept of the family farm.

THE CURRENT SIZE OF FARM

The Census economic classification of farms applies the term "commercial" to any noninstitutional farm selling more than \$1,200 worth of farm products and to farms having sales in the range \$250 to \$1,199 if the operator worked off the farm fewer than 100 days and if sales of farm products exceeded the family's nonfarm income. The "commercial" farms are subdivided into six classes, by value of products sold. Most farms in classes V and VI are distinctly inadequate production units on which underemployment of family labor is a serious limitation on income. The first 4 classes (I-IV) made up only 44 percent of all farms but sold about 91 percent of all farm products put on the market in 1954 (table A-1). The first four classes comprise, approximately, "commercial agriculture" as the term is used in the study with which this volume deals.

¹ Prepared by the subcommittee staff. Discussions of farm size and the family farm in major geographic regions of the country are included in the papers of ch. 3 of this volume.

TABLE A-1.—*Economic classification of farms, United States, 1954*

Economic class	Sales per farm	Number of farms (thousands)	Percentage of all farms	Percentage of value of products sold
"Commercial" farms				
Class I.....	\$25,000 and over.....	134	2.8	31.3
Class II.....	\$10,000 to \$24,999.....	449	9.4	26.9
Class III.....	\$5,000 to \$9,999.....	707	14.8	20.5
Class IV.....	\$2,500 to \$4,999.....	812	17.0	12.1
Subtotal.....		2,102	44.0	90.8
Class V.....	\$1,200 to \$2,499.....	763	16.0	5.7
Class VI.....	\$250 to \$1,199 ¹	462	9.7	1.4
Subtotal.....		1,225	25.7	7.1
All "commercial".....		3,327	69.7	97.9
Part-time.....	\$250 to \$1,199 ¹	575	12.0	1.4
Residential.....	Under \$250.....	878	18.4	.3
Abnormal ²		3	.1	.3
Subtotal.....		1,455	30.4	2.0
All farms.....		4,782	100.0	100.0

¹ Farms with sales of from \$250 to \$1,199 were classified as part-time if the operator worked off the farm 100 days or more or if the family's nonfarm income exceeded the value of farm products sold.

² Public and private institutional farms, etc.

Source: 1954 census of agriculture.

More work is done by family labor than by hired labor on most class II farms and on some class I farms. A classification of farms by labor expenditures in 1954 suggests the relative importance of farms on which hired labor exceeds family labor (table A-2). Probably an annual expenditure of \$2,000 for labor roughly separates the farms on which family labor is most important from those on which hired labor does most of the work. This tends to be borne out by the labor on farms at the time the 1954 census was taken, although employment of seasonal labor was high on that date. Apparently, unpaid family labor did half or more of the farmwork on about 95 percent of all farms, and these farms contained 82 percent of the harvested cropland and 63 percent of all pastureland in 1954.

TABLE A-2.—*Classification of farms by labor expenditures, 1954¹*

Labor expenditures during year	Percentage of all farms	Workers per farm, enumeration date ²			Percentage of all cropland harvested	Percentage of all pasture land
		Family ³	Hired, regular ⁴	Hired, seasonal ⁴		
None.....	53.6	1.4			31.4	28.4
\$1 to \$1,999.....	41.3	1.5	0.1	0.6	50.9	35.1
Subgroup.....	94.9	1.4	.05	.3	82.3	63.5
\$2,000 to \$4,999.....	3.4	1.4	1.0	1.8	10.1	16.6
\$5,000 to \$9,999.....	1.0	1.2	2.1	3.9	3.9	8.9
\$10,000 or more.....	.7	1.0	7.0	12.0	3.7	11.0
All farms.....	100.0	1.44	.14	.43	100.0	100.0

¹ From a special tabulation of the Bureau of the Census (press release of Oct. 16, 1957, No. 4, series AC54-3) based on a sample of 5 percent of the larger farms and 1 percent of the other farms included in the 1954 census of agriculture. Sampling error is rather large, and some averages are slightly influenced by rounding-off inaccuracies.

² Sept. 26-Oct. 2 (33 States) and Oct. 24-30 (15 States).

³ Operators working 1 or more hours and other unpaid family members working 15 hours or more in the specified week.

⁴ Regular workers hired for 150 or more days of the year; seasonal workers employed less than 150 days.

Approximately 3 percent of all farms spent between \$2,000 and \$4,999 for labor in 1954. Often much of this was for temporary workers to meet seasonal labor requirements and was in this sense supplemental to the family labor force. Opinion differs as to whether the labor criterion permits these farms to be considered family farms. They contained one-tenth of the harvested cropland and one-sixth of all pastureland. Two percent of all farms, containing about 8 percent of the cropland and 20 percent of the pastureland, employed considerably more hired than family labor (labor expenditures exceeded \$5,000). Much of the pastureland on farms spending \$2,000 or more for labor was rangeland of low carrying capacity in the West. But much of the cropland on large farms was fruit, vegetable, and irrigated cotton land on which the value of production per acre was high. The larger farms' share of total crop production probably was substantially higher than their proportion of harvested cropland.

The relative importance of larger-than-family farms in different types of farming is suggested by table A-3. The most important type of farm is "livestock farms (other than dairy and poultry)." On this kind of farm, 37.8 percent of all sales in classes I to VI were made by class I farms in 1954. The average hired labor force on class I farms was 2.12 man-equivalents. Further breakdown of this group would show that the hired labor force on class I cattle and sheep ranches of the Rocky Mountain and desert regions probably averaged about 5 or 6 man-equivalents,² while the hired labor on class I livestock farms in the Corn Belt averaged only 1.1 man-equivalents.³

² 1954 census of agriculture, vol. III, pt. 9, ch. VI, pp. 14-16.

³ *Ibid.*, ch. VII, p. 35.

TABLE A-3.—Value of sales and composition of the labor force, by type and economic class of farm, 1954¹

Type of farm and descriptive item ²	Economic class of farm					
	I	II	III	IV	V	VI
All types (100.0):						
Percentage of sales in classes I-VI.....	32.0	27.5	20.9	12.4	5.8	1.4
Sales per farm (thousands of dollars).....	58.0	14.9	7.2	3.7	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.13	1.21	1.21	1.16	1.04	1.02
Hired labor per farm (man-equivalent).....	4.29	.60	.22	.11	.05	.02
Cash-grain farms (18.5):						
Percentage of sales in classes I-VI.....	22.3	36.4	26.1	11.1	3.5	.6
Sales per farm (thousands of dollars).....	45.6	14.8	7.3	3.8	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.16	1.18	1.11	.94	.79	.91
Hired labor per farm (man-equivalent).....	1.91	.33	.12	.07	.04	.02
Cotton farms (10.7):						
Percentage of sales in classes I-VI.....	40.8	15.1	12.2	15.2	12.7	4.0
Sales per farm (thousands of dollars).....	69.7	15.4	6.8	3.4	1.8	.8
Family labor ³ per farm (man-equivalent).....	1.06	1.12	1.44	1.53	1.35	1.19
Hired labor per farm (man-equivalent).....	6.70	1.39	.49	.15	.05	.02
Other field-crop farms ⁴ (6.5):						
Percentage of sales in classes I-VI.....	20.8	14.4	20.7	26.6	14.1	3.4
Sales per farm (thousands of dollars).....	59.6	14.9	6.9	3.7	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.15	1.28	1.46	1.37	1.15	1.05
Hired labor per farm (man-equivalent).....	7.44	1.14	.33	.13	.06	.02
Vegetable farms (2.2):						
Percentage of sales in classes I-VI.....	72.6	13.2	6.9	4.3	2.2	.8
Sales per farm (thousands of dollars).....	101.3	15.5	7.0	3.5	1.7	.7
Family labor ³ per farm (man-equivalent).....	1.11	1.24	1.15	1.08	.93	1.04
Hired labor per farm (man-equivalent).....	16.71	2.35	.85	.36	.15	.05
Fruit-and-nut farms (4.9):						
Percentage of sales in classes I-IV.....	59.3	20.8	10.8	5.9	2.7	.5
Sales per farm (thousands of dollars).....	65.7	16.1	7.8	4.1	2.0	.8
Family labor ³ per farm (man-equivalent).....	.98	.96	.87	.75	.67	.88
Hired labor per farm (man-equivalent).....	8.04	1.67	.74	.36	.18	.10
Dairy farms (14.8):						
Percentage of sales in classes I-VI.....	16.4	30.1	31.0	16.1	5.4	1.0
Sales per farm (thousands of dollars).....	50.1	14.2	7.1	3.7	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.18	1.30	1.28	1.19	1.02	.98
Hired labor per farm (man-equivalent).....	4.17	.67	.19	.07	.03	.01
Poultry farms (6.1):						
Percentage of sales in classes I-VI.....	43.7	30.2	14.2	7.0	3.7	1.2
Sales per farm (thousands of dollars).....	49.4	15.7	7.4	3.8	1.9	.7
Family labor ³ per farm (man-equivalent).....	1.19	.15	1.03	.89	.75	.79
Hired labor per farm (man-equivalent).....	1.52	1.27	.10	.05	.02	.01
Livestock farms (other than dairy and poultry) (25.3):						
Percentage of sales in classes I-VI.....	37.8	30.2	18.1	8.7	4.1	1.1
Sales per farm (thousands of dollars).....	58.1	15.2	7.3	3.7	1.8	.7
Family labor ³ per farm (man-equivalent).....	1.15	1.19	1.14	1.00	.81	.91
Hired labor per farm (man-equivalent).....	2.12	.42	.19	.12	.07	.03
General farms, primarily crop (2.4):						
Percentage of sales in classes I-VI.....	42.0	22.8	16.1	11.7	6.1	1.3
Sales per farm (thousands of dollars).....	65.4	13.5	6.6	3.4	1.7	.7
Family labor ³ per farm (man-equivalent).....	1.10	1.16	1.17	1.10	.93	.94
Hired labor per farm (man-equivalent).....	6.82	.90	.35	.15	.07	.02
General farms, primarily livestock (1.4):						
Percentage of sales in classes I-VI.....	6.8	29.7	34.1	20.2	7.6	1.6
Sales per farm (thousands of dollars).....	39.7	14.3	7.1	3.7	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.31	1.37	1.32	1.21	1.02	.91
Hired labor per farm (man-equivalent).....	2.48	.31	.10	.05	.03	.01
General crop and livestock farms (5.2):						
Percentage of sales in classes I-VI.....	12.3	31.7	31.8	17.1	6.1	1.0
Sales per farm (thousands of dollars).....	47.5	14.1	7.2	3.7	1.9	.8
Family labor ³ per farm (man-equivalent).....	1.27	1.32	1.28	1.19	1.02	1.02
Hired labor per farm (man-equivalent).....	3.06	.42	.14	.07	.04	.02
Miscellaneous farms ⁵ (2.0):						
Percentage of sales in classes I-VI.....	65.1	18.0	7.7	5.2	3.1	.9
Sales per farm (thousands of dollars).....	71.0	15.1	6.8	3.5	1.8	.7
Family labor ³ per farm (man-equivalent).....	1.02	1.04	1.00	.89	.74	.91
Hired labor per farm (man-equivalent).....	11.26	1.76	.66	.30	.12	.04

¹ Compiled from Farmers and Farm Production in the United States 1954 Census of Agriculture, vol. III, pt. 9, ch. IX, a cooperative report of the U. S. Department of Commerce and the U. S. Department of Agriculture, 1956.

² Figure in parentheses after type of farm is the value of sales of products by farms of that type as a percentage of the value of sales by all class I-VI farms of all types.

³ Operator and unpaid family labor. Hired labor may include paid family labor.

⁴ Tobacco, peanut, sugar, and other farms.

⁵ Forest-product and horse farms, nurseries, greenhouses, etc.

On cash-grain farms, the second most important type of farm, class I farms accounted for 22.3 percent of all class I-VI sales and had an average hired labor force of 1.91 man-equivalents. Class I wheat farms in most subregions averaged less than 2.0 man-equivalents of hired labor per farm;⁴ class I cash-grain farms in the Corn Belt averaged 1.2 man-equivalents of hired labor.⁵

Class I farms in the dairy group, the third most important class of farm, accounted for only 16.4 percent of all sales by class I-VI farms, but the average amount of hired labor on class I farms was 4.17 man-equivalents. On poultry farms, where sales per man are high because so many inputs, especially feed, are purchased, class I farms made up 43.7 percent of all class I-VI sales but had an average hired labor force of only 1.52 man-equivalents.

The size situation on cotton farms is complex. Among cotton farms in the three major subregions east of the delta, class I farms produced less than 8 percent of the cotton in 1954.⁶ Cropper units, classified as separate farms, made up from 27 to 36 percent of all class I-VI cotton farms. In the delta area, class I farms produced 26.7 percent of all cotton grown on class I-VI cotton farms in 1954. The importance of large farms would have been increased if farms had been defined as ownership units rather than as cropper units, which made up 48.3 percent of all class I-VI cotton farms in the delta. In south and west Texas, class I farms produced about 60 percent of the cotton grown on class I-VI cotton farms, and in the California-Arizona-New Mexico region, the percentage was 86.6. As table A-3 indicates, hired labor was more important than family labor even on class II cotton farms.

"Other field-crop" farms are unusual in that class IV farms account for a larger proportion of sales than any other. Class IV farms grew 43.9 percent of all flue-cured tobacco and 31.6 percent of all burley tobacco produced on class I-VI tobacco farms in 1954.⁷ Classes III and IV were the most important production groups among peanut farms in 1954.⁷

Larger-than-family farms are most important in vegetable and fruit farming. Class I vegetable farms had average sales of \$101,300 in 1954, marketed 72.6 percent of all products sold by class I-VI vegetable farms, and hired an average of 16.71 man-equivalents of labor. Class II vegetable farms employed more hired than family labor and accounted for 13.2 percent of all class I-VI sales. Class I farms hiring considerable labor were also very important in fruit and tree-nut farming. Harvesting requires large amounts of seasonal labor on both vegetable and fruit farms.

Larger-than-family farms are especially important in the areas of the country where fruit and vegetable farms, livestock ranches, and large cotton farms are located: California, Texas, Florida, and parts of the range States. If the multiple-unit operations of the South are counted as single farms, the Mississippi Delta becomes another area of large farms.

⁴ *Ibid.*, ch. I, pp. 11-26.

⁵ *Ibid.*, ch. VII, p. 35.

⁶ Details on cotton are from *ibid.*, ch. II.

⁷ *Ibid.*, ch. III, pp. 21 and 46.

CHANGES IN SIZE OF FARM

The size of farm as measured by acreage has been rising (table A-4). Since 1940, the number of farms of less than 260 acres has decreased and the number larger than 260 acres has increased. The average size of all census farms rose from 157 to 242 acres between 1930 and 1954.

TABLE A-4.—Number of farms by size of acreage group, United States, specified years, 1930-54¹

Item	1930	1940	1945	1950	1954
Number of farms (thousands):					
Under 10 acres.....	359	506	595	485	484
10 to 49 acres.....	2,000	1,780	1,654	1,478	1,213
50 to 99 acres.....	1,374	1,291	1,157	1,048	864
100 to 179 acres.....	² 1,388	1,279	1,200	1,103	953
180 to 259 acres.....	² 476	517	493	487	464
260 to 499 acres.....	451	459	473	478	482
500 to 999 acres.....	160	164	174	182	192
1,000 acres and over.....	81	101	113	121	130
All census farms.....	6,289	6,097	5,859	5,382	4,782
Average size of farm (acres):					
All census farms.....	157	174	195	215	242
Commercial farms ³	(⁴)	220	255	300	336

¹ Taken from McElveen, Jackson V., *Family Farms in a Changing Economy*, Agriculture-Information Bulletin No. 171, Agricultural Research Service, U. S. Department of Agriculture, March 1957, p. 26 (based on Bureau of Census data).

² Corrected for comparability with more recent census data.

³ Census class I-VI farms, except that farms on which operator did 100 days or more of off-farm work or on which family nonfarm income exceeded farm sales were excluded from class V as well as class VI. Also includes abnormal farms.

⁴ Not available.

An increase in volume of sales per farm has also occurred. By adjusting sales of farm products for changes in prices, Jackson V. McElveen, in a USDA study, set up economic classes of farms that represented approximately the same physical volume of marketings in various census years. His data show a strong tendency for class I and II farms, as so defined, to increase in number and for class V and VI farms to decrease.⁵

Farms have been growing larger in terms of acres and sales volume chiefly because rising labor efficiency has created a strong incentive in that direction. Output per man-hour in farming increased 94 percent between 1940 and 1956 (Appendix table C-11). In terms of labor force per farm, the size of farm has slowly decreased. Hired labor has not been displacing family labor. The division of the total labor force between family and hired workers has been one of the stable characteristics of our rapidly changing agriculture:

	1910	1920	1930	1940	1950	1956
Farm workers per farm ¹	2.12	2.06	1.91	1.73	1.65	² 1.59
Family workers as a percentage of all farm workers.....	75.1	74.8	74.5	75.6	77.6	² 76.5

¹ The number of farms used for this computation is the USDA series used in preparing farm income estimates.

² Among class I-IV farms, which marketed 91 percent of all farm products sold, the average labor force was 1.70 man-equivalents in 1954. Of this labor, 70 percent was operator and unpaid family labor. (Computed from 1954 census of agriculture, vol. III, pt. 9, ch. IX.)

⁵ McElveen, Jackson V., *Family Farms in a Changing Economy*, Agriculture Information Bulletin 171, Agricultural Research Service, U. S. Department of Agriculture, March 1957, p. 19.

McElveen adjusted the economic classification of farms so that each class represented approximately the same labor requirements in various census years (table A-5). Though small changes may not be meaningful, the data indicate that the relative importance of large, medium, and small farms, as measured by labor requirements, has been fairly constant since 1930.

TABLE A-5.—Number and percentage of census "commercial" farms in major size categories equivalent to constant levels of farm output per man-hour of labor, United States, specified years, 1930-54¹

Scale of operation in 1954 terms ²	1930	1940	1945	1950	1954
Number of class I-VI farms (thousands):					
Class I farms.....	205	195	175	155	134
Class II-IV farms.....	3,118	2,680	2,516	2,180	1,968
Class V and VI farms ³	1,400	1,390	1,250	1,130	998
Total.....	4,723	4,265	3,941	3,465	3,100
Percentage of class I-VI total:					
Class I farms.....	4.3	4.6	4.4	4.5	4.3
Class II-IV farms.....	66.0	62.8	63.9	62.9	63.5
Class V and VI farms ³	29.7	32.6	31.7	32.6	32.2
Total.....	100.0	100.0	100.0	100.0	100.0

¹ McElveen, op. cit., p. 50.

² Value-of-sales class limits were established in each year by adjusting 1954 limits to reflect changes in prices received by farmers and changes in farm output per man-hour of labor. In the original table, class I farms are called large-scale farms, class II-IV farms are called family-scale family farms, and class V and VI farms are called small-scale family farms.

³ Does not include farms where the operator worked off the farm 100 days or more or where family nonfarm income exceeded the value of farm products sold.

OWNERSHIP AND MANAGEMENT OF FARMS

Tenancy, operation of farms by hired managers, and ownership of farms by corporations often are considered inconsistent with family farming. Statistics are available to show trends in some but not all aspects of farm ownership and management.

The number of farms and farmers decreased about one-fifth between 1940 and 1954, but shifts in farm tenure were largely in the direction of the family farm ideal (table A-6). The category "full owners" includes many part-time and residential farmers, as is suggested by the fact that full owners were 57.4 percent of all farmers in 1954 but operated only 33.2 percent of the harvested cropland. Full owners were a somewhat larger percentage of all farmers in 1954 than in 1940, but their share of cropland declined slightly. One reason for the latter was the sharp increase in importance of part owners. Many farmers have responded to economic incentives to increase farm size by renting additional land. Full and part owners' combined share of the harvested cropland rose from 58.0 percent in 1939 to 70.4 percent in 1954.

TABLE A-6.—*Number of farms and cropland harvested, by tenure of operator, United States, selected census years*

Tenure of operator	Number of farms			Cropland harvested		
	1940	1950	1954	1939	1949	1954
Reported numbers and acreages:	<i>Thou-</i>	<i>sands</i>	<i>Thou-</i>	<i>Thou-</i>	<i>sands</i>	<i>Millions</i>
Full owner.....	3,084	3,090	2,745	115.4	121.4	110.8
Part owner.....	615	825	868	71.0	113.6	124.2
Manager.....	36	24	21	6.4	7.1	6.1
Tenant.....	2,361	1,444	1,149	128.4	102.2	93.1
Sharecropper ¹	541	347	268	12.8	8.3	6.1
Total, all farms.....	6,097	5,382	4,783	321.2	344.4	334.2
Percentages of total:						
Full owner.....	50.6	57.4	57.4	35.9	35.2	33.2
Part owner.....	10.1	15.3	18.2	22.1	33.0	37.2
Manager.....	.6	.4	.4	2.0	2.1	1.8
Tenant.....	38.7	26.8	24.0	40.0	29.7	27.9
Sharecropper ¹	8.9	6.4	5.6	4.0	2.4	1.8
Total, all farms.....	100.0	100.0	100.0	100.0	100.0	100.0

¹ South only. Included in total for tenants.

Source: 1954 census of agriculture.

Farms operated by managers are relatively unimportant in the country's agriculture as a whole and, except in the range States and in other special cases, have not been increasing in significance. The acres of cropland harvested by manager-operated farms were 6.9 million in 1929, declined to 6.0 million in 1934, rose to a peak of 8.3 million in 1944, and have since fallen to 6.1 million in 1954. Tenancy decreased sharply in both absolute and relative terms between 1940 and 1954. The reduction in cropland farmed by sharecroppers in the South has been especially marked.

The agricultural census contains information only for the South on the extent to which more than one farm is owned by a single person or firm. Statistics on multiple farm operations in the South have not been assembled on a strictly comparable basis in each census year. Data from the latest two censuses indicate that the importance of multiple farms in the agriculture of the South was about the same in 1954 as in 1949. The relative importance of cropper units in multiple farms declined, however.

Vertical integration of farming operations with those of firms processing farm products or selling farm supplies has developed rapidly in poultry farming in recent years. A variety of contractual relationships between farmers and business firms is involved, ranging from situations in which a supplier merely has a financial interest in a batch of broilers to other situations where the farmer supplies labor and buildings on a piece-rate basis under close supervision. Trade opinion is that about nine-tenths of all chicken broilers and three-fourths of all turkeys are being marketed under some such an arrange-

ment in 1957. Similar developments have begun more recently in egg production but have not gone nearly so far. Some contract farming is done in livestock production and is a long-established practice in the canning crop industry. For agriculture as a whole, however, vertical integration is of interest mainly as a potential development.⁹

Currently available statistics on corporations in agriculture do not satisfactorily show how much farm production is accounted for by corporate farms. Income tax returns for corporations classified by the Internal Revenue Service in the "farms and agricultural services" category are useful, however, in showing the maximum importance¹⁰ that can be attached to corporation farming and in revealing any trends that may exist (table A-7). The extent to which firms engaged in supplying services are included in the two series of table A-7 is not known. Receipts apparently originating from sale of services were 22 percent as large as gross income from sales of goods in 1954. Other receipts were small. Gross income from sales rather than total gross income is given in series No. 2 in order to minimize the influence of corporations not wholly engaged in farming, but their influence cannot be removed from the net profit figures.

⁹ See also the paper in this volume by John H. Davis, *Vertical Integration of Production and Marketing Functions in Agriculture*, p. 307.

¹⁰ The category "farms and agricultural services" clearly contains firms not engaged wholly in conventional farming, and they inflate the apparent importance of corporation farming. On the other hand, some processing corporations producing farm products may be included in such categories as "manufacturing: food and kindred products" rather than in "farms and agricultural services." It is believed that the first factor outweighs the second.

TABLE A-7.—Number and income of agricultural and related service corporations submitting Federal income tax returns, 1926-54

Year ¹	Number of returns, active corporations	Gross income or sales ²	Net profit or loss ³	Gross income or sales as percentage of total farm marketings ⁴
Series No. 1: ⁵		Millions of dollars	Millions of dollars	Percent
1926.....	(⁶)	709	10.4	6.7
1927.....	7,708	681	10.7	6.3
1928.....	8,093	685	25.3	6.2
1929.....	8,283	715	16.7	6.3
1930.....	8,777	551	-39.8	6.1
1931.....	8,735	417	-72.4	6.5
1932.....	8,685	329	-73.4	6.9
1933.....	8,193	341	-36.6	7 6.2
1934.....	8,165	479	-13.7	7 7.0
1935.....	7,865	517	11.6	7 6.7
1936.....	7,737	627	33.5	7 7.2
1937.....	7,539	674	26.3	7 7.3
Series No. 2: ⁵				
1938.....	8,227	422	-0.6	5.5
1939.....	7,834	424	14.4	5.4
1940.....	7,540	484	22.9	5.8
1941.....	7,098	538	63.5	4.8
1942.....	6,639	603	78.1	3.9
1943.....	6,259	671	108.4	3.4
1944.....	5,830	739	116.3	3.6
1945.....	5,637	744	129.6	3.4
1946.....	6,041	927	174.7	3.7
1947.....	6,660	1,266	206.3	4.3
1948.....	7,021	1,398	209.4	4.6
1949.....	7,336	1,436	172.6	5.2
1950.....	7,561	1,507	283.8	5.3
1951.....	8,028	1,793	249.5	5.4
1952.....	8,155	1,909	129.4	5.9
1953.....	8,693	1,846	105.0	5.9
1954 ⁸	7,971	1,713	114.6	5.7

¹ Tax year ending in 12-month period beginning July 1 of the given year.

² Gross income for series No. 1, 1926-37; gross sales for series No. 2, 1938-54. Gross sales were 76 percent of gross income for the 8,227 reporting corporations in 1938.

³ "Net income" for series No. 1, 1926-37, refers to taxable net income; definition not the same for all years. Data for series No. 2, 1938-54, refers to "compiled net profit or net loss" as reported by the Internal Revenue Service.

⁴ The two series are not comparable; see footnote 2.

⁵ Series No. 1 relates to "farming—cotton, grain, stock, horticulture, and all other farming; lessors." Series No. 2 is now described as "farms and agricultural services." The two classifications are not entirely comparable nor is one a subdivision of the other.

⁶ Not available, but total number of returns in 1926 exceeded total number in 1927.

⁷ Gross income as percentage of farmers' cash receipts from marketings and Government payments.

⁸ Data from preliminary report for 1954.

Source: Statistics for corporations obtained from Statistics of Income for 1953, pt. 2, and preceding annual publications of the Internal Revenue Service, U. S. Treasury Department. Revisions of published data were supplied by IRS.

About 8,000 corporations were classified in the "farms and agricultural services" category in 1954. If each of these had been a corporation farm, the number of corporation farms would have been 0.2 percent of all farms and 0.4 percent of all class I-IV farms. Apparently the number of corporations engaged in agriculture declined from the end of the 1920's until 1945 and subsequently increased approximately to the earlier level.

The gross sales income of farm and agricultural service corporations amounted to 5.7 percent of farmers' cash receipts from marketings in 1954. When differences between the two series of table

A-7 are taken into account, it appears that the relative importance of corporations in terms of share of farm products marketed did not change greatly from the middle of the 1920's to the beginning of World War II, declined during the war, and recovered to about the former level by the 1950's. Net profits were low or negative until World War II and were highest in the period 1947-51.

About 5 percent of all land in farms in 1954 was owned by corporations.¹¹ A breakdown of the national figure by 9 geographic divisions shows that the proportion ranged between 1 and 2 percent in the northeast and north-central divisions, between 2 and 6 percent in the southern divisions, and from 10 to 12 percent in the mountain and Pacific divisions. A considerable part of the corporate-owned land in the West was grazing land.

SUMMARY

One who reviews the past and present agricultural situation to determine the status of the family farm finds some sharply different circumstances that may or may not fit into his conception of the family farm. Oversimplified somewhat, the situation in 1954 was about like this:

Thirty percent of all census farms were residential or part-time units where the family depended mainly on nonfarm income. Another one-fourth of all farms were small units without sufficient production capacity to employ family labor effectively, and incomes on them were low. The 2 groups together accounted for only 9 percent of all farm products sold. The great bulk, 91 percent, of all products put on the market came from 44 percent of the farms. Most of these used considerable machinery and technically advanced production methods, but only about 5 percent of all farms employed more hired than family labor. On perhaps 2 percent of all farms, hired labor was clearly dominant rather than supplemental to the family labor force. Farms employing more hired than family labor may have accounted for (very roughly) one-third of the farm products sold. Corporation farms were perhaps 0.2 percent of all farms and may have marketed about 5 percent of all farm products.

Looking at the past, one sees that farms have become increasingly commercial in character: they have larger acreages, buy more supplies and sell more products, use much larger amounts of machinery, require a higher degree of technical and managerial skill on the part of the operator, and are more dependent on cost-price relationships. But farms have not grown in terms of labor force per farm, nor has hired labor replaced family labor. The relative importance of large farms—large in terms of labor requirements—has changed very little. Tenancy has declined, owner operation of farms has risen, and the relative importance of corporation farming apparently is about where

¹¹ Individuals Own Seventh-eighths of Farmland in United States, U. S. Department of Commerce press release, February 13, 1957.

it was in 1929. We have fewer farms and farmers, and farming is more commercial; but family labor and family control are as important as they were a generation ago.

Looking ahead, one sees that the existing gap between actual and optimum size of farm will exert strong pressure for further consolidation and enlargement of units, and the optimum size is itself likely to increase. How family operation and control of farms will fare cannot be foreseen with certainty. Integration of farm with nonfarm operations may upset existing conceptions of farms as independent units. Rising capital requirements, the present success of large-scale farms in some types of agriculture, and certain other considerations suggest that larger-than-family farms may become more nearly dominant. On the other hand, cost-size relationships do not now seem to favor large-scale farms in many important types of agriculture. The family business unit, by adapting its operations greatly, has maintained its relative position in a rapidly changing agriculture in the past. It may be able to do the same in the future.

APPENDIX B

MARKETING COORDINATION AND BUYERS' REQUIREMENTS

[Appendix tables for the paper under this title by George L. Mehren, p. 282 ff.]

TABLE IV-1.—*The flow through the distribution system, United States, 1869-1948*

	1869	1879	1889	1899	1909	1919	1929	1929	1939	1948
	1	2	3	4	5	6	7	8	9	10
Value (in billions of dollars):										
1. Output in producer's prices, relevant commodities	\$3.6	\$4.1	\$5.9	\$7.4	\$13.3	\$33.8	\$39.4	-----	-----	-----
2. Of which, amount sold through retail stores	2.6	3.1	4.6	5.9	10.7	27.7	31.8	-----	-----	-----
3. Freight charges, producer to initial distributor	.2	.3	.3	.4	.6	1.4	2.6	-----	-----	-----
4. Input into the distribution system [line 2+line 3]	2.8	3.4	4.9	6.4	11.3	29.1	34.4	\$29.4	\$25.5	\$78.9
5. Via wholesalers	1.9	2.4	3.5	4.3	7.4	18.3	20.5	17.3	14.5	45.4
6. Direct to retailers	.9	1.0	1.5	2.0	3.9	10.8	13.9	12.2	11.0	33.6
7. Value added by wholesalers	.4	.5	.7	.9	1.6	3.9	4.4	3.7	3.1	9.7
8. Retailers' purchases [line 5 + line 6 + line 7]	3.2	3.9	5.7	7.3	12.9	33.0	38.8	33.1	28.6	88.6
9. Value added by retailers	1.0	1.2	1.9	2.6	4.9	12.9	15.8	13.3	12.1	37.4
10. Retailers' sales [line 8 + line 9]	4.1	5.1	7.6	9.8	17.8	45.9	54.7	46.4	40.6	126.0
Percentages:										
11. Sold through retail stores [line 2 ÷ line 1]	71.0	77.0	78.0	80.0	80.0	82.0	81.0	-----	-----	-----
12. Via wholesalers [line 5 ÷ line 4]	69.0	70.0	70.0	68.0	66.0	63.0	60.0	59.0	57.0	57.0
13. Wholesale markup [line 7 ÷ line 5]	20.5	20.8	20.9	21.0	21.4	21.4	21.6	21.4	21.3	21.3
14. Retail markup [line 9 ÷ line 8]	30.3	31.8	33.5	35.5	38.1	38.9	40.7	40.1	42.2	42.3
15. Combined markup [(line 7 + line 9) ÷ line 4]	48.6	50.9	53.1	54.8	57.5	57.5	58.8	57.6	59.5	59.7

Source: Cols. 1-7: Barger, Harold, *Distribution's Place in the American Economy Since 1869*; Princeton, published for the National Bureau of Economic Research, New York, by Princeton University Press, 1955; 222 pp. (National Bureau of Economic Research, General series, No. 58); p. 70, table 20.

Cols. 8-10: *ibid.*, p. 77, table 23. (Note: This table obtained by different method from that used in table 20, so 2 levels shown for 1929 in source tables are repeated here.)

TABLE IV-2.—Number of establishments and sales of retail foodstores, by legal form of organization by kind of business, United States, 1954

Kind of business	Number of establishments by legal form of organization						Annual sales by legal form of organization					
	Total	Individual proprietorship	Partnerships	Corporations	Cooperatives	Other legal forms	Total	Individual proprietorship	Partnerships	Corporations	Cooperatives	Other legal forms
	Number						Thousands of dollars					
All food stores ¹	384,616	300,091	51,402	32,281	562	280	39,762,213	15,282,820	6,338,669	17,988,821	111,689	40,214
Grocery.....	279,440	219,659	35,684	23,425	475	197	34,420,764	12,207,076	5,153,801	16,922,655	104,006	33,226
Meat, fish.....	27,354	20,729	4,895	1,699	11	20	2,128,117	1,222,878	528,882	371,544	1,309	3,504
Fruits, vegetables.....	13,136	10,850	1,961	310	10	5	484,503	307,370	133,689	42,586	297	561
Candy, nut, confectionery..	20,507	16,214	2,202	2,077	3	11	567,955	333,484	83,605	150,292	(²)	(²)
Bakery products.....	19,034	13,327	3,139	2,530	7	31	862,290	456,612	171,738	232,212	294	1,434
	Percent											
All food stores ¹	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Grocery.....	72.7	73.2	69.4	72.6	84.5	70.4	86.6	79.9	81.3	94.1	93.1	82.6
Meat, fish.....	7.1	6.9	9.5	5.3	2.0	7.1	5.4	8.0	8.3	2.1	1.2	8.7
Fruits, vegetables.....	3.4	3.6	3.8	1.0	1.8	1.8	1.2	2.0	2.1	.2	.3	1.4
Candy, nut, confectionery..	5.3	5.4	4.3	6.4	.5	3.9	1.4	2.2	1.3	.8	-----	-----
Bakery products.....	4.9	4.4	6.1	7.8	1.2	11.1	2.2	3.0	2.7	1.3	.3	3.6

¹ It was not possible to classify all food stores according to kind of business, so figures do not always add to totals.

² Withheld to avoid disclosure.

Source: U. S. Bureau of the Census, 1954 census of business, Bul. R-2-5, Retail trade, legal form of organization; table 5-A.

TABLE IV-3.—Number of grocery (and combination) stores and their annual sales, by type of store, United States, 1952-56

Type of store ¹	1956		1955		1954		1953		1952	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All grocery stores.....	310,000	100.0	343,300	100.0	354,640	100.0	362,600	100.0	377,000	100.0
All supermarkets.....	27,100	8.7	24,700	7.2	21,440	6.0	18,940	5.2	16,540	4.4
Chain stores.....	13,500	4.3	12,400	3.6	11,140	3.1	10,340	2.9	9,540	2.5
Independents.....	13,600	4.4	12,300	3.6	10,300	2.9	8,600	2.3	7,000	1.9
All superettes.....	70,000	22.6	66,100	19.3	67,400	19.0	70,660	19.5	75,560	20.0
Chain stores.....	4,100	1.3	5,900	1.8	7,200	2.0	8,660	2.4	10,630	2.8
Independents.....	65,900	21.3	60,200	17.5	60,200	17.0	62,000	17.1	64,900	17.2
All small stores.....	212,900	68.7	252,500	73.5	265,800	75.0	273,000	75.3	284,900	75.0
Chain stores.....	400	.2	500	.1	700	.2	1,000	.3	1,800	.5
Independents.....	212,500	68.5	252,000	73.4	265,100	74.8	272,000	75.0	283,100	75.2
Annual sales										
	<i>Millions</i>	<i>Percent</i>	<i>Millions</i>	<i>Percent</i>	<i>Millions</i>	<i>Percent</i>	<i>Millions</i>	<i>Percent</i>	<i>Millions</i>	<i>Percent</i>
All grocery stores.....	\$42,500	100.0	\$39,415	100.0	\$36,860	100.0	\$34,715	100.0	\$32,920	100.0
All supermarkets.....	20,550	62.5	23,535	59.7	19,735	53.6	16,760	48.3	14,435	43.3
Chain stores.....	13,800	32.5	12,585	31.9	11,385	30.9	10,060	29.0	9,200	27.9
Independents.....	12,750	30.0	10,950	27.8	8,350	22.7	6,700	19.3	5,235	15.9
All superettes.....	11,725	27.6	10,410	26.4	10,665	28.9	11,100	32.0	11,415	34.7
Chain stores.....	1,675	4.0	1,640	4.2	1,950	5.3	2,345	6.8	2,300	7.0
Independents.....	10,050	23.6	8,770	22.2	8,715	23.6	8,755	25.2	9,115	27.7
All small stores.....	4,225	9.9	5,470	13.9	6,460	17.5	6,855	19.7	7,070	21.5
Chain stores.....	25	(²)	35	.1	50	.1	70	.2	170	.5
Independents.....	4,200	9.9	5,435	13.8	6,410	17.4	6,785	19.5	6,900	21.0

¹ Supermarkets: Stores with an annual volume of \$375,000 or more per year; superettes: \$75,000 to \$375,000; small stores: less than \$75,000. Chains: Organizations with 11 or more retail stores; independents: those with 10 or fewer retail stores.

² Less than 0.1 percent.

Source: Progressive Grocer, Facts in Grocery Distribution (New York and annual), 1953 edition, p. 10; 1954 edition, p. 10; 1955 edition, p. 8; 1956 edition, p. 8, and 1957 edition, pp. 8-9.

TABLE IV-4.—Number of establishments and annual sales for retail food stores and grocery stores, by sales volume and legal form of organization, United States, 1954

	Total establishments	Establishments operated entire year with annual sales of—										Establishments not operated entire year
		Total	\$1,000,000 or more	\$500,000 to \$999,000	\$300,000 to \$499,000	\$100,000 to \$299,000	\$50,000 to \$99,000	\$30,000 to \$49,000	\$20,000 to \$29,000	\$10,000 to \$19,000	Less than \$10,000	
Number of establishments												
All legal forms:												
Food stores.....	394,616	365,069	6,334	7,860	8,606	50,260	73,979	69,723	52,902	56,808	38,597	19,547
Grocery stores.....	279,440	266,738	6,242	7,507	7,711	40,398	55,093	50,016	36,699	38,442	24,630	12,702
Grocery stores as percentage of food stores..	72.7	73.1	98.5	95.5	89.6	80.4	74.5	71.7	69.4	67.7	63.8	65.0
Individual proprietorships:												
Food stores.....	300,091	285,312	235	1,051	2,609	27,540	55,029	59,974	48,079	53,603	37,192	14,779
Grocery stores.....	219,659	209,962	221	961	2,293	23,028	43,244	44,883	34,357	36,908	24,067	9,697
Grocery stores as percentage of food stores..	73.2	73.6	94.0	91.4	87.9	83.6	78.6	74.8	71.5	68.9	64.7	65.6
Partnerships:												
Food stores.....	51,402	48,186	388	1,146	2,050	14,572	14,424	7,776	3,922	2,688	1,190	3,216
Grocery stores.....	35,684	33,753	367	1,066	1,864	11,718	10,004	4,636	2,152	1,429	517	1,931
Grocery stores as percentage of food stores..	69.4	70.0	94.6	93.0	89.6	80.4	69.4	59.6	54.9	53.2	43.4	60.0
Corporations:												
Food stores.....	32,281	30,767	5,688	5,630	3,854	7,907	4,317	1,851	853	470	187	1,514
Grocery stores.....	23,425	22,374	5,632	5,448	3,505	5,438	1,681	411	157	73	29	1,051
Grocery stores as percentage of food stores..	72.6	72.7	99.0	96.8	90.7	68.8	38.9	22.2	18.4	15.5	15.5	69.4
Cooperatives:												
Food stores.....	562	550	17	26	44	185	132	74	27	21	24	12
Grocery stores.....	475	470	17	25	42	167	112	55	20	17	15	5
Grocery stores as percentage of food stores..	84.5	85.5	100.0	96.2	95.5	90.3	84.8	74.3	74.1	81.0	62.5	41.7
Other legal forms:												
Food stores.....	280	254	6	7	9	56	77	48	21	26	4	26
Grocery stores.....	197	179	5	7	7	47	52	31	13	15	2	18
Grocery stores as percentage of food stores..	70.4	70.5	83.3	100.0	77.8	83.9	67.5	64.6	61.9	57.7	50.0	69.2

Source: U. S. Bureau of the Census, 1954 census of business, Bull. R-2-2, Retail Trade, Sales Size; table 2E.

TABLE IV-4.—Number of establishments and annual sales for retail food stores and grocery stores, by sales volume and legal form of organization, United States, 1954—Continued

	Total establishments	Establishments operated entire year with annual sales of—										Establishments not operated entire year
		Total	\$1,000,000 or more	\$500,000 to \$999,000	\$300,000 to \$499,000	\$100,000 to \$299,000	\$50,000 to \$99,000	\$30,000 to \$49,000	\$20,000 to \$29,000	\$10,000 to \$19,000	Less than \$10,000	
Annual sales (thousand dollars)												
All legal forms:												
Food stores.....	39,762,213	37,920,650	10,869,942	5,529,075	3,311,963	8,030,472	5,162,470	2,693,690	1,271,688	818,728	232,622	1,841,563
Grocery stores.....	34,420,764	32,898,736	10,722,693	5,293,876	2,977,974	6,523,086	3,857,765	1,934,687	883,331	554,602	150,722	1,522,028
Grocery stores as percentage of food stores..	86.6	86.8	98.6	95.7	89.9	81.2	74.7	71.8	69.5	67.7	64.8	82.6
Individual proprietorships:												
Food stores.....	15,282,820	14,477,487	343,318	696,923	983,082	4,201,790	3,795,194	2,307,787	1,154,467	770,822	224,104	805,333
Grocery stores.....	12,207,076	11,599,878	(1)	639,872	866,804	3,537,437	2,992,806	1,729,793	826,651	531,787	(1)	607,198
Grocery stores as percentage of food stores..	79.9	80.1	-----	91.8	88.2	84.2	78.9	75.0	71.6	69.0	-----	75.4
Partnerships:												
Food stores.....	6,338,669	6,004,326	604,585	766,996	784,900	2,359,541	1,037,991	308,044	94,892	40,021	7,377	334,343
Grocery stores.....	5,153,801	4,897,661	(1)	713,504	703,793	1,918,302	726,557	184,881	51,951	21,239	(1)	256,140
Grocery stores as percentage of food stores..	81.3	81.6	-----	93.0	89.7	81.3	70.0	60.0	54.8	53.1	-----	76.6
Corporations:												
Food stores.....	17,988,821	17,293,416	9,881,794	4,043,270	1,523,207	1,428,557	314,178	73,034	21,181	7,180	1,015	695,405
Grocery stores.....	16,922,655	16,268,884	9,782,422	3,919,342	1,388,026	1,030,959	126,310	16,633	3,933	1,089	170	653,771
Grocery stores as percentage of food stores..	94.1	94.1	90.0	96.9	91.1	72.2	40.2	22.8	18.6	15.2	16.7	94.0
Cooperatives:												
Food stores.....	111,689	107,952	27,548	17,288	17,265	31,923	9,886	2,966	655	309	112	3,737
Grocery stores.....	104,006	101,200	27,548	16,560	(1)	29,001	8,546	2,212	474	248	(1)	2,806
Grocery stores as percentage of food stores..	93.1	93.7	100.0	95.8	-----	90.8	86.4	74.6	72.4	80.3	-----	75.1
Other legal forms:												
Food stores.....	40,214	37,469	12,697	4,598	3,500	8,661	5,221	1,859	523	396	14	2,745
Grocery stores.....	33,226	31,113	(1)	4,598	(1)	7,387	3,546	1,168	322	239	(1)	2,113
Grocery stores as percentage of food stores..	82.6	83.0	-----	100.0	-----	85.3	67.9	62.8	61.6	60.4	-----	77.0

(1) Withheld to avoid disclosure.

TABLE IV-5.—Number of establishments and annual sales of retail food stores, by kind of business, for 4 regions of the United States, 1948 and 1954

Kind of business	1954					1948					Percent change, 1948-54				
	United States	North-east	North Central	South	West	United States	North-east	North Central	South	West	United States	North-east	North Central	South	West
	All food stores ¹	384,616	118,263	101,769	122,504	42,080	460,913	144,453	123,145	148,592	44,723	-16.6	-18.1	-17.4	-17.6	-5.9
Grocery stores.....	279,440	67,243	74,904	108,022	29,271	350,754	87,022	94,654	134,326	34,752	-20.3	-22.7	-20.9	-19.6	-15.8
Other food stores.....	101,940	48,794	26,493	14,122	12,541	110,159	57,431	28,491	14,266	9,971	-7.5	-15.0	-7.0	-1.1	25.8
Meat markets.....	22,896	11,393	5,234	2,038	4,231	23,920	.....	.....	.....	.....	-4.3	.....	.....	.....	.....
Fish (seafood) markets.....	4,458	2,051	576	1,413	418	4,517	.....	.....	.....	.....	-1.3	.....	.....	.....	.....
Fruit stores, vegetable markets.....	13,136	6,525	2,475	2,584	1,552	13,482	.....	.....	.....	.....	-2.6	.....	.....	.....	.....
Candy, nut, confectionary stores.....	20,507	11,116	5,391	2,853	1,147	27,165	.....	.....	.....	.....	-24.5	.....	.....	.....	.....
Bakery products stores.....	19,034	7,800	5,972	2,378	2,884	19,500	.....	.....	.....	.....	-2.4	.....	.....	.....	.....
Delicatessen stores.....	8,132	4,441	2,317	761	613	7,917	.....	.....	.....	.....	2.7	.....	.....	.....	.....
Food stores, not elsewhere classified.....	13,777	5,468	4,528	2,085	1,696	13,658	.....	.....	.....	.....	.9	.....	.....	.....	.....

Kind of business	ANNUAL SALES (THOUSAND DOLLARS)														
	United States	North-east	North Central	South	West	United States	North-east	North Central	South	West	United States	North-east	North Central	South	West
All food stores ¹	\$39,762,213	\$11,621,905	\$11,718,327	\$10,054,077	\$6,367,904	\$29,207,864	\$9,061,156	\$8,705,918	\$7,095,995	\$4,344,795	36.1	28.3	34.6	41.7	46.6
Grocery stores.....	34,420,764	9,091,299	10,283,203	9,466,251	5,580,011	24,729,717	6,747,096	7,489,602	6,637,912	3,855,107	39.2	34.7	37.3	42.6	44.7
Other food stores.....	5,275,087	2,483,924	1,427,086	582,344	781,735	4,478,147	2,314,060	1,216,316	468,083	489,688	17.8	7.3	17.3	27.1	59.6
Meat markets.....	1,943,969	920,682	492,678	147,371	383,238	1,641,087	.....	.....	.....	.....	18.5	.....	.....	.....	.....
Fish (seafood) markets.....	184,148	86,140	23,084	52,120	22,804	132,331	.....	.....	.....	.....	39.2	.....	.....	.....	.....
Fruit stores, vegetable markets.....	484,503	233,230	99,160	73,297	73,816	394,602	.....	.....	.....	.....	22.8	.....	.....	.....	.....
Candy, nut confectionary stores.....	567,953	302,748	158,965	65,863	40,379	586,592	.....	.....	.....	.....	-3.2	.....	.....	.....	.....
Bakery products stores.....	862,290	381,186	274,986	90,230	115,888	722,761	.....	.....	.....	.....	19.3	.....	.....	.....	.....
Delicatessen stores.....	479,787	268,881	119,803	45,861	45,242	308,336	.....	.....	.....	.....	55.0	.....	.....	.....	.....
Food stores, not elsewhere classified.....	752,437	286,057	258,410	107,602	100,368	692,438	.....	.....	.....	.....	8.7	.....	.....	.....	.....

¹ It was not possible to classify all food stores according to kind of business, so figures do not always add to totals.

Source: U. S. Bureau of the Census, 1954 census of business, Bull. R-1-1, Retail Trade, United States Summary, tables 1A, 1B, 1D, 1E.

TABLE IV-6.—Number of establishments and annual sales of retail foodstores, by number of units operated by kind of business, United States, 1954

Kind of business	Total	Single unit	Establishment (multiunits)			Total	Single unit	Establishment (multiunits)		
			2 or 3	4 to 10	11 or more			2 or 3	4 to 10	11 or more
	Number of establishments					Annual sales (thousands of dollars)				
All food stores.....	384,616	350,267	9,137	3,718	21,494	\$39,762,213	\$22,272,464	\$2,012,382	\$1,501,075	\$13,976,292
Grocery.....	279,440	254,805	5,559	2,171	16,905	34,420,764	17,838,323	1,663,876	1,365,760	13,552,800
Meat, fish.....	27,564	25,504	1,142	324	384	2,128,117	1,811,852	172,559	53,258	90,448
Fruit, vegetables.....	13,136	12,745	257	67	67	484,503	450,044	19,545	(1)	(1)
Candy, nut, etc.....	20,507	18,159	394	382	1,572	567,955	425,769	14,959	21,334	105,843
Bakery products.....	19,034	16,059	1,077	448	1,450	862,290	649,058	70,495	25,214	117,623
	Number of establishments (percent distribution)					Annual sales (percent distribution)				
All food stores.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Grocery.....	72.7	72.7	60.8	58.4	78.6	86.6	80.1	82.7	91.0	97.0
Meat, fish.....	7.1	7.3	12.5	8.7	1.8	5.4	8.1	8.6	3.5	.6
Fruit, vegetables.....	3.4	3.0	2.8	1.8	.3	1.2	2.0	1.0	.....	.....
Candy, nut, etc.....	5.3	5.2	4.3	10.3	7.3	1.4	1.9	.7	1.4	.8
Bakery products.....	4.9	4.6	11.8	12.0	6.7	2.2	2.9	3.5	1.7	.8

¹ Withheld to avoid disclosure.

Source: U. S. Bureau of the Census, 1954 census of business, Bull. R-2-4, Retail Trade, Single Unit and Multiunit, table 4-D.

TABLE IV-7.—Annual sales of grocery and combination stores, by type of store, United States, 1937-56

Year	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Total grocery and combination stores		Chain stores ¹		Total		Independent stores ²			
							Voluntary and cooperatives		Unaffiliated	
	Millions	Percent	Millions	Percent	Millions	Percent	Millions	Percent	Millions	Percent
1937-----	\$8,356	100.0	\$2,698	32.3	\$5,658	67.7	\$2,695	32.2	\$2,963	35.5
1939-----	8,340	100.0	2,913	34.9	5,427	65.1	2,556	30.7	2,871	34.4
1940-----	8,850	100.0	3,180	35.9	5,670	64.1	2,665	30.1	3,005	34.0
1941-----	10,210	100.0	3,820	37.4	6,390	62.6	3,003	29.4	3,387	33.2
1942-----	12,250	100.0	4,600	37.6	7,650	62.4	3,596	29.3	4,054	33.1
1943-----	13,335	100.0	4,250	31.9	9,085	68.1	4,269	32.0	4,816	36.1
1944-----	14,485	100.0	4,650	32.1	9,835	67.9	4,621	31.9	5,213	36.0
1945-----	15,350	100.0	4,750	30.9	10,600	69.1	4,982	32.5	5,618	36.6
1946-----	19,040	100.0	6,265	32.9	12,775	67.1	5,736	30.1	7,039	37.0
1947-----	23,130	100.0	8,440	36.5	14,690	63.5	6,944	30.0	7,746	33.5
1948-----	25,612	100.0	9,510	37.1	16,102	62.9	8,318	32.5	7,784	30.4
1949-----	25,750	100.0	9,600	37.3	16,150	62.7	8,341	32.4	7,809	30.3
1950-----	27,090	100.0	10,140	37.4	16,950	62.6	8,900	32.9	8,050	29.7
1951-----	30,372	100.0	10,718	35.3	19,654	64.7	10,768	35.4	8,886	29.3
1952-----	32,920	100.0	11,670	35.4	21,250	64.6	11,650	35.4	9,600	29.2
1953-----	34,715	100.0	12,475	35.9	22,240	64.1	12,340	35.6	9,900	28.5
1954-----	36,860	100.0	13,385	36.3	23,475	63.7	13,200	35.8	10,275	27.9
1955-----	39,415	100.0	14,260	36.2	25,155	63.8	15,500	39.3	9,655	24.5
1956-----	42,500	100.0	15,500	36.5	27,000	63.5	18,925	44.5	8,075	19.0

¹ Organizations with 11 or more stores beginning in 1951; with 4 or more stores prior to 1951.

² Organizations with from 1 to 10 stores beginning in 1951; with from 1 to 3 stores prior to 1951.

Source: Cols. 1, 3, 5: The Progressive Grocer, Facts in Grocery Distribution, New York, 1956 edition, p. 17; cols. 7, 9: Ibid., inside cover, various annual issues, 1938-56. For many years prior to 1952, the data given in each annual issue for these subtotals do not add to the revised totals shown in 1956 issue. In these cases, the relative importance of the subtotals was kept the same but data were forced to add to revised totals. Data for cols. 7, 9 in 1944 were estimated to have the same relative importance as those in 1943.

TABLE IV-8.—Percent distribution of supermarkets by sales volume, United States, 1955 and 1954

Sales volume	Supermarkets	
	1955	1954
Total.....	Percent 100	Percent 100
\$1,000,000 to \$2,000,000.....	62	67
\$2,000,000 to \$3,000,000.....	26	24
\$3,000,000 or more.....	12	9

Source: Super Market Institute, the Super Market Industry Speaks, 1956; 8th Annual Report by the members of Super Market Institute; p. 9. (Based on a survey of SMI members only.)

TABLE IV-9.—*Rise in supermarkets' share of grocery sales, United States, 1940-55*

Year	Number of supermarkets	Sales (million dollars)	Supermarket share of total grocery sales (percent)
1940.....	6, 175	2, 000, 000	24. 0
1941.....	7, 185	2, 500, 000	25. 0
1942.....	9, 011	3, 000, 000	25. 0
1943.....	9, 100	3, 500, 000	26. 0
1944.....	9, 460	3, 600, 000	26. 0
1945.....	9, 575	4, 500, 000	27. 0
1946.....	10, 057	5, 500, 000	28. 0
1947.....	10, 846	7, 000, 000	29. 0
1948.....	11, 970	7, 780, 500	31. 1
1949.....	13, 089	8, 507, 850	35. 2
1950.....	14, 217	10, 250, 457	40. 4
1951.....	15, 383	12, 356, 000	41. 8
1952.....	16, 501	14, 096, 800	43. 5
1953.....	17, 550	16, 092, 000	48. 0
1954.....	18, 845	18, 200, 000	52. 3
1955.....	20, 537	20, 380, 000	55. 1

Source: Super Market Merchandising, 1955 Reached New Peaks in Sales and Stores, reprinted from the January and February 1956 issues; pp. 10-11, tables 13, 14, and 15.

TABLE IV-10.—*Independent grocery sales by size of store in annual sales volume, United States, 1948 and 1953*

Annual sales volume	Number of stores		1948 sales		1953 sales		Average sales per store		Percent change 1948-53
	1948	1953 ¹	Thousand dollars	Per cent	Thousand dollars	Per cent	1948	1953	
All independent groceries.....	381, 869	342, 600	16, 163, 000	100. 0	22, 240, 000	100. 0	\$42, 326	\$64, 915	53. 4
\$500,000 and over.....	1, 125	5, 800	905, 500	5. 6	5, 520, 000	24. 8	805, 156	951, 724	18. 2
\$300,000 to \$499,999.....	2, 485	6, 800	1, 007, 950	6. 2	2, 490, 000	11. 2	405, 614	366, 176	-9. 7
\$100,000 to \$299,999.....	30, 525	31, 000	4, 711, 250	29. 1	5, 145, 000	23. 1	154, 341	165, 908	7. 5
\$50,000 to \$99,999.....	66, 583	63, 000	4, 537, 000	28. 1	4, 555, 000	20. 5	68, 141	72, 302	6. 1
\$30,000 to \$49,999.....	67, 951	64, 000	2, 549, 000	15. 8	2, 400, 000	10. 8	37, 512	37, 500	0
Under \$30,000.....	213, 200	172, 000	2, 452, 000	15. 2	2, 130, 000	9. 6	11, 501	12, 384	7. 7

¹ Owing to a change in definition the 1953 independent figures include 2,500 stores with sales of approximately \$800,000,000 that in 1948 were considered chains and therefore were excluded from the 1948 figures.

Source: The Progressive Grocer, Facts in Grocery Distribution, New York, 1954 edition, p. 15.

TABLE IV-11.—*Distribution of new¹ supermarkets by weekly sales, by size of market, United States, 1955*

[Percent of markets]

Size of market	Weekly sales									
	Total	\$7,000 to \$10,000	\$10,000 to \$15,000	\$15,000 to \$20,000	\$20,000 to \$25,000	\$25,000 to \$30,000	\$30,000 to \$35,000	\$35,000 to \$40,000	\$40,000 to \$50,000	\$50,000 and over
Total.....	100.0	20.2	15.6	15.6	14.0	6.3	6.2	5.6	4.4	12.1
Small (under 5,000 square feet).....	100.0	92.0	4.0	-----	-----	4.0	-----	-----	-----	-----
Medium (5,000 to 10,000 square feet).....	100.0	42.8	31.3	17.1	7.1	1.7	-----	-----	-----	-----
Large (10,000 to 15,000 square feet).....	100.0	-----	14.4	25.9	33.1	7.3	9.6	7.2	-----	2.5
Extra large (15,000 to 20,000 square feet).....	100.0	-----	11.0	18.6	11.0	14.4	15.3	3.4	7.6	18.7
Colossal (20,000 square feet and over).....	100.0	-----	-----	-----	4.2	5.2	4.2	18.5	18.5	49.4

¹ Built in 1955.

Source: Supermarket Merchandising, 1955 Reached New Peaks in Sales and Stores, reprinted from the January and February 1956 issues of Supermarket Merchandising, p. 6, table 7.

TABLE IV-12.—*Relation of selling to nonselling areas in new¹ supermarkets, United States, 1955*

Size of market	Average size in square feet	Selling area in square feet	Percent selling to overall	Percent service to overall	Percent with park- ing lots	Size of lots in square feet	Ratio to store size ²
Small (under 5,000 square feet).....	4,000	3,200	80.0	20.0	88.6	10,700	2.67
Medium (5,000 to 10,000 square feet).....	7,000	5,400	77.1	22.9	95.8	14,600	2.08
Large (10,000 to 15,000 square feet).....	12,000	9,000	75.0	25.0	97.7	24,800	2.07
Extra large (15,000 to 20,000 square feet).....	16,600	11,500	69.3	30.7	100.0	48,000	2.89
Colossal (20,000 square feet and over).....	25,300	16,100	63.6	36.4	100.0	76,700	3.03
United States average.....	12,900	9,100	70.5	29.5	96.2	27,600	2.43
Region:							
New England.....	11,400	7,600	66.7	33.3	-----	-----	-----
Middle Atlantic.....	13,900	8,900	64.0	36.0	-----	-----	-----
East North Central.....	12,300	9,200	74.8	25.2	-----	-----	-----
West North Central.....	9,500	6,800	71.6	28.4	-----	-----	-----
East South Central.....	11,000	7,400	67.3	32.7	-----	-----	-----
South Atlantic.....	12,600	9,300	73.8	26.2	-----	-----	-----
West South Central.....	13,200	9,600	72.7	27.3	-----	-----	-----
Mountain.....	14,800	10,700	72.3	27.7	-----	-----	-----
Pacific.....	16,900	11,800	69.8	30.2	-----	-----	-----

¹ Built in 1955.² Exclusive of markets in shopping center developments.

Source: Supermarket Merchandising, 1955 Reached New Peaks in Sales and Stores, reprinted from the January and February, 1956, issues of Supermarket Merchandising; pp. 3-4, tables 2 and 3.

TABLE IV-13.—*Extent of self-service in perishables, new¹ supermarkets, United States, 1955*

Department	Percent self- service	Percent partial self- service	Percent service
Meats.....	61.5	28.9	9.6
Produce.....	71.6	25.0	3.4
Cooked foods.....	83.1	9.6	7.3
Store-baked goods.....	67.2	9.8	23.0

¹ Built in 1955.

Source: Super Market Merchandising, 1955 Reached New Peaks in Sales and Stores, reprinted from the January and February 1956 issues of Super Market Merchandising, p. 9.

TABLE IV-14.—Percent distribution of sales, gross profit and floor space in supermarkets by major product groups, five supermarkets in the Cleveland area, spring 1954

Major product group	Percent distribution—		
	Sales	Gross profit ¹	Floor space
Total.....	100.0	100.0	100.0
Groceries.....	43.7	40.3	44.6
Meats.....	28.1	26.5	27.0
Produce.....	12.8	18.0	17.4
Dairy products.....	8.6	7.4	4.0
Frozen foods.....	4.1	5.1	5.0
Bakery goods.....	2.7	2.7	2.0

¹ The spread between the dollar cost of merchandise delivered to the store and the dollar value of the store's retail prices.

Source: The Progressive Grocer, Foodtown Study, New York, 1954, p. 31. (The study is an analysis of operations in 5 supermarkets in the Cleveland area, conducted over a 13-week period in the spring of 1954 by the editors of the Progressive Grocer.)

TABLE IV-15.—Percent of supermarkets with selected merchandise departments and type of service, by departments, United States, 1954 and 1952

Department	Percent of supermarkets with department		Percent distribution by type of service—					
			Self-service		Partial self-service		Clerk service	
	1954	1952	1954	1952	1954	1952	1954	1952
Meat.....	100.0	100.0	59.9	49.2	31.5	38.1	8.6	12.7
Produce.....	100.0	100.0	66.0	69.1	29.4	26.2	4.6	4.7
Drugs and cosmetics.....	97.5	92.9	96.9	94.0	1.0	4.3	2.1	1.7
Dietetic foods.....	92.9	86.3	100.0	100.0	0	0	0	0
Housewares.....	83.2	74.6	98.8	98.9	.6	1.1	.6	0
Delicatessen.....	66.0	63.5	93.8	88.8	3.1	5.0	3.1	6.2
Stationery.....	71.1	59.5	97.9	96.0	0	4.0	2.1	0
Magazines.....	71.1	57.9	98.6	98.6	0	0	1.4	1.4
Store baked goods.....	48.2	53.2	80.0	64.3	0	9.0	20.0	26.7
Beer.....	49.7	53.2	99.0	95.5	1.0	1.5	0	3.0
Soft goods.....	54.3	40.7	97.2	93.9	1.9	6.1	.9	0
Hardware.....	48.7	39.7	98.0	96.0	1.0	4.0	1.0	0
Toys.....	59.9	35.7	98.4	97.8	.8	2.2	.8	0
Wine.....	22.3	34.9	90.9	93.1	2.3	2.3	6.8	4.6
Fountain and lunch.....	7.6	14.2	0	0	13.3	0	86.7	100.0
Liquors.....	8.1	7.9	81.3	50.0	6.2	0	12.5	50.0
Ice cream.....	99.5	(¹)	99.5	-----	.5	-----	0	-----
Children's books.....	74.1	(¹)	99.3	-----	0	-----	.7	-----
Appliances.....	25.9	(¹)	92.2	-----	5.9	-----	1.9	-----

¹ Not available.

Source: America's Super 1952 Models, Super Market Merchandising, vol. 18, No. 1, New York, January 1953, p. 41; and Survey Shows Industry's Vigor, Super Market Merchandising, vol. 20, No. 2, New York, February 1955, p. 56.

TABLE IV-16.—*Relationship between average weekly customer transactions, number of checkout stands, and weekly sales volume of store, for new¹ supermarkets, United States, 1956*

Weekly sales volume	Average number of checkouts per store (median)	Average weekly customer transactions per store (median)
All new supers.....	8	7,500
\$20,000 to \$30,000.....	6	6,300
\$30,000 to \$40,000.....	8	7,000
\$40,000 to \$50,000.....	9	8,700
\$50,000 to \$60,000.....	10	10,000
Over \$60,000.....	12	12,000

¹ Built in 1956.

Source: Super Market Institute, Facts About New Super Markets Opened in 1956, p. 15.

TABLE IV-17.—*Percent distribution by marketing, channel of consumer food expenditures, United States, 1929, 1939, 1947-49*

Channels	Consumer food expenditures				
	1949	1948	1947	1939	1929
All channels.....	100.00	100.00	100.00	100.00	100.00
Grocery-combination stores ¹	38.50	37.44	36.12	37.07	35.92
Specialty food stores ²	9.93	10.02	9.76	11.77	17.65
Eating and drinking places ³	16.95	17.69	18.18	17.77	10.52
Government and military ⁴	2.57	2.60	2.43	2.29	2.61
Farm consumption ⁵	4.18	4.76	5.11	5.88	8.06
All other ⁶	27.87	27.69	28.40	25.22	25.24

¹ All grocery stores handling a full line of foods with or without meats.

² Bakeries, meat markets, fish stores, delicatessens, dairy stores, confectionery stores, fruit and vegetable markets.

³ Includes restaurants, cafeterias, lunchrooms, hotel and club dining rooms, and the like.

⁴ Covers food bought by the Government for civilian and military use.

⁵ Represents only that portion of the total food supply which is eaten on the farms and ranches where it is produced. The figures represent what farmers would have paid for their own foodstuffs had they bought them in retail stores.

⁶ Includes hospitals, institutions, factories, home delivery, direct sale by farmers, home gardening, and food sales by mail-order houses, department stores, variety stores, general stores, and similar outlets.

Source: Food Topics, What the Public Spends for Grocery Store Products, (New York: Food Topics Publishing Co., 1950); Table 5, p. 7.

TABLE IV-18.—*Importance of direct buying to large multiunit retailers supplied by wholesalers, United States, 1956*

Number of units operated	Number of stores that—	
	Buy direct from manufacturer	Buy from wholesaler
Total.....	18,253	6,382
2 stores.....	1,450	2,958
3 to 5 stores.....	840	1,258
6 to 10 stores.....	368	856
11 to 25 stores.....	1,082	540
Over 25 stores.....	14,513	770

Source: The Progressive Grocer, Facts in Grocery Distribution, New York, 1957 edition; p. 16.

TABLE IV-19.—Type of wholesale grocery supplier patronized by independent grocery stores in 1954 and percent increase in sales from 1953 to 1954, by size of store, United States

Kind of store	Total	Type of wholesaler		
		Retailer-owned	Voluntary group	Unaffiliated
Percent buying, from each type of wholesaler				
All independents.....	100.0	30.5	29.3	40.2
Supermarkets.....	100.0	39.2	28.3	32.5
Superettes.....	100.0	30.9	31.2	37.9
Small stores.....	100.0	22.2	22.2	55.6
Percent change in sales from 1953 to 1954				
All independents.....	7.8	7.4	9.4	7.0
Supermarkets.....	13.5	12.2	10.9	12.8
Superettes.....	3.7	3.0	4.9	3.1
Small stores.....	-2.1	-2.3	-1.7	-1.9

Source: The Progressive Grocer, Facts in Grocery Distribution, New York, 1955 edition; p. 14.

TABLE IV-20.—Relative shares of total grocery store sales, chainstores, unaffiliated independents, and affiliated independents, United States, 1947, 1950, 1953, and 1956.

Type of store	Share of United States grocery store sales			
	1947	1950	1953	1956
Total.....	Percent 100	Percent 100	Percent 100	Percent 100
Chains.....	37	36	36	37
Unaffiliated independents.....	34	31	25	19
Affiliated ¹ independents.....	29	33	39	44

¹ Members of voluntary and cooperative groups.

Source: The Progressive Grocer, Facts in Grocery Distribution, New York; 1957 edition, p. 15.

TABLE IV-21.—Percent of independent stores handling frozen foods, United States, 1940, 1942, 1945-51

Year:	Stores handling frozen foods as percent of all independent stores	Year—Continued		Stores handling frozen foods as percent of all independent stores
		Year	Year	
1940.....	29.0	1948.....	73.0	
1942.....	39.0	1949.....	84.0	
1945.....	44.0	1950.....	88.3	
1946 ¹	52.0	1951.....	92.0	
1947.....	67.0			

¹ There is a discrepancy between sources; some editions credit 1946 with only 51 percent.

Source: Progressive Grocer, Facts in Grocery Distribution, New York: Annual, 1947 edition, p. 6; 1949 edition, p. 9; 1950 edition, p. 9; 1951 edition, p. 9; 1952 edition, p. 11.

TABLE IV-22.—Percent distribution of frozen-food sales in chainstores by item, United States, 1955 and 1954

Type of frozen food	Frozen-food sales in chainstores	
	1955	1954
All frozen foods.....	100.0	100.0
Vegetables.....	27.0	30.0
Juice.....	19.0	21.0
Specialties ¹	18.5	14.0
Poultry.....	15.0	15.0
Fish.....	10.5	10.0
Meat.....	5.5	4.5
Fruit.....	4.5	5.5

¹ Includes precooked meals and other prepared foods.

Source: Frozen Food Sales Rocket Upward, Chain Store Age, grocery executives edition, frozen-food merchandising section, April 1956, p. 125, and Chain Store Age, grocery executives edition, frozen-food merchandising section, May 1955, p. 99.

TABLE IV-23.—Dollar value at retail and output of commercial frozen foods, United States, 1938-55

Year	Total retail value (millions of dollars) ¹	Output (millions of pounds)							
		Total	Fruits	Vegetables	Poultry	Meats	Seafoods	Specialties	Concentrates
1938.....	(?)	268	130	73	12	5	48	0	0
1939.....	(?)	325	180	70	15	10	50	0	0
1940.....	108	431	225	92	50	14	50	0	0
1941.....	142	568	250	150	75	18	75	0	0
1942.....	162	648	275	220	70	12	70	1	0
1943.....	178	711	210	300	90	14	90	7	0
1944.....	197	790	315	285	90	0	90	10	0
1945.....	257	1,028	445	338	100	0	120	25	0
1946.....	324	1,317	540	475	125	12	125	40	0
1947.....	245	968	347	346	130	15	125	5	0
1948.....	292	1,163	377	446	150	20	150	20	0
1949.....	375	1,516	360	566	200	50	165	35	140
1950.....	500	2,000	475	590	275	75	225	60	300
1951.....	700	2,470	420	790	350	85	300	85	440
1952.....	875	2,890	420	895	400	125	350	150	550
1953.....	1,200	3,636	542	1,076	470	170	400	300	678
1954.....	1,450	3,920	523	974	525	200	450	465	783
1955 ³	1,700	4,410	550	1,150	600	250	500	600	760

¹ Includes all sales of frozen foods projected at retail prices. Quick Frozen Foods points out that 70 percent of total figures will give actual retail sales.

² Not available.

³ Estimated.

Source: Quick Frozen Foods, 1956 Almanac of the Frozen Food Industry, New York, February 1956, p. 222.

TABLE IV-24.—Sales in foodstores of health and beauty aids, United States, 1951-56

Year:	Sales	Year—Continued	Sales
1951.....	\$340,000,000	1955.....	\$700,000,000
1953.....	510,000,000	1956.....	810,000,000
1954.....	600,000,000		

Source: The Progressive Grocer, Facts in Grocery Distribution, New York, 1957 edition, p. 14.

TABLE IV-25.—*Foods, food beverages, and confections, advertising expenditures, by type of medium, United States, 1951-54*

Advertising medium	1954	1953	1952	1951	Percent change, 1951-54
All mediums.....	\$233,547,428	\$212,148,639	\$187,756,051	\$170,433,386	30.2
Magazines.....	67,017,945	60,927,727	54,884,457	49,405,064	35.6
Sunday magazine section.....	17,315,587	15,637,644	11,497,619	12,714,245	36.2
Newspapers.....	46,611,891	49,515,867	42,727,323	43,987,782	6.0
Farm journals.....	2,830,634	2,596,070	2,613,733	3,065,346	-7.7
Network radio.....	28,648,115	34,549,564	38,267,955	43,740,301	-34.5
Network TV.....	67,870,006	46,330,667	35,255,494	25,478,348	166.4
Business papers.....	3,253,250	2,591,100	2,509,470	1,041,800	212.3

Source: Printers' Ink, Advertisers' Guide to Marketing for 1956, New York, October 1955, p. 75, as compiled by B. W. Lyndon. The study is limited to 259 manufacturing, insurance, and transportation companies whose total advertising expenditures for all mediums were over \$1,000,000 in 1954; 52 advertisers were included in this food, food beverages, and confections group.

TABLE IV-26.—*Percent margin on foodstore sales, by commodity, United States, 1928 and 1952*

Commodity	Percent margin on sales		Commodity	Percent margin on sales	
	1928 ¹	1952 ²		1928 ¹	1952 ²
Total, all commodities.....	26.0	16.0	Groceries—Continued		
Meat.....	29.6	18.0	Cleaners.....	30.5	10.5
Produce.....	35.5	23.5	Spices.....	31.8	27.0
Dairy.....	18.2	14.0	Flour.....	17.0	10.0
Butter.....	14.9	11.5	Salt.....	34.0	14.5
Eggs.....	19.0	11.0	Baking powder.....	22.4	16.0
Cheese.....	28.7	20.5	Candy and gum.....	32.1	22.5
Milk and cream.....	16.9	16.0	Sugar.....	22.4	9.0
Margarine.....	23.0	16.0	Canned milk.....	19.5	8.0
Lard.....	25.4	11.0	Canned fruit.....	26.9	16.0
Bakery.....	16.7	20.0	Canned fish.....	26.2	16.0
Bread and rolls.....	13.0	16.5	Soups.....	24.9	26.0
Soft goods.....	20.1	25.0	Canned meats.....	26.2	14.5
Crackers and cookies.....	24.4	20.5	Salad dressings.....	25.9	18.5
Groceries.....	25.8	14.5	Cooking oil.....	27.7	14.0
Coffee.....	19.4	8.0	Dried fruits.....	27.8	21.0
Tea.....	31.1	15.5	Cereals.....	24.5	12.0
Soft drinks.....	33.4	18.5	Spaghetti.....	45.7	13.5
Cocoa.....	31.5	20.5	Jams, jellies.....	28.3	23.5
Cigarettes.....	22.6	6.0	Condiments.....	29.9	21.5
Canned vegetables.....	28.8	19.5	Molasses, sirups.....	23.1	16.0
Soaps.....	22.6	6.0	Popcorn.....	30.6	21.0

¹ U. S. Bureau of Foreign and Domestic Commerce, Distribution Cost Studies, No. 11, Louisville Grocery Survey, pt. III A, Merchandising Characteristics of Grocery Store Commodities, General Findings and Specific Results, Government Printing Office, Washington, D. C., 1932, pp. 23, 44-47. (This study was made among 26 Louisville, Ky., independent retail grocery stores in 1929, and it covered the year's operations for 1928.)

² Based on supermarket surveys conducted by The Progressive Grocer. See Food Stores Have Reduced Margins More Than One-Third Since 1928, Progressive Grocer, vol. 21, October 1952, p. 169.

TABLE V-1.—Number of establishments, annual sales, credit ratios, and bad-debt losses for merchant wholesalers, by kind of business, United States, 1954

Kind of business	All establishments		Establishments reporting credit sales					Establishments reporting cash sales only		Establishments not reporting cash and credit data	
	Number	Sales, cash and credit	Number	Sales, cash and credit	Credit sales as percent of sales	End-of-year receivables as percent of sales	Bad-debt losses as percent of sales	Number	Sales	Number	Sales
GROCERY, CONFECTIONERY, MEAT WHOLESALERS											
General line grocery wholesalers.....	3,320	Thousands \$7,353,560	2,390	Thousands \$5,463,091	84.7	3.8	0.06	259	Thousands \$435,201	671	Thousands \$1,455,268
Voluntary group grocery wholesalers.....	574	2,463,756	471	1,909,091	81.8	3.2	.06	27	173,532	76	380,533
Retailer cooperative food wholesalers.....	193	1,298,175	127	914,208	91.8	3.0	(¹)	28	129,299	38	254,668
Cash-carry food depots.....	291	139,950	56	44,140	15.6	.5	(¹)	143	58,398	92	37,412
Other general line of grocery wholesalers.....	2,262	3,451,679	1,736	2,595,052	84.8	4.6	.09	61	73,972	465	782,655
Confectionery wholesalers.....	1,909	527,446	1,227	366,370	66.3	5.0	.09	227	29,317	455	131,759
Fish, seafood distributors.....	1,808	653,698	1,127	494,575	86.9	5.8	.14	236	30,623	445	128,500
Meat, meat products wholesalers.....	4,857	2,866,193	3,063	2,200,073	87.0	4.3	.11	394	67,908	900	598,212
Specialty-line grocery wholesalers.....	9,221	5,919,993	5,568	4,218,673	85.3	4.9	.07	1,062	226,401	2,591	1,474,919
Bakery, restaurant, hotel supply houses.....	438	215,414	319	160,885	87.0	8.1	.21	31	2,698	88	51,831
Bread, bakery goods distributors.....	800	160,478	337	91,892	66.4	5.8	.07	165	21,048	298	47,538
Canned-food wholesalers.....	928	621,222	718	481,705	87.3	6.1	.09	60	15,318	150	124,199
Coffee, tea, spice wholesalers.....	488	1,606,380	376	1,118,917	92.9	3.9	(¹)	27	64,162	85	423,301
Dairy products distributors.....	2,281	1,340,279	1,187	911,815	84.8	4.4	.07	208	48,544	886	379,020
Flour distributors.....	170	108,303	125	89,488	93.9	8.1	.22	6	391	39	18,424
Frosted, frozen food distributors.....	610	455,882	481	386,910	76.4	4.9	.08	22	3,715	107	65,257
Soft-drink distributors.....	1,142	165,965	475	96,769	58.7	5.9	.10	311	21,340	356	47,856
Other grocery specialty wholesalers.....	2,364	1,246,070	1,550	880,292	82.8	5.0	.08	232	49,185	582	316,593
FARM PRODUCTS (EDIBLE) DISTRIBUTORS											
Poultry, poultry products distributors.....	2,660	1,475,195	1,543	1,100,510	85.3	3.6	.06	390	105,398	727	269,287
Fresh fruit, vegetable wholesalers.....	6,520	3,261,739	4,493	2,469,235	82.8	4.0	.11	776	138,896	1,251	653,608

¹ Less than 0.01 percent.

Source: U. S. Bureau of the Census, 1954 census of business, Bull. W-2-3; wholesale trade credit, receivables, bad-debt losses, merchant wholesalers, table 3-A.

TABLE V-2.—Wholesale trade: Percent distribution of sales by class of customer, by selected types of operation and kinds of business, United States, 1954

	Total		Sales of establishments reporting class of customer						
	Establishments	Sales	Total	Industrial, commercial, etc., users	Consumers and farmers	Federal Government	Retailers	Wholesale organization	Export
Merchant wholesalers:									
Grocery, confectionery, meat wholesalers:		<i>Thousands</i>	<i>Thousands</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
General line grocery, wholesalers.....	3,320	\$7,353,560	\$6,471,119	6.9	0.2	0.4	89.2	2.9	0.5
Voluntary, group grocers, wholesalers.....	574	2,463,756	2,314,355	4.7	.1	.3	92.4	2.3	.2
Retailer cooperative food wholesalers.....	193	1,298,175	1,163,173	.3	(1)	(1)	99.1	.5	.1
Cash carry, food depots.....	291	139,950	139,539	.7	-----	(1)	99.1	.2	-----
Other general line grocery wholesalers.....	2,262	3,451,679	2,854,052	11.6	.3	.7	82.0	4.6	.7
Confectionery, wholesalers.....	1,909	527,446	430,087	7.2	.5	-----	73.9	14.0	2.0
Fish, seafood distributors.....	1,808	653,698	487,279	19.0	1.8	1.2	38.9	38.8	.3
Meat, meat products, wholesalers.....	4,357	2,866,193	2,332,298	22.6	1.6	1.1	53.9	19.1	1.5
Specialty-line grocery wholesalers.....	9,221	5,919,993	4,743,008	24.3	1.2	2.5	34.5	34.2	3.2
Bakery, restaurant, hotel supply houses.....	438	215,414	165,673	61.0	.5	.7	25.4	12.1	.3
Bread, bakery goods distributors.....	800	160,478	120,715	15.8	.5	.6	65.5	17.5	(1)
Canned food wholesalers.....	928	621,222	527,900	17.5	.4	1.9	45.7	29.8	4.7
Coffee, tea, spice wholesalers.....	488	1,606,380	1,359,991	30.6	(1)	1.9	6.2	59.2	2.0
Dairy products distributors.....	2,281	1,340,279	1,002,102	14.1	2.6	5.8	47.7	29.6	.2
Flour distributors.....	170	108,303	92,466	37.6	.4	.2	41.7	10.1	10.0
Frosted, frozen foods distributors.....	610	455,882	419,347	19.2	.9	3.7	58.4	17.6	.3
Soft drink distributors.....	1,142	165,965	124,136	14.7	3.1	.2	70.2	10.8	1.1
Other grocery specialty wholesalers.....	2,364	1,246,070	930,678	26.4	2.3	.7	36.9	24.4	9.4
Farm products (edible) distributors:									
Poultry, poultry products.....	2,660	1,475,105	1,173,670	13.4	1.7	2.5	52.6	29.1	.7
Fresh fruit, vegetable wholesalers.....	6,520	3,261,739	2,771,516	8.6	3.0	1.4	54.3	31.4	1.2
Manufacturers' sales branches and offices: Food and kindred products.....	4,488	11,746,914	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Merchandise agents, brokers:									
Groceries, confectionery, meats.....	2,940	7,621,093	6,909,531	19.9	.1	.4	11.2	66.0	2.5
Farm products (edible).....	1,107	2,107,445	1,856,733	11.6	.1	1.1	17.0	67.0	3.2
Dairy, poultry products.....	214	516,210	417,324	29.7	.4	3.3	29.2	34.2	3.3
Fruits, vegetables.....	893	1,591,235	1,439,409	6.3	(2)	.5	13.4	76.5	3.2

¹ Less than 0.1 percent.

² Not analyzed by class of customer.

Source: U. S. Bureau of the Census, 1954 Census of Business, Bulletin W-2-4, Wholesale Trade, Sales by Class of Customer; table 4A.

TABLE V-3.—Number of establishments and annual sales of merchant wholesalers for selected kinds of business, by sales size of establishment, United States and 9 geographic divisions, 1954

Kind of business and sales size of establishment	United States		New England		Middle Atlantic		East North Central		West North Central		South Atlantic		East South Central		West South Central		Mountain		Pacific	
	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales	Establishments	Sales
GENERAL-LINE GROCERY WHOLESALERS																				
Voluntary group grocery wholesalers:																				
Establishments operated entire year, sales of—	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars
\$2,000,000 and over.....	311	2,154,357	26	149,676	56	320,941	76	549,764	58	477,325	25	112,325	15	126,954	27	159,307	11	59,967	17	198,098
\$1,000,000 to \$1,999,000.....	155	235,190	17	26,157	38	54,368	27	40,880	17	30,221	13	18,937	4	5,584	19	28,306	13	18,266	7	12,471
\$500,000 to \$999,000.....	74	56,973	7	5,126	24	18,474	7	6,152	5	4,188	7	6,362	3	2,054	13	9,784	5	3,500	3	2,333
\$200,000 to \$499,000.....	27	(1)	4	1,493	7	2,599	2	(1)	1	(1)	3	1,119	1	(1)	5	1,777	1	(1)	3	965
Less than \$200,000.....	2	(1)			1	(1)													1	(1)
Establishments not operated entire year.....	6	7,048	1	(1)	1	(1)			2	(1)	1	(1)			(1)					
Retailer cooperative food wholesalers:																				
Establishments operated entire year, sales of—	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars
\$2,000,000 and over.....	114	1,218,694	10	36,843	20	171,159	22	259,292	13	104,228	12	79,940	6	24,091	9	50,250	9	87,134	13	405,748
\$1,000,000 to \$1,999,000.....	37	53,159	6	8,714	9	12,550	7	10,096	4	(1)	10	13,803			1	(1)				
\$500,000 to \$999,000.....	29	21,891	4	2,766	10	7,590	3	(1)	3	2,136	7	6,102					1	(1)	1	(1)
\$200,000 to \$499,000.....	9	(1)			2	(1)	1	(1)											3	1,027
Less \$200,000.....	2	(1)			1	(1)			1	(1)	3	1,190								
Establishments not operated entire year.....	2	(1)			1	(1)	1	(1)												
Cash-carry food depots:																				
Establishments operated entire year, sales of—	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars	Number	Thousands of dollars
\$2,000,000 and over.....	6	18,766					4	13,684							(1)					
\$1,000,000 to \$1,999,000.....	18	26,889	1	(1)	2	(1)			1	(1)	9	14,274			1	(1)			2	(1)
\$500,000 to \$999,000.....	52	33,507	2	(1)	4	2,274	8	5,274	3	2,361	8	5,636	2	(1)	1	(1)	3	1,779	21	12,695
\$200,000 to \$499,000.....	160	52,155	3	861	21	7,432	37	11,534	13	4,040	8	2,599	3	1,016	7	2,457	3	626	65	21,590
Less than \$200,000.....	50	7,470			2	(1)	25	3,329	5	904	4	652	1	(1)			5	870	8	1,328
Establishments not operated entire year.....	5	1,163					1	(1)											4	(1)
Other general-line grocery wholesalers:																				

Establishments operated en- tire year, sales of—																				
\$2,000,000 and over	436	1,834,286	15	64,111	40	219,017	- 58	254,228	40	183,417	86	305,136	70	251,643	73	315,107	19	63,843	36	177,784
\$1,000,000 to \$1,999,000	667	947,649	33	46,857	51	72,361	67	92,258	61	84,555	183	262,614	93	129,467	141	204,948	22	31,895	16	22,694
\$500,000 to \$999,000	649	483,530	28	20,255	87	62,885	69	50,095	42	31,380	156	119,142	92	66,478	123	95,078	20	13,900	32	23,467
\$200,000 to \$499,000	364	138,040	16	5,719	52	19,230	54	19,553	20	8,720	97	36,818	52	20,377	34	13,498	17	6,698	22	7,427
Less than \$200,000	118	14,258	4	356	26	3,154	20	2,297	4	577	25	2,842	7	769	8	1,016	11	1,333	13	1,914
Establishments not operated entire year	28	33,866	2	(1)	5	2,557	4	4,595	1	(1)	6	4,188	3	2,314	5	4,439	-----	(1)	2	(1)

¹ Withheld to avoid disclosure.

Source: U. S. Bureau of the Census, 1954 census of business, Bull. W-2-2, Wholesale Trade, Size of Establishment or Firm; table 2-B.

TABLE V-4.—Wholesale trade: Number of establishments, annual sales, inventories and occupiable space by type of operation and kind of business, United States, 1954

Type of operation and kind of business	All establishments			Establishments reporting floor space of 500 feet or more						Establishments not reporting floor space or reporting less than 500 square feet			
	Number	Sales	Inventories, end of year, at cost	Number	Sales	Inventories, end of year, at cost	Occupiable warehouse floor space, end of year				Number	Sales	Inventories, end of year, at cost
							Total	1-story buildings	Multi-story buildings	Building not reported			
Merchant wholesalers:		Thousands of dollars	Thousands of dollars		Thousands of dollars	Thousands of dollars	Thousand square feet	Thousand square feet	Thousand square feet	Thousand square feet		Thousands of dollars	Thousands of dollars
Grocery, confectionary, meat wholesalers:													
General-line grocery wholesalers.....	3,320	7,353,560	560,337	2,535	6,166,521	507,919	68,851	35,241	31,738	1,872	785	1,187,039	52,418
Voluntary group grocery wholesalers.....	574	2,463,756	181,332	513	2,243,962	175,281	23,303	10,967	11,958	378	61	210,794	6,051
Retailer cooperative food wholesalers.....	193	1,298,175	87,248	160	1,143,069	80,717	8,711	5,228	3,256	227	33	155,106	6,531
Cash-carry food depots.....	291	139,950	8,052	210	115,508	7,442	1,209	870	303	36	81	24,442	610
Other general line grocery wholesalers.....	2,262	3,451,679	283,705	1,652	2,663,982	244,479	35,628	18,176	16,221	1,231	610	787,697	39,226
Confectionery wholesalers.....	1,909	527,446	35,722	1,193	342,654	28,238	5,752	3,845	1,772	135	716	184,792	7,494
Fish, seafood distributors.....	1,808	653,698	33,765	776	272,651	14,903	3,738	2,408	1,287	43	1,032	381,047	18,862
Meat, meat products wholesalers.....	4,357	2,866,183	68,959	1,901	1,480,464	31,205	6,697	3,056	230	230	2,456	1,385,729	37,754
Specialty-line grocery wholesalers.....	9,221	5,919,993	282,633	4,193	2,430,725	169,310	35,286	20,399	13,834	1,053	5,028	3,489,268	113,323
Bakery, restaurant, hotel supply houses.....	438	215,414	16,338	262	150,353	13,864	2,925	1,398	1,492	35	176	65,061	2,474
Bread, bakery goods distributors.....	800	160,478	5,490	245	73,656	2,821	1,229	508	253	168	555	86,822	2,609
Canned food wholesalers.....	928	621,222	51,660	635	416,129	40,378	7,446	3,778	3,583	85	293	205,093	11,282
Coffee, tea, spice wholesalers.....	488	1,606,380	58,405	244	176,539	16,460	1,973	651	1,296	26	244	1,429,841	41,945
Dairy products distributors.....	2,281	1,340,279	33,167	687	615,572	18,477	3,878	2,087	1,662	129	1,594	724,707	14,690
Flour distributors.....	170	108,363	3,562	83	62,025	2,499	1,938	1,583	263	92	87	46,278	1,063
Frosted frozen food distributors.....	610	455,882	26,209	270	230,876	15,520	2,078	1,288	782	8	340	225,006	9,689
Soft drink distributor.....	1,142	165,965	6,206	515	88,015	3,873	2,519	2,028	472	19	627	77,950	2,333
Other grocery specialty wholesalers.....	2,364	1,246,070	82,596	1,252	617,560	55,418	11,300	6,778	4,031	491	1,112	628,510	27,178
Farm products (edible) distributors:													
Poultry, poultry products distributors.....	2,660	1,475,195	29,482	1,356	840,507	16,309	6,583	4,255	2,073	255	1,304	634,688	13,173
Fresh fruit, vegetable wholesalers.....	6,520	3,261,739	70,627	3,692	2,116,522	48,456	29,015	17,615	10,368	1,032	2,828	1,145,217	22,171

Manufacturers' sales branches, with stocks:													
Food and kindred products.....	3,398	7,954,675	242,253	2,308	4,966,458	144,740	20,512	11,704	8,299	509	1,090	2,988,217	97,513
Merchandise agents, brokers:													
Grocery, confectionery, meats.....	2,949	7,621,083	10,587	348	689,647	2,435	3,792	(1)	(1)	3,792	2,601	6,931,446	8,152
Farm products (edible).....	1,107	2,107,445	4,061	224	335,581	1,222	1,899	(1)	(1)	1,899	883	1,771,864	2,833
Dairy, poultry products.....	214	516,210	2,138	48	48,208	248	265	(1)	(1)	265	166	468,002	1,890
Fruits, vegetables.....	893	1,591,235	1,923	176	287,373	974	1,634	(1)	(1)	1,634	717	1,303,862	949

¹ Not available.

Source: U. S. Bureau of the Census, 1954 Census of Business, Bulletin W-2-5, Wholesale Trade, Warehouse and Cold Storage Space; table 5A.

TABLE V-5.—Wholesale trade: Number of establishments, annual sales, and operating expenses as percentage of sales, for selected types of operation and kinds of business, by single or multiunit, United States, 1954

Type of operation and kind of business	Number of establishments						Sales (thousand dollars)						Operating expenses as percent of sales					
	Total	Single unit	Wholesale multiunits				Total	Single unit	Wholesale multiunits				Total	Single unit	Wholesale multiunits			
			2 or 3	4-9	10-24	25 or more			2 or 3	4-9	10-24	25 or more			2 or 3	4-9	10-24	25 or more
Merchant wholesalers, grocery, confectioners, meats:																		
General line grocery wholesalers:																		
Voluntary group grocery wholesalers.....	574	316	44	99	115	2,463,756	1,305,161	228,096	401,127	529,372	7.4	7.1	7.2	8.6	7.4			
Retail cooperative food wholesalers.....	193	158	18	17		1,298,175	986,288	181,634	130,253		4.4	4.2	5.6	4.2				
Cash-carry food depots wholesalers.....	291	16	13	49	43	170	139,950	23,957	4,181	15,351	28,155	68,306	4.2	5.1	4.7	5.0	3.2	4.2
Other general line grocery wholesalers.....	2,262	1,723	178	181	92	88	3,461,679	2,323,566	278,145	459,691	180,515	209,762	8.9	8.3	9.5	10.0	9.7	10.9
Confectionery wholesalers.....	1,909	1,822	69	18			527,446	478,094	33,497	15,855			12.9	13.1	12.9	6.5		
Fish, seafood distributors.....	1,808	1,713	73	22			653,698	591,106	24,777	37,815			16.4	16.4	21.6	12.7		
Meat, meat product wholesalers.....	4,357	4,242		115			2,866,193	2,705,992		160,201			10.3	10.4		9.4		
Specialty line grocery wholesalers:																		
Bakery, restaurant, hotel supply.....	438	419	19				215,414	201,846	13,568				15.4	14.7	26.1			
Bread, bakery goods distributors.....	800	785	15				160,478	149,285	11,193				20.6	20.9	16.0			
Canned food wholesalers.....	928	858	33	37			621,222	543,044	40,490	37,688			10.5	10.0	14.3	12.2		
Coffee, tea, spice wholesalers.....	488	411	16	23	38		1,606,380	1,146,495	167,011	271,914	20,960		3.0	2.6	2.5	4.6	10.0	
Dairy products distributors.....	2,281	2,073	125	50	33		1,340,279	1,054,912	193,001	70,517	20,949		11.6	11.4	9.6	17.0	23.4	
Flour distributors.....	170	163	7				108,303	99,634	8,669				7.4	7.5	6.2			
Frosted frozen food distributors.....	610	516	58	36			455,882	345,622	73,002	37,258			13.9	13.8	15.6	11.3		
Soft drink distributors.....	1,142	1,092	21	29			165,965	141,616	13,404	10,945			23.5	23.6	10.7	38.9		
Other grocery specialty wholesalers.....	2,364	2,158	101	52	53		1,246,070	1,082,494	108,251	21,714	33,611		9.8	9.6	10.4	16.7	8.8	

Manufacturers' sales branches and offices: Food and kindred products..	4,488	92	206	411	582	3,197	11,746,914	451,101	658,222	1,356,598	1,496,460	7,784,443	(1)	(1)	(1)	(1)	(1)	(1)	
Merchandise agents, brokers: Grocery, confectionery, meats.....	2,940	2,685	171	93		-----	7,621,093	6,224,662	643,668	752,763		-----	2.1	2.3	1.9	1.3		-----	
Farm products:																			
Dairy, poultry.....	214	206	8		-----	516,210	427,149	89,061		-----	-----	-----	3.6	2.4	9.4		-----	-----	-----
Fruits, vegetables.....	893	707	61	24	101	1,591,235	1,058,983	101,791	28,033		402,428	-----	4.3	3.9	3.9	3.6	5.5		-----

¹ Not available.

Source: U. S. Bureau of the Census, 1954 Census of Business, Bull. W-2-2, Wholesale Trade, Size or Establishment or Firm; table 2H.

TABLE V-6.—Wholesale trade, number of establishments, annual sales, inventories, and operating expense as percent of sales, for selected kinds of business and type of operation, United States, 1954 and 1948

Type of operation and kind of business	Number of establishments			Annual sales			Inventories, end of year, at cost			Operating expenses as percent of sales	
	1954	1948	Percent change 1948 to 1954	1954	1948	Percent change 1948 to 1954	1954	1948	Percent change 1948 to 1954	1954	1948
Merchant wholesalers, all.....	165, 153	129, 117	27.9	<i>Thousands</i> \$101, 100, 941	<i>Thousands</i> \$76, 533, 260	32.1	<i>Thousands</i> \$9, 524, 871	<i>Thousands</i> \$7, 056, 391	35.0	13.2	11.5
General line grocery.....	3, 320	4, 253	-21.9	7, 353, 560	5, 771, 700	27.4	560, 337	598, 763	-6.4	7.5	8.2
Confectionery.....	1, 909	1, 696	12.6	527, 446	357, 554	47.5	35, 722	23, 749	50.4	12.9	12.1
Fish, seafood.....	1, 798	1, 100	63.5	625, 046	387, 557	61.3	30, 463	16, 149	88.6	16.8	15.6
Meat, meat products.....	4, 357	3, 200	36.2	2, 866, 193	1, 977, 065	45.0	68, 959	33, 807	104.0	10.3	7.5
Specialty-line grocery.....	6, 950	5, 458	27.3	4, 608, 366	2, 719, 192	69.5	252, 763	209, 950	20.4	9.0	9.7
Poultry, poultry products.....	14, 941	4, 839	2.1	2, 815, 474	2, 688, 598	4.7	62, 649	63, 017	- .6	10.1	7.9
Fresh fruit, vegetables.....	6, 520	6, 127	6.4	3, 261, 739	3, 169, 960	2.9	70, 627	51, 830	36.3	13.2	9.9
Manufacturers' sales branches, all ²	14, 759	15, 687	-5.9	36, 811, 233	28, 609, 331	28.7	2, 152, 720	1, 730, 310	24.4	10.5	10.0
Food and kindred products.....	3, 398	4, 085	-16.8	7, 954, 679	8, 121, 928	-2.1	242, 253	273, 439	-11.4	10.3	7.9
Merchandise agents, brokers, all.....	22, 131	18, 138	22.0	39, 250, 500	32, 839, 667	19.5	103, 232	64, 910	59.0	3.1	2.5
Groceries, confectionery, meats.....	2, 949	2, 568	14.8	7, 621, 093	5, 179, 537	47.1	10, 587	8, 804	20.3	2.1	2.0
Grocery products.....	2, 678	2, 401	11.5	6, 907, 496	4, 518, 201	52.9	10, 371	8, 750	18.5	2.3	2.1
Confectionery.....	174	109	50.6	192, 992	89, 961	114.5	92	20	360.0	3.9	3.7
Meats.....	97	58	67.2	520, 605	571, 375	-8.9	124	34	264.7	1.1	.6
Farm products (edible).....	1, 107	956	16.8	2, 107, 445	1, 663, 467	26.7	4, 061	3, 545	14.6	4.2	3.1
Dairy, poultry products.....	214	151	41.7	516, 210	368, 069	40.2	2, 133	684	212.6	3.6	1.5
Fruits, vegetables.....	893	805	10.9	1, 591, 235	1, 295, 398	22.8	1, 923	2, 861	-32.8	4.3	3.5

¹ Plus dairy products.

² With stocks, as contrasted with manufacturers' sales offices; without stocks.

Source: U. S. Bureau of the Census, 1954 Census of Business, Bulletin W-1-1, Wholesale Trade, United States Summary; table 1c.

TABLE V-7.—*Central warehousing and group affiliation, supermarkets, United States, at the beginning of 1956*

	Own central warehouse	Belong to retailer-owned cooperative	Belong to wholesaler sponsored voluntary chain	No central warehouse or approval affiliation
Percentage of supermarkets.....	81	10	3	8
Percentage of companies, total.....	33	31	15	24
Company sales group:				
Up to \$2,000,000.....	5	40	26	31
\$2,000,000 to \$10,000,000.....	34	30	12	27
\$10,000,000 to \$20,000,000.....	69	36	3	5
\$25,000,000 to \$50,000,000.....	92			8
Over \$50,000,000.....	100			
Region:				
New England.....	39	18	14	32
Middle Atlantic.....	35	37	8	20
East North Central.....	30	38	16	20
Southeast.....	46	23	9	26
West North Central.....	21	21	37	21
West South Central.....	44	7	19	30
Mountain and Pacific.....	21	55	8	26
Canada.....	67			33

NOTE.—Figures add to more than 100 percent since some companies have their own central warehouse and are also affiliated with a group.

Source: Super Market Institute, *The Super Market Industry Speaks* * * * 1956, 8th Annual Report by the Members of the Super Market Institute; p. 12.

TABLE V-8.—*Employment in wholesale and retail distribution, United States, 1929, 1939, and 1948*

[Thousands of persons]

	1929	1939	1948
Distribution, total.....	7,238	7,458	10,358
Wholesale.....	1,751	1,749	2,627
Retail.....	5,487	5,709	7,731
Percent wholesale.....	24	23	25

Source: Barger, Harold, *Distribution's Place in the American Economy Since 1869*. (Study by the National Bureau of Economic Research, New York; published by Princeton University Press, Princeton, 1955); p. 14, table 7.

TABLE V-9.—*Distribution of wholesale grocery sales, by type of operation, United States, 1935, 1939, and 1948*¹

	1935	1939	1948
	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Regular wholesalers ²	57.8	49.5	50.5
Manufacturers' sales branches.....	37.9	36.5	30.1
Cash-and-carry wholesalers.....	.9	1.1	1.2
Voluntary group wholesalers.....	1.6	10.4	13.4
Retailer-cooperative warehouses.....	1.9	2.5	4.8
Total.....	100.0	100.0	100.0

¹ All data from Census of Business, 1935, 1939, and 1948. The table includes all forms of wholesaling in which stocks are carried, except chainstore warehouses. Data are from the census of distribution. Table does not include wholesaling of meat or dairy products.

² General line and specialty, including importers and wagon distributors.

Source: Barger, Harold, *Distribution's Place in the American Economy Since 1869* (Study by the National Bureau of Economic Research, New York; published by Princeton University Press, Princeton, 1955); p. 77, table 22.

TABLE V-10.—Distribution of wholesale sales, 4 kinds of business, by type of operation, United States, 1939 (all data from United States census of business, 1939)

	Drugs	Dry goods	Groceries	Hardware
	Millions of dollars			
Total sales, wholesalers with stocks ¹	\$780	\$958	\$6,387	\$614
	Percent			
Percentage distribution of above:				
Regular wholesalers ²	69.5	78.1	49.0	92.5
Manufacturers' sales branches.....	25.9	21.9	36.5	3.9
Cash-and-carry wholesalers.....	0	0	1.1	0
Wagon distributors.....	0	0	.5	0
Voluntary group wholesalers.....	.8	0	10.4	2.1
Retailer-cooperative warehouses.....	3.8	0	2.5	1.5
Total.....	100.0	100.0	100.0	100.0
	Millions of dollars			
For comparison: Retail sales of stores in classifications named above.....	\$1,563	\$713	\$8,210	\$782

¹ Except chainstore warehouses.

² General line and specialty, including importers.

Source: Barger, Harold, *Distribution's Place in the American Economy Since 1869* study by the National Bureau of Economic Research, New York; published by Princeton University Press, Princeton, 1955; p. 74, table 21.

TABLE V-11.—Percent distribution of grocery wholesalers and their sales by ownership and sponsorship, United States, 1955

Ownership	Percent distribution					
	All wholesalers		Voluntary sponsors		Not voluntary sponsors	
	Number	Sales	Number	Sales	Number	Sales
All wholesalers.....	100	100	43	72	57	28
Privately owned.....	100	100	42	80	58	20
Retailer owned.....	100	100	47	48	53	52

Source: Mueller, Robert W., *The New Look of the Wholesale Grocery Industry*, address delivered before the National-American Wholesale Grocers' Association, Chicago, Mar. 7, 1956 (mimeographed); pp. 8-9

TABLE V-12.—Wholesale grocery sales, by type of wholesaler, United States, 1956

Type of wholesaler	Number of firms	Sales, 1956 (billions)	Percent gain in sales, 1956 over 1955	Average annual sales per wholesaler (millions)
Total.....	2,927	\$8.7	+11.6	\$3.00
Voluntary group wholesalers.....	555	3.2	+19.7	5.76
Cooperative wholesalers.....	192	2.0	+18.8	10.41
Unaffiliated wholesalers.....	2,180	3.5	+1.7	1.60

Source: *The Progressive Grocer*, Facts in Grocery Distribution, New York, 1957 edition, p. 16.]

TABLE V-13.—*Percent distribution of wholesale grocers and their sales, by size, United States, 1955 and 1950*

Annual dollar sales volume	Percent distribution of—			
	1955		1950	
	Firms	Sales	Firms	Sales
All wholesalers.....	100	100	100	100
Under \$1,000,000.....	22	2	23	5
\$1,000,000 to \$5,000,000.....	53	22	52	27
\$5,000,000 to \$10,000,000.....	12	14	12	16
Over \$10,000,000.....	13	62	13	52

Source: Mueller, Robert W., *The New Look of the Wholesale Grocery Industry*, address delivered before the National-American Wholesale Grocer's Association, Chicago, Mar. 7, 1956 (mimeographed); p. 12.

TABLE V-14.—*Distribution of grocery wholesale firms, by size of annual volume of sales, United States, 1948-54*

Annual sales volume per firm	1954		1953		1952		1951		1950		1949		1948	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All wholesalers.....	131	100.0	119	100.0	139	100.0	143	100.0	132	100.0	232	100.0	141	100.0
Under \$1,000,000.....	47	35.9	39	32.8	47	33.8	43	30.1	47	35.6	84	36.2	53	37.6
\$1,000,000 to \$2,000,000.....	40	30.5	38	31.9	60	36.0	60	41.9	48	36.4	88	37.9	48	34.0
\$2,000,000 to \$3,000,000.....	16	12.2	18	15.1	19	13.7	18	12.6	19	14.4	28	12.1	20	14.2
\$3,000,000 to \$4,000,000.....	11	8.4	11	9.3	8	5.75	8	5.6	4	3.0	9	3.9	6	4.3
\$4,000,000 to \$6,000,000.....	8	6.1	6	5.0	7	5.0	5	3.5	7	5.3	8	3.4	4	2.8
Over \$6,000,000.....	9	6.9	7	5.9	8	5.75	9	6.3	7	5.3	15	6.5	10	7.1

Source: Bromell, John R., Survey of Wholesale Grocers' Profit and Loss Figures (Washington: U. S. Wholesale Grocers' Association, Inc., annual, years 1949-55), table I, p. 6.

TABLE V-15.—Sales increase by size of grocery wholesaler, United States, 1955 as compared with 1954 and 1950

States volume group	Percent increase to 1955 from—	
	1954	1950
All wholesalers, average.....	12.9	42.1
Under \$1,000,000.....	— .3	6.2
\$1,000,000 to \$5,000,000.....	8.5	28.3
\$5,000,000 to \$10,000,000.....	13.1	31.4
Over \$10,000,000.....	15.1	51.1
Retail sales gain.....	6.9	46.2

Source: Mueller, Robert W., The New Loss of the Wholesale Grocery Industry, address delivered before the National-American Wholesale Grocers' Association, Chicago, Mar. 7, 1956 (mimeographed); pp. 10-11.

TABLE V-16.—Number of items handled by grocery wholesalers, United States, 1955, 1954, and 1950

Item	Number of items handled		
	1955	1954	1950
All wholesalers, average.....	3,033	2,811	2,472
Retailer owned.....	3,353	3,010	2,520
Privately owned.....	2,954	2,761	2,460
Voluntary.....	3,336	3,071	2,650
Not voluntary.....	2,781	2,599	2,330

Source: Mueller, Robert W., The New Look of the Wholesale Grocery Industry, address delivered before the National-American Wholesale Grocers' Association, Chicago, Mar. 7, 1956, (mimeographed); p. 17.

TABLE V-17.—Percent of grocery wholesalers dealing in 6 special lines of merchandise, United States, 1955

[Percent]

Item	All grocery wholesalers	Retailer owned	Privately owned	Voluntary
Drugs and toiletries.....	83	71	86	77
Fresh meats.....	11	11	11	18
Fresh produce.....	26	35	24	29
Frozen foods.....	30	35	24	49
Kitchen hardware.....	19	20	19	16
Toys.....	17	22	16	19

Source: Mueller, Robert W., The New Look of the Wholesale Grocery Industry, address delivered before the National-American Wholesale Grocers' Association, Chicago, Mar. 7, 1956 (mimeographed); p. 18.

TABLE V-18.—*Inventory turnover by size of wholesale grocery companies, United States, 1947-53*

Year	Number of companies in survey	Inventory turnover by total asset size of wholesaler			
		All sizes	Under \$250,000	\$250,000 to \$1,000,000	\$1,000,000 to \$10,000,000
1947.....	140	8.54	7.57	9.03	18.38
1948.....	141	9.45	10.58	10.11	9.29
1949.....	191	9.79	10.81	9.95	9.72
1950.....	190	8.93	8.67	8.90	8.94
1951.....	198	9.49	9.52	9.38	9.52
1952.....	253	10.31	9.77	10.64	10.27
1953.....	264	10.65	10.23	10.15	10.79

¹ \$1,000,000-\$5,000,000 total assets.

Source: Robert Morris Associates, *Some Highlights of the Wholesale Grocery Trade*, Supplement No. 5, Philadelphia, 1953; p. 6. (The financial data in the publication are obtained by Robert Morris Associates from statements contributed to them by their member banks; the banks, in turn, derive operating data from statements of wholesale grocers dealing with them. The study is limited to firms of less than \$10,000,000 in total assets.)

TABLE V-19.—*Margins of wholesale grocers, by size of annual sales volume, United States, 1955 and 1950*

Annual dollar sales volume	Percent margin—	
	1955	1950
All wholesalers.....	6.5	7.8
Under \$1,000,000.....	7.3	8.6
\$1,000,000 to \$5,000,000.....	6.7	8.0
\$5,000,000 to \$10,000,000.....	5.3	6.5
Over \$10,000,000.....	5.0	6.4

Source: Mueller, Robert W., *The New Look of the Wholesale Grocery Industry*, address delivered before the National-American Wholesale Grocers' Association, Chicago, Mar. 7, 1956 (mimeographed); p. 13.

TABLE VI-1.—*Index of advertising by grocery manufacturers, and percent distribution by media types, United States, 1954, 1953, 1951,¹ and 1948*

Mediums ²	1954	1953	1951	1948
Index of 20 large grocery manufacturers: Advertising expenditures (1948=100).....	165	156	141	100
Percent distribution by media: Total.....	100.0	100.0	100.0	100.0
Newspapers.....	25.5	30.0	33.6	30.5
Magazines.....	21.8	22.5	21.6	27.7
Network radio.....	16.4	21.1	29.6	41.8
Network TV.....	36.3	26.4	15.2	

¹ Estimated total advertising expenditures of 20 grocery manufacturers. Total for all forms of advertising for all 20 manufacturers in 1948 equals the index base of 100.

² Spot broadcasting and outdoor advertising expenditures are not available.

Source: A. C. Nielsen Co., *The Outlook for Grocery Marketing and Distribution—Presentation to the 47th Annual Meeting of Grocery Manufacturers of America, Inc.*, Chicago, 1956; p. 13.

THE CONTRIBUTION OF MARKETING AGREEMENTS AND ORDERS TO THE STABILITY AND LEVEL OF FARM INCOME

[A supplement to the paper under this title by Sidney Hoos. For secs. I and II, see p. 317 ff.]

III. SOME PARTICULARS AND DETAILS

Federal marketing agreements and orders (except milk).—The legislatively specified intent of Congress (expressed in the Agricultural Marketing Agreement Act of 1937) is—

through exercise of powers conferred upon the Secretary of Agriculture * * * to establish and maintain such orderly marketing conditions for agricultural commodities in interstate commerce as will establish, as prices to farmers, parity prices—

and—

to protect the interests of the consumer by (a) approaching [the parity] level of prices * * * by gradual correction of the current level at as rapid a rate as the Secretary of Agriculture deems to be in the public interest and feasible in view of the current consumption demand in domestic and foreign markets.

Also included are quality control provisions (except for milk and its products)—

as will effectuate such orderly marketing of such agricultural commodities as will be in the public interest.

Federal marketing agreements are not limited to specific crops or products. But Federal marketing orders are authorized for and applicable only to the following:

* * * commodities and products thereof (except products of naval stores and the products of honeybees); milk, fruits (including filberts, almonds, pecans, and walnuts but not including apples, other than apples produced in the States of Washington, Oregon, and Idaho, and not including fruits, other than olives for canning or freezing and grapefruit for canning and freezing), tobacco, vegetables (not including vegetables, other than asparagus, for canning or freezing), soybeans, hops, honeybees, and naval stores. * * *

A number of attempts have been made to revise the Federal enabling legislation so as to broaden the list of products for which Federal marketing order programs may be authorized.

The Federal legislation recognizes "orders with marketing agreement" and "orders without marketing agreement." No order with a marketing agreement can be made effective unless handlers with not less than 50 percent of the volume have signed the agreement (an exception applies to citrus fruit produced in the California area for

which the handlers with at least 80 percent of the volume must have signed the agreement). In addition to agreement approval by handlers, the corresponding order must be approved by at least two-thirds of the producers in the production area specified in the order (an exception again applies to citrus fruit produced in the California area for which at least three-fourths of the producers must have signed the order).

Federal marketing orders can be made effective by the Secretary of Agriculture, however, if he determines that failure of approval by the necessary majority of the handlers tends to prevent the effectuation of declared policy and if he determines that the issue of the order is the "only practical means of advancing interests of producers pursuant to the declared policy" and the order is approved by at least two-thirds of the producers (80 percent for citrus produced in the California area).

Once in operation a Federal marketing order program can be terminated if the Secretary determines that the program is not effectuating the declared policy or if termination is favored by 50 percent (by volume) of the producers. The extent of terminations is reflected in the following summaries of programs.

An overall picture of the programs, which have been in effect under Federal marketing agreement legislation is reflected in chart I. There may be noted the relative frequencies of programs for milk, fruits, vegetables, and other commodities. The other commodities group declined rapidly after 1933-34.

I. Programs in effect under Federal marketing agreement legislation, 1933-34 to 1953-54¹

Fiscal year	Milk			Fruits and vegetables					Other commodities ²
	Fluid milk	Milk products	Total	Fresh and canned fruits	Dried fruits, hops, and tree nuts	Potatoes	Other vegetables	Total	
1933-34	30	2	32	8	1			9	11
1934-35	51	2	53	12	4	1	4	21	5
1935-36	43	2	45	7	3	1	3	14	2
1936-37	29	2	31	3	2		3	8	2
1937-38	25	2	27	4	2	3	6	15	2
1938-39	27	2	29	5	3		7	15	2
1939-40	31	2	33	7	2		6	15	2
1940-41	28	2	30	9	2		5	16	1
1941-42	29	1	30	11	2	2	4	19	1
1942-43	27	1	28	12	2	4	4	22	1
1943-44	25	1	26	12	2	4	4	22	1
1944-45	25	1	26	12	2	4	4	22	1
1945-46	29	1	30	12	1	4	2	19	1
1946-47	30	1	31	12	1	4	1	18	1
1947-48	32		32	12	1	4	1	18	1
1948-49	30		30	12	1	7	1	21	1
1949-50	37		37	12	6	8	1	27	1
1950-51	41		41	12	7	10	1	30	1
1951-52	46		46	12	7	8	1	28	2
1952-53	49		49	10	7	7	1	25	2
1953-54 ³	49		49	12	6	7	1	26	2

¹ Before 1935-36 these programs were marketing agreements, licenses, or both; programs issued after Aug 24, 1935, were marketing agreements, orders, or both. Some licenses continued after that date but subsequently were terminated or reissued as orders.

² North Pacific wheat, tobacco, peanuts, rice, turpentine and rosin, alcoholic beverage imports, package bees and queens, and anti-hog-cholera serum. Since 1935 programs for the last item were under the Anti-Hog-Cholera Serum and Virus Act of 1935.

³ To Apr. 1, 1954.

Source: Donald M. Rubel and Budd A. Holt, Marketing Agreements, in Marketing, 1954 Yearbook of Agriculture (U. S. Department of Agriculture).

A more detailed picture of the use which has been made of Federal marketing programs for the other group or miscellaneous products is shown in chart II. Such products include varieties or types of wheat, rice, peanuts, tobacco, naval-store products, and honeybees. But operating experience in the 1930's indicated the inapplicability of marketing programs for most of those products, and in the later years marketing agreement and order programs were oriented mostly toward fruits and vegetables (in addition to fluid milk).

II. Miscellaneous commodities: Federal marketing agreement programs

Commodity and area	Number		Effective date		Termination date ²	Composition of administrative committee ³				Other commodities included?
	Agreement	License or order ¹	Agreement	License or order		G	P	H	N	
Wheat, North Pacific.....	14		Oct. 11, 1933		Apr. 1, 1936	4	2	2	1	Yes. ⁴
Rice, California.....	10	96L	Sept. 26, 1933	Dec. 12, 1934	Sept. 14, 1935		7		1	
Rice, milling, southern.....	17	11L	Oct. 16, 1933	Oct. 17, 1933	Mar. 6, 1934		7			
Do.....	39	11L	Mar. 6, 1934	do	Apr. 1, 1935		7			
Peanut millers.....	35	29L	Jan. 27, 1934	Jan. 27, 1934	Oct. 1, 1934	5	5			
Tobacco:										
Flue-cured.....	15		Sept. 25, 1933		Mar. 31, 1934					Yes. ⁷
Burley.....	34		Dec. 11, 1933		Apr. 15, 1934					
Fire-cured and dark air-cured.....	37		Dec. 1, 1933		July 16, 1934					
Dark air-cured.....	38		do		do					
Fire-cured and dark air-cured.....	41		Mar. 26, 1934		do					
Cigar-leaf.....	46		Dec. 1, 1933		June 30, 1934					
Shade-grown, Connecticut Valley.....	28	28L	Dec. 11, 1933	Jan. 17, 1934	Aug. 15, 1941			(9)		
Cigar-leaf, type 62 shade-grown, Florida-Georgia.....	83			June 3, 1952						
Alcoholic beverages importing.....	25	19L	Dec. 1, 1933	Dec. 10, 1933	Oct. 22, 1940					
Distilled spirits.....	27	21L	Dec. 10, 1933	Dec. 13, 1933	Apr. 18, 1934					
Gum-turpentine, and gum-rosin processors.....	36	37L	Feb. 21, 1934	Mar. 13, 1934	Nov. 3, 1937		9			Yes. ⁸
Wood-turpentine and wood-rosin processors.....		55L		May 13, 1934	Dec. 31, 1936		7			
Gum, gum-turpentine, and gum-rosin agents.....		77L		July 14, 1934	do			5		
Gum, gum-turpentine, and gum-rosin distributors.....		78L		do	do			5		
Packaged bees and queens.....	43	64L	May 6, 1934	May 6, 1934	Sept. 6, 1938			5		
Do.....	79	29	Sept. 6, 1938	Sept. 6, 1938	Aug. 29, 1939			6		

¹ Suffix L denotes a license, others are orders. No orders issued to accompany MA-14, 15, 34, 37, 38, 41, and 46. No agreement issued to accompany licenses 55, 77, and 78, and order 83.

² Each license or order was terminated on the same date as the marketing agreement it accompanied except license 11, which was continued for the duration of marketing agreements 17 and 39.

³ Abbreviations: G—Grower, P—Processor, H—Handler, N—Neutral.

⁴ Crop board of 7 grower representatives plus chairman of Marketing Board.

⁵ Administered by Secretary of Agriculture.

⁶ Executive committee of Connecticut Valley Shade Growers Association plus proportional representation of contracting handlers not members of the association.

⁷ Acreage committee of 5 members—2 from control committee, 2 selected by growers who are not parties to the marketing agreement, 1 chosen by 1st 4.

⁸ Administered by Federal Alcohol Control Administration.

⁹ Advisory Council of 6 members—2 selected by processors, 2 by dealers, and 2 by Secretary.

Source: Summarized from copies of marketing agreements, licenses and orders, and termination orders issued by U. S. Department of Agriculture; and annual reports of the Department.

Jerry Foytik, Marketing Agreements: Fruits and Vegetables, ch. 9 in Murray R. Benedict and Oscar C. Stine, The Agricultural Commodity Programs (New York, 1956).

A summary account of the Federal marketing programs issued for fruits and vegetables is shown in chart III. When the close of 1955 is compared with the close of 1934, it is found that the total number of fruit and vegetable programs in effect is nearly the same—20 in 1934 and 21 in 1955; during the 2 decades, there was an increase of 2 for fresh fruits, a decrease of 2 for fresh vegetables, and an increase of 1 for nonperishables. The number of programs terminated has varied by groups of years, and the number issued (except by renewal) has also varied over time. Variation has also occurred in the length of life of the Federal fruit and vegetable programs; 12 were operated 1 season or less, 12 for 2 to 4 seasons, 7 for 5 to 8 seasons, 4 for 9 to 14 seasons, and 5 programs had been operated for 15 seasons or longer. Some 30 percent of the programs were operated for 1 season or less, and 60 percent of the programs were operated for 4 seasons or less; while about 22 percent of the fruit and vegetable programs were operated for 9 or more seasons. If the experience of the 2 most recent years is added, the long-lived programs are reflected as slightly more pronounced, but the general picture remains the same.

III. *Fruits and vegetables: Federal marketing agreement programs¹ in effect and operated, by groups, August 1933–December 1955*

MARKETING PROGRAMS ISSUED (EXCEPT BY RENEWAL) FOR YEARS SHOWN

Period or date	Fresh fruits	Fresh vegetables	Non-perishables	Total
1933 to 1934.....	9	4	7	20
1935 to 1938.....	3	4	2	9
1939 to 1942.....	3	2	0	5
1943 to 1946.....	0	0	0	0
1947 to 1950.....	0	0	2	2
1951 to 1955.....	2	1	1	4

MARKETING PROGRAMS TERMINATED (EXCEPT BY RENEWAL) FOR YEARS SHOWN

1933 to 1934.....	0	0	0	0
1935 to 1938.....	3	3	3	9
1939 to 1942.....	2	3	0	5
1943 to 1946.....	0	3	0	3
1947 to 1950.....	0	0	0	0
1951 to 1955.....	1	0	1	2

MARKETING PROGRAMS IN EFFECT ON DATE SHOWN

Dec. 31, 1934.....	9	4	7	20
Dec. 31, 1938.....	6	5	3	14
Dec. 31, 1942.....	10	4	2	16
Dec. 31, 1947.....	10	1	7	18
Dec. 31, 1950.....	10	1	7	18
Dec. 31, 1955.....	11	2	8	21

NUMBER OF SEASONS OPERATED

1 season or less.....	5	6	1	12
2 to 4 seasons.....	4	4	4	12
5 to 8 seasons.....	1	0	6	7
9 to 14 seasons.....	4	0	0	4
15 seasons or longer.....	3	1	1	5

¹ A series of agreements and licenses or orders is considered to be a single program if a particular commodity or group of commodities is covered for substantially the same production area. All lapse periods are disregarded.

Sources: Summarized from copies of marketing agreements, licenses and orders, and termination orders issued by U. S. Department of Agriculture; reports of the Department; and supplemental information furnished by Fruit and Vegetable Division, U. S. Agricultural Marketing Service.

Adapted from Jerry Foytik, *Marketing Agreements: Fruits and Vegetables*, ch. 9 in Murray R. Benedict and Oscar C. Stine, *The Agricultural Commodity Programs* (New York, 1956).

In charts IV, V, and VI, there are detailed characteristics of the individual programs for nonperishable horticultural products, fresh fruits, and fresh vegetables for the period 1933-55. For a summary account of the Federal fruit and vegetable marketing programs in effect currently (as of September 26, 1957), reference is made to chart VII. At the present time, 5 Federal programs are in effect for citrus, 14 for other fruits, 9 for potatoes, 4 for vegetables, and 4 for tree nuts; thus, in total, some 36 Federal fruit and vegetable marketing agreement and order programs are currently in effect. This is a larger number than in any of the earlier years. The length of life of the currently effective programs and the frequency of their amendment are also indicated in chart VII.

IV. Nonperishable horticultural products—Federal marketing agreement programs, 1933-55

97228-57-52

Commodity and area	Number		Effective date ²	Termination date ²	Seasons operated (beginning in year shown) ³	Regulations permitted ⁴
	Agreement	Order ¹				
Peaches, California canning cling.....	2	2L.....	Aug. 17, 1933	July 12, 1934	1933.....	SC, PP, Misc.
Do.....	47	75L.....	July 12, 1934	Oct. 18, 1935	1934.....	SC, PP.
Olives, California canning ripe.....	26	20L.....	Dec. 13, 1933	Nov. 19, 1935	1933, 1934.....	SC, PP.
Asparagus, California canning.....	59	36L.....	Mar. 6, 1934	Feb. 20, 1936	1934, 1935.....	SC, Misc., QC.
Raisins, California.....	44	59L.....	May 31, 1934	Sept. 14, 1935	1934.....	SC, PP.
Do.....	109	89.....	Aug. 18, 1949	-----	1949, 1951-55.....	SC, QC. ⁵
Dates, California.....	45	61L.....	June 11, 1934	Oct. 9, 1935	1934.....	QC, PP, PS, Misc.
Do.....	127	103.....	July 15, 1955	-----	1955.....	SC, QC.
Prunes, California dried.....	53	87L.....	Aug. 17, 1934	Aug. 21, 1939	1934.....	SC.
Do.....	110	93.....	Aug. 25, 1949	-----	1949-55.....	SC, QC.
Figs, California.....	123	64.....	Mar. 22, 1955	-----	1955.....	SC, QC.
Walnuts, Pacific coast.....	12	8L.....	Oct. 11, 1933	Oct. 15, 1935	1933, 1934.....	SC.
Do.....	62	1.....	Oct. 15, 1935	July 31, 1948	1935-47.....	SC, PS.
Do.....	105	84.....	Aug. 1, 1948 ⁶	-----	1948-55.....	SC, PS, QC.
Pecans, Southeast.....	57	-----	Mar. 13, 1935	Sept. 30, 1935	-----	QC, PP.
Do.....	111	94.....	Sept. 20, 1949	-----	1949-54.....	QC.
Filberts, Northwest.....	115	97.....	Oct. 1, 1949	-----	1949-55.....	SC, QC, PS.
Almonds, California.....	119	9.....	Aug. 4, 1950	-----	1950-55.....	SC, QC.
Hops, Pacific coast.....	78	28.....	Aug. 15, 1938	July 31, 1940	1938, 1939.....	SC.
Do.....	92	49.....	Aug. 5, 1940	Sept. 1, 1942	1940, 1941.....	SC.
Do.....	100	63.....	Sept. 1, 1942	Sept. 1, 1945	-----	SC.
Do.....	107	86.....	July 2, 1949	July 1, 1953	1949-52.....	SC, QC.

¹ Suffix "L" denotes a license, others are orders. Order 9 is a reassignment of an order previously terminated. No license issued to accompany MA 57.

² Same dates for license or order and accompanying agreement except MA 47 effective July 6, 1934 and terminated June 30, 1935, MA 59 effective Apr. 3, 1935, MA 44 effective May 29, 1934, MA 45 effective June 8, 1934, MA 12 effective Oct. 9, 1933, and MA 2 terminated July 31, 1934.

³ In addition, programs were maintained for data collection in some years: MA 109 and MA 119 in 1950 and MA 100 in 1942-44. Includes period Oct. 2, 1943 to Mar. 31, 1947, when MA 62 was superseded by WFO 82.

⁴ Abbreviations:

- SC—surplus (and/or volume) control
- PP—price posting or fixing
- PS—pack standards or specifications
- QC—quality control, including grade and size limitations

Misc.—Miscellaneous provisions include: Control of unfair trade practices in MA 2, maximum rate on marketing service charges in MA 45, and synchronization of activities under MA 59 with those of MA 40 and 58.

⁵ QC began in 1955; previously QC only on deliveries of surplus tonnage.

⁶ Amended, effective July 10, 1954, to include shelled walnuts.

Sources: Summarized from copies of marketing agreements, licenses and orders and termination orders issued by the U. S. Department of Agriculture; annual reports of the department supplemented by information furnished by the Fruit and Vegetable Division, U. S. Agricultural Marketing Service.

Jerry Foytik, Marketing Agreements: Fruits and Vegetables, ch. 9 in Murray R. Benedict and Oscar C. Sime, The Agricultural Commodity Programs (New York, 1950).

V. Fresh fruits: Federal marketing agreement programs, 1933-55

Commodity and area	Number		Effective date ²	Termination date ²	Seasons operated (beginning in year shown) ³	Regulations permitted ⁴
	Agreement	Order ¹				
Citrus, Florida.....	29	22L.....	Dec. 18, 1933	Aug. 13, 1934	1933.....	GS, RF, MC, TP, Misc.
Do.....	55	95L.....	Dec. 18, 1934	July 15, 1935	1934.....	GS, RF, MC, TP, Misc.
Do.....	64	7.....	May 8, 1936	July 31, 1937	1936.....	GS, RF.
Do.....	84	33.....	Feb. 22, 1939	-----	1939-55.....	GS, H.
Limes, Florida.....	126	101.....	June 15, 1955	-----	1955.....	GS, Misc.
Citrus, California-Arizona.....	30	23L.....	Dec. 18, 1933	May 17, 1947	1933-35.....	RF, MC, Misc.
Do.....	30	2.....	Jan. 13, 1936	May 17, 1947	1936-41.....	RF.
Lemons, California-Arizona.....	94	53.....	Apr. 10, 1941	-----	1941-55.....	RF.
Grapefruit, California-Arizona.....	96	55.....	May 26, 1941	-----	1941-55.....	GS.
Oranges, California-Arizona.....	-----	66.....	Oct. 26, 1942	Mar. 8, 1952	1941-52.....	S, RF.
Navel oranges, Arizona-California.....	117	14.....	Sept. 22, 1953	-----	1953-55.....	S, RF.
Valencia oranges, Arizona-California.....	-----	22.....	Mar. 31, 1954	-----	1954-55.....	S, RF.
Citrus, Texas.....	33	26L.....	Dec. 26, 1933	Nov. 14, 1935	1934.....	GS, MC, TP, Misc.
Do.....	71	15.....	July 13, 1937	Jan. 1, 1940	1937-1939.....	GS, RF.
Deciduous tree fruits, California.....	6	7L.....	Oct. 9, 1933	Aug. 1, 1935	1934.....	RF.
Do.....	61	7L.....	July 20, 1935	Nov. 8, 1938	1935.....	GS, RF, MC.
Do.....	66	9.....	May 25, 1936	Apr. 1, 1938	1936, 1937.....	GS, RF, H.
Do.....	85	36.....	May 29, 1939	-----	1939-42; 1945-55.....	GS, RF, H, TP.
Grapes, California Tokay.....	11	9L.....	Oct. 14, 1933	Sept. 14, 1935	1933.....	RF, MC.
Do.....	93	51.....	Aug. 20, 1940	-----	1940-42; 1947-55.....	GS, RF.
Apples, California Gravenstein.....	51	82L.....	Aug. 20, 1934	Dec. 2, 1936	1935.....	RF, MC.
Pears, California Hardy.....	87	38.....	June 20, 1939	-----	1939-1941.....	GS, Misc.
Deciduous fruits, Northwest.....	16	27L.....	Oct. 28, 1933	Oct. 18, 1935	1934.....	RF, TP, PP, Misc.
Prunes, Northwest fresh.....	77	26.....	July 23, 1938	June 30, 1952	1939-1942.....	G, RF, PP.
Pears, Pacific coast winter.....	81	31.....	Oct. 11, 1938	June 1, 1939	1938.....	GS.
Do.....	89	39.....	Aug. 26, 1939	-----	1939-42; 1948-53; 1955.....	GS.
Strawberries, Florida.....	50	81L.....	Aug. 20, 1934	Dec. 19, 1935	None.....	GS, MC.
Peaches, Colorado.....	54	-----	Nov. 6, 1934	Oct. 3, 1939	None.....	RF, MC, PP.
Do.....	88	40.....	Aug. 15, 1939	-----	1939-41, 1949-55.....	GS.
Grapes, Arkansas.....	76	25.....	July 19, 1938	Feb. 19, 1939	1938.....	G, RF.
Peaches, Utah.....	91	50.....	July 24, 1940	-----	1940, 1941, 1951-55.....	GS.
Peaches, Georgia.....	99	62.....	Apr. 27, 1942	-----	1942, 1945-47, 1950-54.....	GS, Misc.
Avocados, Florida.....	121	69.....	June 11, 1954	-----	1954-55.....	G, Misc.

¹ Suffix "L" denotes a license, others are orders. No order issued to accompany MA-54. No marketing agreement issued to accompany orders 22 and 66.

² Same dates for license or order and accompanying agreement except effective dates for MA-29 (Dec. 14, 1933), 30 (Dec. 14, 1933), 6 (Sept. 2, 1933), 11 (Sept. 30, 1933), 16 (Oct. 14, 1933), 50 (Aug. 5, 1934) and 51 (Aug. 5, 1934). Also license 7 continued for duration of both MA-6 and MA-61 and license 23 terminated on Oct. 15, 1936, after being superseded by order 2 (on Jan. 13, 1936).

³ In addition, programs were maintained for data collection in some years: MA-93 in 1944-46 and MA-54 in 1934-35.

⁴ Abbreviations:

GS—grade and size limitations (G—grade only; S—size only).

RF—rate of flow, i. e., period proration, including regulation of daily shipments.

MC—maximum rate on marketing service charges.

TP—control of unfair trade practices and competition.

H—holidays (packing, loading or shipping).

PP—price posting or fixing.

Misc.—Miscellaneous provisions include: auction control in MA-16, 29 and 55; volume control in MA-87; maturity control in MA-99; coordination of activities by citrus-producing areas in MA-29, 30, 33 and 55; maturity and container regulation in MA-121; and container regulation in MA-126.

Sources: Summarized from copies of marketing agreements, licenses and orders and termination orders issued by the U. S. Department of Agriculture; annual reports of the Department supplemented by information furnished by the Fruit and Vegetable Division, U. S. Agricultural Marketing Service.

Jerry Foytik, Marketing Agreements: Fruits and Vegetables, ch. 9 in Murray R. Benedict and Oscar C. Stine, The Agricultural Commodity Programs (New York, 1956).

VI. Fresh vegetables and melons: Federal marketing agreement programs, 1933-55

Commodity and area	Number		Effective date ²	Termination date ²	Seasons operated (beginning in year shown)	Regulations permitted ³
	Agreement	Order ¹				
Asparagus, California, fresh	40	39L	Mar. 20, 1934	Apr. 6, 1935	1934.....	RF, Misc.
Do.....	58	39L.....	Apr. 3, 1935	Nov. 21, 1936	1935.....	RF, Misc.
Cantaloups, Arizona-California.....	75	24.....	May 17, 1938	July 31, 1938	1938.....	S, Misc.
Cauliflower, Oregon.....	72	16.....	July 19, 1937	Apr. 23, 1939	None.....	RF, GS.
Celery, Florida.....	42	51L.....	May 1, 1934	Dec. 7, 1935	1935.....	RF, MC.
Do.....	73	21.....	Nov. 9, 1937	Oct. 15, 1938	1937.....	RF.
Onions, Utah.....	70	14.....	Apr. 26, 1937	May 18, 1945	1939.....	GS.
Onions, Colorado.....	90	43.....	Dec. 5, 1939	May 23, 1946	1939.....	GS.
Tomatoes, Mississippi.....	86	37.....	June 5, 1939	June 1, 1945	None.....	GS.
Tomatoes, Florida.....	125	45.....	Oct. 8, 1955	.....	1955.....	GS.
Vegetables, Colorado ⁴	56	97L.....	Jan. 15, 1935	Dec. 7, 1935	1935.....	RF, FS, MC.
Do. ⁴	67	10.....	Aug. 9, 1936	.....	1936-42; 1946-55.....	GS, H, RF, FS.
Vegetables, Washington ⁵	49	79L.....	July 21, 1934	Mar. 8, 1940	1934-35.....	GS.
Do. ⁵	63	6.....	May 4, 1936	Mar. 8, 1940	1936.....	RF, H, GS, Misc.
Watermelons, Florida, Georgia, North Carolina, South Carolina.....	52	83L.....	Aug. 6, 1934	Jan. 3, 1939	1935.....	RF, H, GS, MC.
Do.....	65	8.....	May 12, 1936	May 2, 1941	1936, 1937, 1939.....	GS.

¹ Suffix "L" denotes a license, others are orders.

² Same dates for license or order and accompanying agreement except MA-40 effective Mar. 17, 1934, and terminated Apr. 6, 1935, and MA-42 effective May 1, 1934, and terminated Dec. 7, 1935; MA-52 effective Aug. 6, 1934. License 39 continued for duration of both MA-40 and MA-58.

³ Abbreviations:

- GS—grade and size limitation (S—size only)
- RF—rate of flow, i. e., period proration
- MC—maximum rate of marketing service charges
- H—holidays (packing, loading, or shipping)
- FS—Federal-State inspection and U. S. grading required

Misc.—Miscellaneous provisions include: container standardization under MA-63 and MA-75; and coordination of activities with MA-59 (canning asparagus) under MA-40 and 58 (fresh asparagus).

⁴ Applicable to peas and cauliflower.

⁵ Applicable to lettuce, peas and cauliflower; regulations, however, issued only for lettuce.

Sources: Summarized from copies of marketing agreements, licenses and orders and termination orders issued by U. S. Department of Agriculture; annual reports of the Department supplemented by information furnished by the Fruit and Vegetable Division, U. S. Agricultural Marketing Service.

Jerry Foytik, Marketing Agreements: Fruits and Vegetables, ch. 9 in Murray R. Benedict and Oscar C. Stine, The Agricultural Commodity Programs (New York, 1956).

VII. Federal marketing agreements and orders in effect for fruits, vegetables, and nuts, Sept. 26, 1957

Commodity and area ¹	Marketing agreement		Marketing order	
	Number	Effective	Number	Effective
CITRUS FRUITS				
Grapefruit, California and Arizona.....	96	May 26, 1941	55	May 26, 1941
Amended.....		Dec. 15, 1949		Dec. 15, 1949
Lemons, Arizona and California.....	94	Apr. 10, 1941	53	Apr. 10, 1941
Amended.....		Mar. 23, 1948		Mar. 23, 1948
Do.....		Aug. 24, 1949		Aug. 24, 1949
Do.....		June 12, 1951		June 12, 1951
Do.....		Nov. 26, 1953		Nov. 26, 1953
Do.....		Nov. 5, 1954		Nov. 5, 1954
Do.....		Dec. 15, 1955		Dec. 15, 1955
Do.....		June 22, 1956		June 22, 1956
Oranges, grapefruit, and tangerines, Florida.....	84	Feb. 22, 1939	33	Feb. 22, 1939
Amended.....		Sept. 1, 1946		Sept. 1, 1946
Do.....		Dec. 15, 1947		Dec. 15, 1947
Oranges, navel, Arizona and California.....	117	Sept. 22, 1953	14	Sept. 22, 1953
Amendment.....		Aug. 1, 1954		Aug. 1, 1954
Do.....		July 30, 1956		July 30, 1956
Oranges, valencia, Arizona and California.....	131	June 22, 1956	22	Mar. 31, 1954
Amended.....				June 22, 1956
OTHER FRUITS				
Avocados, Florida.....	121	June 11, 1954	69	June 11, 1954
Amended.....		June 15, 1955		June 15, 1955
Do.....		June 21, 1957		June 21, 1957
Cherries, Washington.....	134	June 1, 1957	122	June 1, 1957
Dates, California.....	127	July 15, 1955 ^a	103	July 15, 1955
Dried figs, California.....	123	Mar. 22, 1955	64	Mar. 22, 1955
Amended.....		Oct. 5, 1956		Oct. 5, 1956
Tokay grapes, California.....	93	Aug. 20, 1940	51	Aug. 20, 1940
Amended.....		Aug. 24, 1941		Aug. 24, 1941
Do.....		Mar. 1, 1949		Mar. 1, 1949
Do.....		Aug. 15, 1952		Aug. 15, 1952
Do.....		Aug. 18, 1953		Aug. 18, 1953
Limes, Florida.....	126	June 15, 1955	101	June 15, 1955
Amended.....		Apr. 13, 1957		Apr. 13, 1957
Peaches, Colorado.....	88	Aug. 15, 1939	40	Aug. 15, 1939
Amended.....		Aug. 4, 1950		Aug. 4, 1950
Do.....		July 28, 1956		July 28, 1956
Peaches, Georgia.....	99	Apr. 27, 1942	62	Apr. 27, 1942
Amended.....		June 27, 1950		June 27, 1950
Do.....		May 26, 1953		May 26, 1953
Do.....		May 13, 1954		May 13, 1954
Peaches, Utah.....	91	July 24, 1940	50	July 24, 1940
Bartlett pears, plums and elberta peaches, California.....	85	May 29, 1939	36	May 29, 1939
Amended.....		July 17, 1940		July 17, 1940
Do.....		Feb. 15, 1949		Feb. 15, 1949
Do.....		May 21, 1949		May 21, 1949
Winter pears, Oregon, Washington, and California.....	89	Aug. 26, 1939	39	Aug. 26, 1939
Amended.....		Oct. 9, 1950		Oct. 9, 1950
Dried prunes, California.....	110	Aug. 25, 1949	93	Aug. 25, 1949
Amended.....		Aug. 26, 1951		Aug. 26, 1951
Do.....		Mar. 9, 1954		Mar. 9, 1954
Do.....		(^b)		(^b)
Raisins, California.....	109	Aug. 18, 1949	89	Aug. 18, 1949
Amended.....		Sept. 1, 1955		Sept. 1, 1955
Do.....		Oct. 25, 1956		Oct. 25, 1956
Apricots, Washington.....	132	May 21, 1957	120	May 21, 1957
POTATOES				
Colorado.....	97	Aug. 30, 1941	58	Aug. 30, 1941
Idaho and Oregon.....			57	Sept. 5, 1941
Amended.....	98	Jan. 19, 1950		Jan. 19, 1950
Maine.....	122	Aug. 30, 1954	70	Aug. 30, 1954
Red River Valley, N. Dak., Minn.....	135	Sept. 19, 1957	38	Sept. 19, 1957
Massachusetts, Rhode Island, Connecticut, New Hampshire, and Vermont.....			20	Nov. 12, 1950
Oregon and California.....			59	Jan. 26, 1942
Amended.....	114	Nov. 7, 1949		Nov. 7, 1949
Do.....		Sept. 21, 1955		Sept. 21, 1955
Eastern South Dakota.....	103	May 15, 1948	79	May 15, 1948
Southeastern States.....	104	May 24, 1948	81	May 24, 1948
Washington.....	113	Sept. 28, 1949	92	Sept. 28, 1949

See footnotes at end of table.

VII. Federal marketing agreements and orders in effect for fruits, vegetables, and nuts, Sept. 26, 1957—Continued

Commodity and area ¹	Marketing agreement		Marketing order	
	Number	Effective	Number	Effective
VEGETABLES				
Onions, Idaho and Oregon.....	130	Feb. 4, 1957	117	Feb. 4, 1957
Peas and cauliflower, Colorado.....	67	Aug. 9, 1936	10	Aug. 9, 1936
Amended.....		Apr. 13, 1942		Apr. 13, 1942
Do.....		May 26, 1954		May 26, 1954
Tomatoes, Florida.....	125	Oct. 8, 1955	45	Oct. 8, 1955
Cucumbers, Florida.....	118	Sept. 3, 1957	115	Sept. 3, 1957
TREE NUTS				
Almonds, California.....	119	Aug. 4, 1950	9	Aug. 4, 1950
Amended.....		July 1, 1957		July 1, 1957
Filberts, Oregon and Washington.....	115	Oct. 1, 1949	97	Oct. 1, 1949
Amended.....		Mar. 3, 1954		Mar. 3, 1954
Pecans, Georgia, Alabama, Florida, Mississippi, and South Carolina.....	111	Sept. 20, 1949	94	Sept. 20, 1949
Terminated, effective.....		Oct. 1, 1957		Oct. 1, 1957
Walnuts, California, Oregon, and Washington.....	105	Aug. 1, 1948	84	Aug. 1, 1948
Amended.....		July 10, 1954		July 10, 1954
Do.....		July 28, 1955		July 28, 1955
Grade standards for shelled walnuts.....		(²)		(²)

¹ Areas are given by States only. For specific area covered, see marketing agreement or marketing order.

² Data given is for marketing order only, as no marketing agreement was issued at that time. The marketing order was issued pursuant to the authority contained in the Agricultural Marketing Agreement Act of 1937, as amended, authorizing such orders without an accompanying marketing agreement.

³ Provisions relating to minimum standards of quality, additional grade regulation, volume regulation, inspection requirements, and collection of assessments became effective Sept. 1, 1955.

⁴ Provisions relating to grade regulation and inspection requirements became effective Sept. 1, 1949.

⁵ New amendment.

Source: U. S. Department of Agriculture, Agricultural Marketing Service, Fruit and Vegetable Division.

The types of regulations incorporated in the various Federal marketing programs are indicated in charts IV through VI; the major regulatory provisions may be grouped into two categories, volume or quantity control and quality control. The application of both of such types of regulations have economic implications which will be commented upon in the closing major section of the paper. First, however, consideration will be given to State agricultural marketing programs which, in terms of operations and economic effects, cannot be isolated from the Federal programs.

State marketing programs (except milk).—During the great depression of the 1930's when marketing difficulties loomed large in the views of producers, various types of marketing programs were introduced by State legislation. As early as 1933, the State of California enacted its agricultural prorate law, which was oriented in the direction of producer groups controlling the rate of flow of farm products to market. During the past quarter century, while the California legislation was revised and further developed, some other States enacted special legislation for marketing. The growth in State-sponsored marketing programs has proceeded along with the use of Federal agreement and order marketing programs.

When Federal marketing agreement and order programs are compared with State marketing programs, it is found that certain differences prevail. First, it may be noted that considerable variation exists among the enabling legislation of the various States. Further, most of the States having marketing program legislation do not provide for volume control or supply regulation; rather, more often they tend toward quality control and the inclusion of demand-affecting provisions. Some States have enabling legislation permitting marketing programs for all or a wide list of farm products while other States limit their marketing program legislation to specific products.

To indicate the general nature of and the diversity among State marketing programs, reference is made to chart VIII, which summarizes some of the findings of a survey recently completed by the author.

VIII. States with special legislation for agricultural marketing programs and their authorized permissive major provisions

	Volume control	Quality control	Advertising and promotion	Research	State program only for a specific product	State price fixing of fluid milk	No State legislation for marketing programs
Atlantic:							
Maine ¹	X	X	X		X	X	
New Hampshire.....						X	
Vermont.....						X	
Massachusetts.....						X	
Rhode Island.....						X	
Connecticut.....						X	
New York.....	X	X	X	X		X	
New Jersey.....						X	
Pennsylvania.....						X	
East North Central:							
Ohio.....							X
Indiana.....							X
Illinois ²							X
Michigan.....							X
Wisconsin ³		X	X	X			
West North Central:							
Minnesota ⁴		X	X	X	X		
Iowa.....							X
Missouri.....							X
North Dakota.....							X
South Dakota.....							X
Nebraska.....							X
Kansas.....							X
South Atlantic:							
Delaware.....							X
Maryland.....							X
Virginia.....						X	
West Virginia.....							X
North Carolina ⁵			X			X	
South Carolina.....							X
Georgia.....						X	
Florida ⁶		X	X	X		X	
South central:							
Kentucky ⁷		X	X	X	X		
Tennessee.....							X
Alabama.....						X	
Mississippi.....							X
Arkansas.....							X
Louisiana ⁸		X			X		
Oklahoma.....							X
Texas.....							X

See footnotes at end of table.

VIII. States with special legislation for agricultural marketing programs and their authorized permissive major provisions—Continued

	Volume	Quality control	Advertising and promotion	Research	State program only for a specific product	State price fixing of fluid milk	No State legislation for marketing programs
Western:							
Montana.....			X		X	X	
Idaho ⁹			X				X
Wyoming.....			X	X			X
Colorado ¹⁰	X	X	X	X			
New Mexico.....			X		X		
Arizona ¹¹	X	X	X				
Utah.....	X	X	X				
Nevada ¹²						X	
Washington ¹³			X	X			
Oregon ¹⁴			X	X			
California.....	X	X	X	X		X	

¹ Maine: The State legislation applies only to potatoes under the Maine Potato Marketing Act; the program is operated by the Maine Potato Marketing Committee.

² Illinois: An unsuccessful attempt was made in 1935 to enact State enabling legislation.

³ Wisconsin: The State legislation also provides for uniform branding and labeling.

⁴ Minnesota: The State legislation applies only to potatoes under the Minnesota Potato Development, Marketing, and Advertising Act of 1951; the program is operated by the Minnesota Development Committee (the legislation also provides for labeling).

⁵ North Carolina: The State legislation excludes tobacco (which has separate enactment). The State legislation provides for promotion programs to stimulate increased production, use, and sale.

⁶ Florida: The State legislation applies only to citrus with the programs operated by the Florida Citrus Commission established in 1935 by an act of the Florida Legislature. In addition to promotion, research, inspection, and grade standards, the Commission supervises the use of containers, embargo of freeze damage citrus fruit, coloring practices, processing of unwholesome or decomposed fruit, and handles applications for licenses by dealers.

⁷ Kentucky: The State legislation applies only to apples (grade, size, and marking) and to dairy products (promotion and research).

⁸ Louisiana: The State legislation applies only to eggs (grading).

⁹ Idaho: Under State legislation are established the Idaho Advertising Commission (potatoes and onions) and the Idaho Prune Commission which operate advertising, research, and educational programs.

¹⁰ Colorado: The State legislation excludes sugar beets, livestock, hay, and feed grains; included also are, provisions for labeling, marking, branding, and packaging.

¹¹ Arizona: The State legislation applies only to citrus and viticulture products; although still enacted, the legislation has not been used in recent years when Federal marketing programs have been used.

¹² Nevada: The State legislation establishing the Nevada Milk Board provides that "each stabilization and marketing plan may contain provisions fixing the price at which fluid milk and fluid cream may be sold by producers, distributors, and retailers. * * *"

¹³ Washington: The State legislation provides for commodity commissions under the Washington Agricultural Enabling Act of 1955; the legislation also provides for labeling requirements.

¹⁴ Oregon: The State legislation provides for commodity commissions under the Oregon Agricultural Commodity Commission Act originally enacted in 1953.

In total, 15 States have special enabling legislation for marketing programs. The legislation of some six States (New York, North Carolina, Wisconsin, Colorado, Utah, and California) is applicable to all farm products or a comprehensive list of them; some of the States limit the application of their legislation to a specific product (potatoes in Maine and Minnesota and citrus in Florida), while other States exclude certain products (Colorado legislation excludes sugar-beets, livestock, hay, and feed grains, and North Carolina legislation excludes tobacco). In 12 States the marketing program enabling legislation applies specifically to and is limited to milk; and in 21 States there is no marketing program legislation for either milk or other products.

Another overall view of chart VIII is indicated by the following tabulation which indicates the frequency of major provisions permissive under enabling legislation of the States:

Major provisions in marketing program:	Number of States having permissive provision
Volume control.....	6
Quality control.....	11
Advertising and sales promotion.....	14
Research.....	9

The permissive exercise of volume control under State legislation for a comprehensive list of farm products is found in only four States: New York, Colorado, Utah, and California. But other types of provisions are considerably more prevalent among the various State programs; quality control and sales promotion are found relatively frequently in the State programs. In fact, all of the 15 States having enabling legislation for 1 or more farm products (excepting milk) permit the use of quality control and/or promotion.

Of the six States having marketing program legislation for a comprehensive list of farm products—New York, North Carolina, Wisconsin, Colorado, Utah, and California (New York and Wisconsin enacted legislation only recently)—the California situation may be considered in more detail because of that State's long experience with programs of the type considered here.

In mid-1957, 29 different marketing programs were in active operation under the authority of California legislation. The total farm value of all commodities having California marketing programs in 1956 approximated \$475 million—about 17 percent of the State's total cash receipts from farm marketings or 25 percent of the cash receipts from marketing of crops. About 36,000 producers—one-third of California's farmers and ranchers in 1956—were directly affected by marketing programs and many more were indirectly affected. About 3,250 handlers were also directly affected.

Agricultural marketing orders were first introduced in California during the 1930's. At that time they were looked on as temporary devices to boost prices and incomes received by growers and handlers of certain depression-hit commodities. But during the past 25 years, agricultural marketing orders have gradually evolved and changed. In recent years, particularly since 1950, they have been used by more and more industries faced with marketing problems. More than 70 different marketing programs have been in effect under California's enabling legislation; a number of the programs were effective for only a single season, and others have operated for more than 20 years. The average length of life of programs is close to 7 years, although that figure cannot be actuarially interpreted as an index of life expectancy. Marketing orders nowadays are no longer viewed by producers and handlers as emergency measures but rather as aids in dealing with problems through good times as well as bad.

Procedures to be followed before a California marketing order program can be adopted usually include the following: discussions between industry representatives and officials of the State department of agriculture; drafting of a proposed order; holding of an announced public hearing at which proponents and opponents can present their views; review of the accumulated evidence and testimony by the staff of the department; mailing of the revised proposed order to all eligible to vote for its approval or disapproval; requirement of approval by a majority of those voting; and final approval by the director of the department who specifies the date of issuance of the order and when it is to become effective.

California legislation declares that a marketing order regulating producers cannot become effective unless written assent is given by at least 65 percent of the producers representing 51 percent of the volume or by 51 percent of the producers representing 65 percent of the volume. But programs regulating handlers require at least 65

percent of the handlers by number or by volume (an exception applies to processors of canned and dried fruit for whom the requirement is 65 percent by number and volume of processors).

In California the director of agriculture determines, in view of the available evidence, whether there is need for an order and whether the proposed order meets the need. He is required to judge a proposed order in the light of legislatively defined standards. To assist him in carrying out the terms of a marketing order, the director appoints an advisory board from a list of industry nominations. Board members generally are drawn from the segment of the industry to which the order pertains.

The advisory board may employ a manager and staff, and most boards do so. In all matters of major consequence, however, advisory boards cannot make decisions and act on them. They make recommendations to the director who either approves or disapproves in light of the evidence and legislatively specified standards.

The main purpose of California marketing orders is to improve the returns to producers. The director of agriculture is also required by law to consider consumer interests, but these are secondary to the economic welfare of producers. The legislation expresses its objectives in terms of various standards, an important one being to keep in business enough producers to provide an adequate supply of the commodity to meet the needs of consumers.

The provisions contained in recently effective California State marketing orders can be grouped into seven general classes. These are listed below in the order of their occurrence in the 28 marketing programs active in 1956:

Provision :	<i>Number of programs with provision</i>
Sales promotion and advertising.....	23
Production, processing, and/or marketing research.....	22
Grade and/or size regulation.....	18
Mandatory inspection and/or certification.....	14
Quantity regulation with or without stabilization pool.....	10
Pack and/or container regulation.....	7
Unfair trade practices.....	4

The major provisions of the individual commodity programs are summarized in chart IX. Contrary to some popular belief, California marketing orders do not necessarily or merely provide for quantity restrictions.

IX. Provisions of California agricultural marketing program operating in 1955

Commodity	Grade and/or size regulation	Pack and container regulation	Mandatory inspection and/or certification	Advertising and sales promotion	Production, processing, and/or marketing research and surveys	Quantity regulation	Stabilization pool and/or substandard pool	Unfair trade practices	State fund
Early apples.....	X	X	X	X	X	X			
Fresh asparagus.....	X		X	X	X	X			
Processing asparagus.....				X	X	X			
Bush berries.....				X	X				
Cantaloups.....	X	X	X						
Dried figs and dried fig products.....	X		X	X	X		X	X	
Grapefruit.....	X	X	X	X					
Extracted honey.....				X	X				
Lemon products.....	X		X	X	X	X	X	X	
Dry-pack lettuce.....	X		X	X	X	X			
Standard lima beans.....	X		X	X	X	X			
Cling peaches.....	X		X	X	X	X		X	X
Fresh peaches.....	X	X	X	X	X				
Fresh Bartlett pears.....	X	X							
Bartlett pears, canning.....	X		X	X	X				
Bartlett pears (promotion).....				X	X				
Canning fall and winter pears.....	X		X						
Fresh fall and winter pears.....	X	X		X		X			
Hardy pears (promotion).....				X	X				
Fresh plums.....	X	X	X	X	X				
Delta white potatoes.....	X		X	X	X	X			
Long white potatoes.....	X		X	X	X				
Poultry and turkey improvement.....	X								
Dried prunes.....				X	X				
Raisins.....				X	X				
Strawberries.....				X	X				
Turkey (promotion).....				X	X				
Wine.....				X	X				

Sources: Hoos, Sidney, *Economic Objectives and Operations of California Agricultural Marketing Orders* (Berkeley: University of California, division of agricultural sciences, agricultural experiment station, May 1957), 39 p. (Giannini Foundation Mimeographed Rept. No. 196.) Processed. Compiled from data in California Department of Agriculture, *California Agricultural Marketing Programs* (Sacramento: State Printing Office, 1956), 31 p. (Its bulletin, vol. 45, No. 1, January-March 1956, supplemented by current releases.)

Only 10 of the orders in 1956 had a volume-control provision. These were early apples, fresh asparagus, processing asparagus, lemon products, dry-pack lettuce, standard lima beans, cling peaches for canning and freezing, fresh fall pears, winter pears, and delta white potatoes. In each of these 10 orders quantity restriction is permissible only with the approval of the director rather than being mandatory or automatic.

An attempt is made to tailor each order to meet the needs of the commodity concerned, and there is complete flexibility as to which provisions are included. This is partly due to the broad general criteria in the California legislation. As long as these are met and the California director of agriculture makes a finding to that effect, a proposed order or an amendment to an existing order may be approved by him.

The costs of the marketing programs carried on under California Legislature are borne directly by the industries themselves. The money is raised through assessments on the participating producers and handlers or processors. In 1956 assessments for all programs totaled \$8,463,000. Expenditures that year, by major categories for the programs, were as shown in the following tabulation:

	Amount	Percent of total
Administration, inspection, and enforcement.....	\$2,041,100	27
Research.....	629,100	8
Market promotion.....	5,028,900	65
Total.....	7,699,100	100

Some major characteristics of the individual commodity programs are summarized in chart X.

X. Characteristics of California agricultural marketing programs operating in 1955

Marketing programs	Date when first effective	Term of current program or expiration date	Number of producers in 1955	Number of handlers or processors in 1955	Administrative costs in 1955	Inspection costs in 1955	Promotional and advertising expenditures in 1955	Research expenditures in 1955
Early apples.....	June 28, 1948	Continuous..	1,362	202	\$19,000	\$8,000	\$300	0
Fresh asparagus.....	Mar. 12, 1954	do.....	286	0	10,000	0	3,500	0
Processing asparagus.....	do.....	do.....	210	26	23,000	0	17,000	0
Standard lima beans.....	Mar. 10, 1951	do.....	772	18	28,000	0	135,000	\$7,000
Bush berries for processing.....	Sept. 15, 1954	do.....	414	48	11,000	0	15,000	500
Cantaloups.....	Aug. 1, 1955	do.....	168	56	12,000	5,000	0	0
Dried figs.....	Aug. 4, 1955	do.....	255	9	40,000	0	66,000	0
Extracted honey.....	Mar. 1, 1952	do.....	482	57	16,000	0	17,000	3,500
Desert grapefruit.....	May 12, 1941	do.....	160	19	15,000	12,000	0	0
Lemon products.....	Mar. 10, 1951	Sept. 30, 1958.	0	37	85,000	0	145,000	7,000
Dry-pack lettuce.....	June 11, 1942	Continuous..	98	104	20,000	19,000	0	0
Fresh peaches.....	Mar. 25, 1950	do.....	2,097	478	60,000	18,000	18,000	1,000
Canning and freezing cling peaches.....	Aug. 1, 1936	June 30, 1957.	2,573	55	130,000	800,000	1,000,000	77,000
Canning Bartlett pears.....	May 25, 1938	Continuous..	2,448	35	45,000	130,000	110,000	45,000
Fresh Bartlett pears.....	July 8, 1937	do.....	1,009	220	15,000	11,000	0	1,000
Sales promotion of fresh Bartlett pears.....	June 27, 1950	do.....	1,497	219	20,000	600	140,000	0
Canning fall and winter pears.....	Aug. 6, 1941	July 14, 1957.	289	21	13,000	15,000	0	0
Fresh fall and winter pears.....	Aug. 26, 1941	Continuous..	490	118	6,000	600	25,000	0
Hardy pears for canning (promotion).....	June 11, 1955	do.....	318	15	800	0	0	0
Fresh plums.....	Mar. 26, 1950	do.....	2,271	431	22,000	6,000	5,000	0
Delta white potatoes.....	Aug. 12, 1955	do.....	27	21	6,000	-----	500	0
Long white potatoes.....	Nov. 16, 1953	do.....	695	129	80,000	850,000	100,000	0
Poultry and turkey improvement.....	June 5, 1945	do.....	491	0	55,000	105,000	0	0
Dried prunes.....	Sept. 3, 1937	do.....	6,068	18	32,000	0	440,000	0
Raisins.....	Oct. 1, 1937	do.....	6,976	27	43,000	0	300,000	4,000
Strawberries.....	July 7, 1955	do.....	1,980	50	16,000	0	28,000	4,000
Turkeys (promotion).....	July 9, 1952	do.....	1,359	183	30,000	0	70,000	0
Wine.....	Aug. 24, 1938	June 30, 1957.	0	295	80,000	0	2,000,000	170,000

Sources: Hoos, Sidney, Economic Objectives and Operations of California Agricultural Marketing Orders (Berkeley: University of California, Division of Agricultural Sciences, Agricultural Experiment Station, May 1957), 39 pp. (Giannini Foundation Mimeographed Rept. No. 106.) Processed. Compiled from data in California Department of Agriculture, California Agricultural Marketing Programs (Sacramento: State Printing Office, 1956), 31 pp. (Its bulletin, vol. 45, No. 1, January-March 1956, supplemented by current releases.)

The major activities—aside from administration—which take place in the operation of California marketing orders are volume regulation, quality control, promotion, and research.

Provisions for volume control include regulations affecting either within season or seasonal total flow of the farm product to market. Such control once made effective is industrywide and applies to all of the participants in the industry (producers alone, or producers and handlers, depending on the particular order). The purpose of volume control is to affect farm prices and thereby improve grower returns.

California experience indicates that volume control as a provision of an order can at times be an effective means of affecting farm price and income. But the temporary or short-run effects can, in time, be outweighed by the long-run effects. Unless volume control is exercised with care and caution, the marketing problem to be eased can instead be aggravated; production in established areas can be encouraged and production in new areas introduced.

Provisions comprising inspection and minimum quality control are included in about two-thirds of the California State marketing programs now in operation. In general, inspection and quality control means the examination of supplies available for marketing—on the basis of grade, size, maturity, quality, and so on—to determine which supplies are to be marketed according to the standards specified.

The inspection and quality control provisions of an order supplement rather than replace the general State legislation on standards. Quality control has a valid role in improved marketing. Yet, when inspection standards and quality control are established and used as a mask for volume control, some problems may be eased—for a time at least—but other and even more difficult problems may be introduced.

Provisions having to do with “promotion” are included in most of the California marketing programs now in operation. The term covers advertising, trade and consumer information, the employment of fieldmen for retail point-of-sales displays, and similar activities. Promotion activities in recent years have accounted for as much as about two-thirds of total marketing program expenditures. Annual expenditures have varied widely depending on the commodity—from \$300 for early apples to \$1 million for cling peaches and \$2 million for wine.

Many growers and handlers believe that their marketing problems can be solved by advertising and trade promotion. Consequently, there has been a rapid increase in such provisions in marketing orders. California experience suggests that advertising and trade promotion are helpful for only certain types of problems in an industry. Furthermore, it is extremely difficult, if not impossible, to measure the real effectiveness of advertising and promotion. Where the basic problem in an industry is chronic overproduction or in the area of costs and price competition, trade promotion by itself does not offer a complete solution. Even where advertising and promotion activities are appropriate, there is need for careful consideration of how much to spend and how and where to spend it.

Provisions involving “research” are included in most of California’s marketing orders—about as many as those for promotion. Research activities have accounted for only a minor percentage of the total funds expended annually. This is largely because a substantial amount of applicable research is performed at the State university, the cost of

which is not reflected in the statistics cited. Most of the services for which there are direct charges are conducted by private firms rather than by staff members of the commodity marketing programs.

Two general types of research activities are carried on within California State marketing programs. For convenience these can be classified as technological and economic. Technological research projects include, for example, investigations to improve crop varieties, mechanical equipment, and processing methods to develop new utilizations and to bring about more efficient disease and pest control. Benefits may come from a reduction in the cost of producing established products or increased returns resulting from new products.

Economic research projects range from the organization and development of data-reporting systems to statistical analyses of the operation and effects of marketing programs. Some advisory boards have arranged for the gathering of information on retail inventories, purchases, sales, and prices—a type of data not generally available from Federal or State agencies. Preharvest sampling forecasts of the prospective supplies for marketing have been financed under the orders for cling peaches, Bartlett pears, and lemon products.

In addition to the State-administered marketing orders in California, there are some 14 Federal programs in operation. They apply to certain fruits, and tree nuts, and to potatoes. The Federal orders provide for volume regulation and/or establishment of minimum quality standards but not for advertising, sales promotion, or research. The economic considerations and effects of the Federal marketing orders are generally similar to those noted in this sketch of California State marketing orders.

Experience with California State marketing programs indicates that they are not all-powerful remedies for marketing problems. They are economic devices useful for dealing with only certain problems under particular circumstances. In common with most tools, their appropriateness and effectiveness depend in large part on the knowledge and skill with which they are used.

All too often marketing programs have been or are viewed as acceptable substitutes for necessary production adjustments. Experience has shown, however, that where chronic and persistent overproduction occurs, marketing programs are at best only a palliative to provide time and aid for easing into the basically necessary production adjustments.

Although California marketing orders may be used to control the within-season amounts or the seasonal total of a product marketed, growers retain freedom to expand or contract their acreage or yield and thereby their total volume produced. Established growers have freedom to expand their production, and new growers can enter the industry in response to anticipated, relatively profitable operations. Such long-run flexibility counteracts, at least in part, the short-run impacts on grower prices and returns exercised by volume-control provisions in marketing orders.

California experience indicates also that there are no fixed rules for the formulation and operation of marketing programs; each one must be thought through in terms of its particular situation and problems. It can be said, however, that marketing programs have been and still are too often judged in terms of their effect on 1 year's price rather than in terms of net returns over a longer period of years.

Their real contribution must be judged in the area of long-term net returns instead of immediate gains in price. In the conduct of any marketing program, attention must also be given to competitive effects on other products and market-entry possibilities from other areas.

In California the view is taking root that marketing orders by themselves are only devices and tools; they do not automatically bring solutions to marketing problems. As with other tools, the effectiveness of marketing orders depends upon the skill and judgment of the operators and the nature of the problems involved. With a quarter of a century's experience behind them, California farmers and handlers are learning to view agricultural marketing order programs in proper balance and with appreciation of their limitations as well as their potentials.

The above brief and summary sketch of California marketing programs is suggestive of, rather than being directly applicable to, the situation in other States having marketing programs. In the other States the situation differs more in degree and details rather than in kind and in basic ideas. Although each State judges whether or not to have special enabling legislation for marketing programs or what types of programs, there is a common structure of economic principles which is applicable to all of the State marketing programs as well as to the Federal marketing agreement and order programs.

Federal milk-marketing orders.—The magnitude and scope of the Federal milk-marketing-order program is suggested by the following figures: 65 milk-marketing areas where producer prices paid by handlers were regulated by Federal orders (as of April 1956); close to 190,000 farmers delivered and sold their milk at prices regulated by the orders; those farmers delivered 30 billion pounds of milk annually; and the population in the 65 areas represented about one-half of the national urban population.

Federal milk orders are intended to provide producer prices consistent with the local and general economic situation rather than guaranteeing a particular or given price level. Federal milk orders do not insure markets with buyer-handlers, do not directly control production, do not directly limit marketing by producers, and do not establish quality control or sanitary standards. The Federal milk orders are limited to specific terms pertaining to the prices to be paid by handlers to farmers.

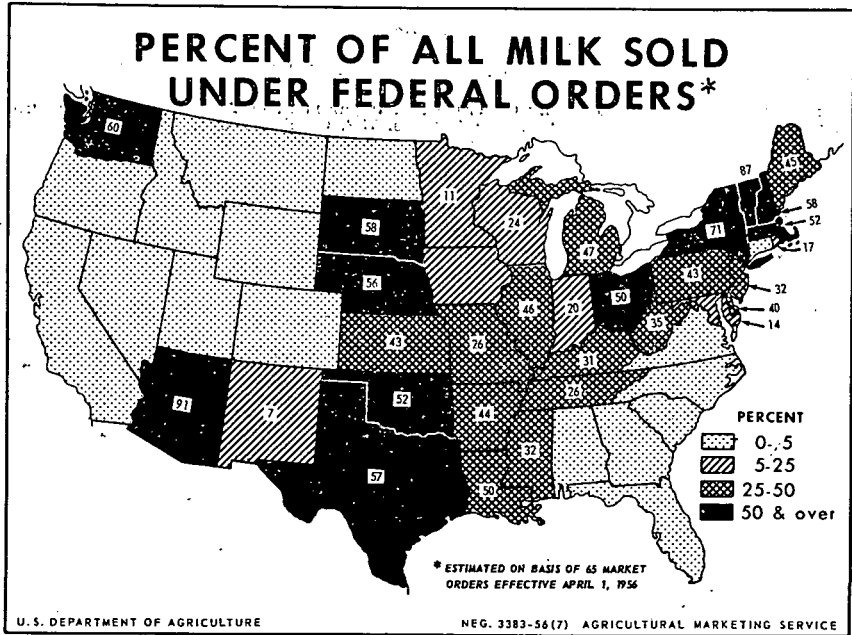
The Federal milk orders apply to all of the handlers in the area specified by the particular order. Under the Agricultural Marketing Agreement Act of 1937, the Secretary of Agriculture is given the authority to administer the orders. In the setting of minimum producer prices the Secretary is required by the legislation to fix the prices so that they are reasonable in light of feed prices, feed supplies, and other economic factors bearing on the demand and supply of milk so as to "insure a sufficient quantity of pure and wholesome milk and be in the public interest."

A legislatively required feature of Federal milk-order price setting is that a "classified price" system be used and that there be provisions for "pooling" the returns to producers. "Classified prices" pertain to different prices for the different ways in which the milk is used.

“Pooling,” along with “classified prices,” pertains to the distribution or allocation of the quantities of milk in each class among the producers supplying the market. Generally, milk for fluid consumption is classified as class I milk, but the number of classes established and the various uses in each may vary with the local situation. There is flexibility in that a marketwide pool or an individual-handler pool may be used. The returns received by a producer depend on the particular pricing plan operating in the area which he supplies; whether he is under a marketwide pool or an individual-handler pool (if the latter, the percentage utilization of his handler); and, in addition, in some markets there is a “base and surplus” plan (where the volume of milk above the producer’s “base” receives the lowest class price).

The geographical spread and locations of areas where Federal milk orders are in operation are indicated in charts XI and XII. The relative positions by States and the distribution of localities reflect a substantial diversity. Yet the diversity is increased even more when State milk-marketing orders are considered.

XI-A



Source: Federal Milk Marketing Orders, U. S. Department of Agriculture, Agricultural Marketing Service (miscellaneous publication No. 732, October 1956).

prices is clearly evident from the chart, as well as the use of class plans. In the legislation of most States, as in the Federal legislation, the special position of milk as a food is recognized. The administrative authority of the State regulating agencies varies widely among the States; some State legislation sharply sets forth the authority, responsibilities, and procedures to be followed in fixing milk prices, and other State legislation is vague and leaves much to the discretion of the State regulating authority. Among the provisions in most State legislation are the following: Distributor or handler licensing; provisions to insure payments to farmers; independent auditing of payments to be made to producers; setting of producer prices (required by all the States having milk-price regulation); and setting of resale prices (here is a major difference with Federal milk orders where resale prices are not set).

XIII. Pricing practices of State milk control agencies, September 1956

State	Producer pricing practices			Distributor pricing practices	
	Fix prices—by areas or markets	Price plans used	Method of establishing seasonality in prices	Fix resale prices	Establish or administer fair trade practices
Alabama.....	Minimum.....	Class.....	Base surplus.....	Minimum and maximum.	X
California.....	do.....	do.....	Seasonal class I.....	Minimum.....	X
Connecticut.....	do.....	do.....	Fall premium plan.....	do.....	X
Florida.....	do.....	do.....	No seasonal.....	Minimum ¹	X
Georgia.....	Minimum and maximum. ²	do.....	Base surplus.....	Minimum and maximum. ³	X
Maine.....	Minimum.....	do.....	Seasonal class I.....	Minimum.....	X
Massachusetts.....	do.....	do.....	do.....	(⁴).....	X
Montana.....	do.....	do.....	No seasonal.....	Minimum.....	X
New Hampshire.....	Minimum and maximum. ⁴	do.....	Seasonal class I.....	Minimum and maximum.	X
New Jersey.....	Minimum.....	do.....	do.....	Minimum ⁵	X
New York.....	do.....	do.....	Fall premium plan.....	do.....	X
North Carolina.....	do.....	do.....	Base surplus.....	do.....	X
Pennsylvania.....	do.....	do. ⁶	Seasonal class I.....	Minimum ⁷	X
Rhode Island.....	do.....	do.....	Base surplus.....	do.....	X
South Carolina.....	do. ⁸	do.....	No seasonal.....	do. ⁸	X
Vermont.....	Minimum, maximum, or both. ⁹	Flat or class.	do.....	Minimum and maximum. ¹⁰	X
Virginia.....	Minimum and maximum. ¹¹	Class.....	Base surplus ¹²	do.....	X

¹ Required to fix minimum resale prices; may fix maximum.

² Although the Georgia board has power to fix minimum and maximum prices, Georgia price orders have provided only minimum prices.

³ Under certain conditions may fix minimum resale prices.

⁴ The board fix only minimum producer, retail, and wholesale prices.

⁵ Retail and wholesale prices were reestablished on July 1, 1956; such prices having been withdrawn on Feb. 15, 1955; and in areas 1 and 2 producers are paid bonuses for low bacteria count.

⁶ In Philadelphia and suburban Philadelphia markets producers are paid a bonus for low bacteria count.

⁷ Fixing maximum prices is permissive under the law.

⁸ The South Carolina law was enacted May 11, 1955, but no price regulations have been issued to date.

⁹ The board set only minimum producer prices, may be defined a flat class I price as it is 25 cents above the Boston blind price, 200- to 210-mil zone.

¹⁰ The board set only minimum retail and wholesale prices.

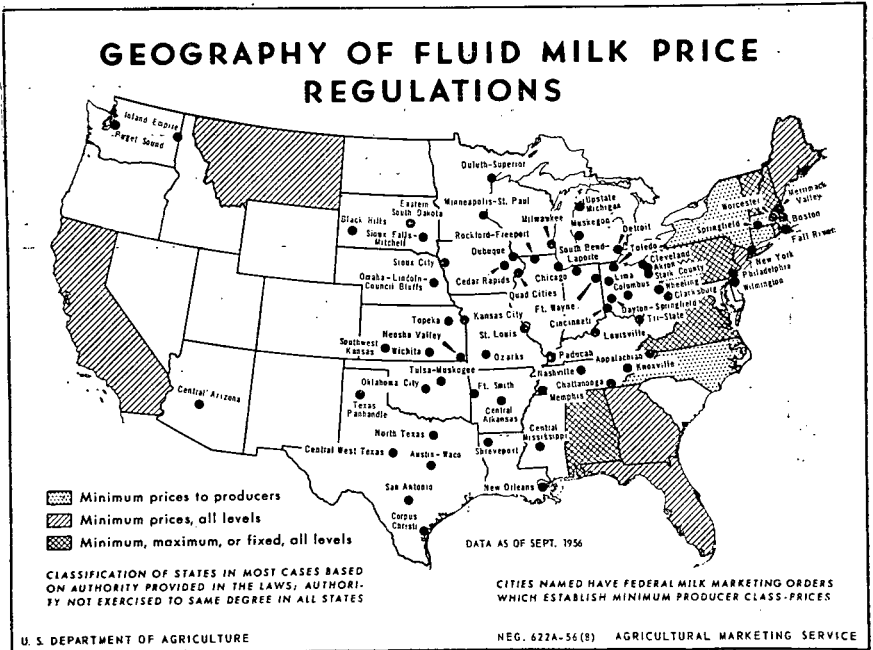
¹¹ The Commission fix only minimum producer prices, and 3 markets located in the southwestern part of the State fall to issue such prices.

¹² All markets excepting Arlington-Alexandria, Manassas, and Richmond have base-surplus pricing provisions.

Source: The Dairy Situation, U. S. Department of Agriculture, Agricultural Marketing Service (D. S.-256, September 19, 1956).

When State milk-pricing regulation is superimposed on the use of Federal milk marketing orders, the general picture emerging is indicated in chart XIV. There may be noted the broad geographical coverage of milk-pricing regulation by governmental agencies. State regulation of milk pricing tends to be concentrated along the Atlantic coast, with California and Montana in the Far West; Federal milk orders are heavily centered in the Middle West, the States below the Great Lakes region, with some Federal markets in the Northeast. In some States, there exists milk price regulation under both Federal and State legislation (the former operating in particular market areas where the State legislation is not applied).

CHART XIV



That milk price control, under either Federal or State authority, blankets most of the country—particularly populationwise—is clear. In terms of pricing, the fluid-milk marketing of the country is heavily dominated by public regulation, and such regulation bears important similarities to public utility regulation in general. With respect to pricing, fluid-milk marketing may be viewed as approximating a public utility; and such a view must rest on the attitude that, because of the importance of fluid milk as a food, its pricing is of special public concern and interest.

The particular provisions in public regulation of milk pricing, however, were not originated by the public controls. Earlier, under voluntary control, were developed price plans, pooling arrangements, and base-surplus plans. Cooperative bargaining groups and large-scale private handlers existed before public control of fluid-milk prices. The Federal and State legislation provided an avenue for enforcing marketwide or statewide pricing practices with the thought

that through the enforcement and police powers of government the public would be represented and would participate in the establishment of prices. Thus, from emergency measures consequent to the breakdown of free-market pricing of fluid milk during the great depression of the early 1930's has developed a Government-industry institution which has grown and continues to operate as a widely accepted segment of our agricultural programs.

IV. SOME ECONOMIC CONSIDERATIONS

Economic conditions are constantly changing, and each generation looks at its own problems in its own way.

So Alfred Marshall began the preface to the first edition of his *Principles of Economics*. Marshall's belief in what he referred to as the "principle of continuity" is, among other places, embodied in his statement:

The new doctrines have supplemented the older, have extended, developed, and sometimes corrected them, and often have given them a different tone by a new distribution of emphasis; but very seldom have subverted them.

Such has occurred in the development of marketing programs.

Reference may rightly be made to Alfred Marshall in a discussion of agricultural marketing agreements and orders because in terms of many of the basic economic ideas underlying marketing programs economists draw heavily upon the system of thought commonly referred to as Marshallian partial equilibrium analysis. As to whether Marshall would approve the introduction and operation of marketing programs, one can judge that, from what he writes in the *Principles*, he would likely look askance at them; yet, from what he advised his Government at various times, as recorded in his reports to royal commissions, one can surmise that he would favor the use of marketing agreements and orders under certain circumstances and conditions.

In terms of history, marketing orders emerged as a result of problems engendered by the great depression of the 1930's. But the economic structure of orders was gradually and experimentally developed by certain cooperative marketing associations during the 1920's. They were faced with seasonal surpluses, quality standards, and unfair trade practices; and they endeavored to organize commoditywise on an industrywide basis. The trials and tribulations of those problems need not be recited here; yet, those marketing associations became convinced that their own devices were not fully adequate to achieve the goals envisaged. New legislation and limited Government participation were deemed to be essential adjuncts.

When experience with marketing agreements showed that their signees were "holding the umbrella" for the nonsigners, thoughts turned to a device whereby everyone in the industry concerned would be required to support the umbrella. Thus emerged marketing orders with their uniform and industrywide application to all producers or handlers of the product concerned. Such industrywide application of marketing orders, however, has often been misinterpreted. It does not mean that the industry has no choice as to whether an order will be introduced; it does not mean that the industry is powerless to change or even eliminate the order; nor does it mean that the industry with its order can operate only as the industry desires.

Legislation clearly sets forth the procedural and administrative criteria to be followed in the promulgation, operation, and termination of marketing programs. The many important details of such procedures need not be considered here. But several significant points must be underlined. First, a majority of the industry, specific criteria for which are written in the legislation, must approve an order before it can be effective. Second, the Secretary is required to determine whether the available evidence indicates the need for an order and that the proposed order meets that need. Furthermore, the Secretary has the authority to terminate the procedure at any of the steps mentioned earlier or to terminate an order which is in operation if, in his judgment, it is no longer consistent with the legislative standards. (The above and following comments apply to Federal orders and most State programs having the respective types of provisions considered.)

To assist him in operating a marketing order, the Secretary appoints an Administrative Committee from a list of industry nominations. The Committee may employ a manager and staff, and most boards do so. But in all matters of any consequence, the Committee cannot make decisions and act thereon. It recommends to the Secretary, and he either approves or disapproves.

The general goals of marketing orders are mainly oriented in the direction of improving the returns to producers. Although the Secretary is required to give consideration to consumer interests as well as those of the agricultural industry, the legislation is clear that its primary concern is with the economic welfare of producers. At this point it is advisable to pause a moment and destroy a false notion which is prevalent in the minds of many, particularly those who have a superficial familiarity with Federal and State marketing programs. This false notion pertains to the volume-restriction provision. Too often the unfounded thought is expressed that marketing orders are synonymous with quantity restriction, and without that provision there would be no agreements and orders. Such a view may be a throwback to the early days of orders when quantity regulation was certainly the primary although not the only reason orders were initiated. In recent years, however, the situation is drastically different. Now quantity control in any of several forms—when it does occur in an order—is only one of the provisions; a majority of the marketing orders have no quantity regulation features and, in the legislation of most States having programs, volume regulation is not permitted. But since volume control is possibly the most controversial question of marketing programs, it is pertinent to consider briefly some economic aspects of the question.

There are two major types of quantity control available under the volume-regulation provisions when they are authorized. One is intertemporal distribution of the harvested crop marketed within the season and a second is curtailment of the total crop to be harvested and/or marketed for the season as a whole. In some instances both may be used. Intertemporal distribution within the season may have several economic objectives, the primary one being the approaching of maximum returns from the sale of the crop. Other but related objectives include dampening of the seasonal patterns of prices and sales.

Curtailment of the total crop harvested and/or marketed also has the primary objective of increasing returns from the sale of the crop. But in each case the particular effects on prices and returns depend upon the nature of the relevant supply and demand functions, their price and income elasticities, their stability over time, and their sensitivity to developments in related products. The economic rationale, in the most elementary case, involves price elasticity as an indicator of the relationship between associated changes in volume and returns. The more complicated cases involve economic theories of price discrimination, market segmentation, and multiple products. For this reason, economic analysis must be drawn upon in the evaluation of marketing programs and their results.

In terms of supply-demand analysis, price is determined by the mutual interaction of supply and demand functions. The economic rationale underlying marketing agreement and/or order programs can be cast in a supply-demand framework. Yet, the way it is viewed depends on whether fluid milk orders, with their price-fixing features, are considered or whether programs for other products are considered; and in the latter case, whether Federal or State programs are analyzed. But in all the cases, the short run and long run are distinctive.

In milk orders the thought is that by setting prices there result certain effects on the supply and demand functions. In the programs for products other than milk, the thought is that the exercise of various provisions has certain effects on the supply and/or demand functions resulting in certain effects on price. But in either case, a differentiation must be made as to whether the supply and/or demand functions are static and unchanging or whether they shift and change shape over time.

Marketing program provisions for volume control may be considered as primarily affecting the supply functions; quality control provisions also impinge on the supply functions and under certain circumstances on the demand schedules; advertising and sales promotion affect the demand functions; and research provisions are intended to affect the supply and/or demand functions, depending upon the particular problem researched. These specific repercussions are short run in nature; and from the long-run view, there is mutual interaction among all the variables in the economic structure.

For static and unchanging functions, and especially in the short run, of special interest are the price elasticities of supply, price elasticities of demand, income elasticities of demand, and similar measures pertaining to the characteristics of fixed functions. For changing or shifting functions, and especially in the long run, also of special interest are the influences causing the shifts; some of those causes may be generated from within the particular industry market while other causes may stem from outside the particular industry market.

The types of relations referred to above bear upon marketing agreements and orders since their results reflect the impacts of the basic economic relationships. Short-run volume regulation, in terms of its bringing increased grower returns, assumes the existence of an inelastic demand in the pertinent segment of the demand function. Yet, such an inelastic demand cannot merely be assumed; it is a matter of fact to be determined by investigation, experience, and observation. And once determined, it need not remain fixed. As the functions shift and change shape, their elasticity characteristics change.

Where volume regulation is concerned with intraseasonal rates of flow to market, and the objective is to control marketings so as to increase grower returns, elasticities enter again through the differential characteristics between market periods. Market allocation or price discrimination over time, as well as between alternative uses or geographical areas, to be successful from the view of growers' returns, requires the existence of certain relationships among the demand functions of the several submarkets and also a low degree of substitution between the product controlled and other products. For economic reasons as these, intraseasonal volume control—which actually brings increased returns—is unusually difficult to achieve even in the short run. And from the long-run view, additional relationships are introduced as changing consumer preferences and attitudes, as well as cumulative interactions among products.

The problem of multiple products stems from the interaction of crops which are competing in demand or which are produced and marketed in competing areas. Interregional and interproduct competition cannot be ignored in the operation of volume control. The economic inferences which can be drawn from the history of marketing orders for asparagus or from the growing market struggle between canned cling and freestone peaches, for example, are reasonably clear. A marketing program which disregards the indirect as well as the direct economic effects on competitive products or competitive regions is eventually likely to find its objectives frustrated and its long-run relative market position affected.

Although marketing order programs now have various types of provisions, that of volume control has always attracted the most criticism. Yet, economists have continuously been aware of the double-edged features of volume control, particularly the differential effects of intraseasonal and interseasonal quantity regulation. The former—intraseasonal control of quantity marketed—is generally used as a device to dampen the swings in shipments and prices thereby attempting to attain a more even or uniform rate of daily or weekly shipments and greater stability in short-run market prices and returns within the season. In the minds of many growers and shippers, the purpose of regulating intraseasonal volume is to prevent short-run "market gluts" and associated sharp "price breaks." Buying attitudes of terminal market receivers are presumably affected favorably in view of their confidence in an "orderly flow" of shipments to market. With such confidence in the minds of buyers, the presumption is that the season average price is higher than would be if intraseasonal shipments were not "stabilized."

Yet, it need not be that, for all products in all seasons and markets, intraseasonal volume stabilization does yield higher season average prices. The outcome depends on the nature of the price elasticities of the daily or weekly market demand and supply functions and also how they shift during the season. Further, if the objective is to obtain as large as possible total returns for the season as a whole, which is a more rational objective for growers and shippers than price stability in itself, the appropriate intraseasonal regulation calls for accepting the intraseasonal patterns of shipments and prices which in combination result in maximum total returns. Such intraseasonal patterns may but need not be consistent with more uniform rates of daily or

weekly shipments than would occur without intraseasonal volume regulation.

The essential problem of using marketing order volume regulation of seasonal total supply concerns the interaction of short-run and cumulative effects on grower returns. If the seasonal total demand facing growers is of such nature that restricting the season's total volume is associated with an increase in total returns to growers, there is a short-run inducement to practice such volume regulation. Such volume restriction can be rationalized in acute situations. But continued restriction, resulting in grower returns being increased sufficiently and over a long enough period, can lead to expansion of growers' productive capacity. Such induced expansion of productive capacities can, in turn, bring a grown in total seasonal volume available for marketing at a rate more rapid than is likely to be balanced by market demands consistent with yielding reasonable returns to growers. Thus, the administration of seasonal total supply regulation, under the authority of marketing orders, calls for the application of the provisions of the order so that its short-term applications do not accumulate into long-term effects which aggravate the situation which the order is intended to alleviate.

Marketing programs with volume control provisions are not effective in controlling the volume produced by growers. Growers retain freedom in expanding or contracting their acreage or yield and thereby their total volume produced. Despite the existence and operation of the marketing orders, free entry into and exit from the industry remain. Established growers have freedom in expanding their production capacities, and new growers can enter the industry in response to anticipated, relatively profitable operations. It is such long-run flexibility in production which counteracts, at least in part, the short-run impacts on grower prices and returns from volume control through marketing orders.

The preceding summary comments concerning volume-control aspects of marketing agreement and order programs have been oriented, in the main, toward domestic marketing and trade. But Federal legislation includes provisions bearing on international trade in products having marketing programs. Specific reference may be made to section 22, which was added to the legislation on farm programs by Public Law 320 (74th Cong., approved August 24, 1935). Since enactment, section 22 has been amended and revised a number of times. Under current legislation, the President is authorized to set quantitative limits on imports (quotas but not less than 50 percent of the volume imported during a representative period as determined by the President) and to set import fees (not more than 50 percent ad valorem) on any products the importation of which he finds to adversely affect or seriously threaten any program or operation under the Department of Agriculture. In the use of section 22, the President's findings are based on investigation by the United States Tariff Commission. The role of the Department of Agriculture is that the Secretary has the responsibility of advising the President concerning the need for action under section 22.

Since a Federal marketing agreement and/or order is under the Department of Agriculture, it is clear that such Federal marketing programs have recourse to section 22. In terms of the number of

Federal marketing agreement and order programs which have been in effect one time or another, section 22 has been used only relatively infrequently. Yet, for certain crops having a Federal marketing program, such as dried figs, application of the section has been requested by the industry and advised by the Secretary. The operation of section 22, however, is not limited to products having marketing agreement and order programs; section 22, rather, is concerned with imports of any products as they bear on any program or operation undertaken by the Department of Agriculture.

Neither by legislative criteria nor by administrative procedures need the provisions or operational objectives of marketing orders be static or unchanging over time. As long as the broad, general criteria written in the enabling legislation are met and the Secretary makes a finding to that effect, a proposed order or an amendment to an existing order may be approved by him. Such flexibility has been taken advantage of by the various industries having marketing orders. As with a biological organism, the institutional organism of a marketing order undergoes mutational and evolutionary changes.

As one studies the evolution of marketing orders and surveys their changing objectives and emphasis, he sees a moving picture of institutional development. Each order has its own special existence, as does each individual in a population. But the societal group gradually takes on new characteristics as the older ones change emphasis and form. The process of institutional mutation and evolution may, with considerable articulation, be identified in the history and development of marketing orders. In what may be termed the early days of marketing orders, the depression years of the middle 1930's, the primary provisions of marketing orders pertained to quantity control and regulation which, in practice, meant volume restriction. In later years, provisions for grade and size regulation and mandatory inspection and certification—aspects dealing with quality control—assumed increased relative importance. And, still later, in State programs, sales promotion and advertising, along with sponsorship of research, received relatively increased attention. This does not mean that the older provisions were necessarily dropped as new ones were adopted; rather, it means a change in relative emphasis and balance. The development of marketing orders fits in well with Marshall's statement:

Economic conditions are constantly changing, and each generation looks at its own problems in its own way.

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FARM MARKET PRORATION—ESSENTIAL SEGMENT OF COMPREHENSIVE FARM-INCOME PROGRAM

[A supplement to the paper under this title by Glenn J. Talbott, p. 738 ff.]

I. COMPULSORY ALL-COMMODITY MARKETING GOAL AND VOLUNTARY CONSERVATION ACREAGE-RESERVE PROGRAM

Some may feel that the needed market proration or supply adjustment can be accomplished adequately solely through adoption of needed single-commodity market proration programs. And let me say I fully believe that these are needed—but more than these are needed. When you try to operate a supply-adjustment program for corn alone, grain sorghum, oats and barley can be substituted. Beef can be substituted by the consumer for pork and vice versa. This means that the income and price elasticity of individual commodities taken one at a time is greater than the elasticity of the demand for all food.

Inauguration and operation of an all-commodity market proration system would make each and every individual commodity program more easily workable, less restrictive, and more acceptable.

To meet this need for an overall market proration system, I suggest the usefulness of a compulsory national all-commodity marketing goal and voluntary conservation acreage reserve to be a basic segment of a comprehensive system of individual farm commodity programs.

National and world emergencies calling for greatly increased United States production of food and fiber could break out at any moment. Both United States and world populations, and consequently the need for food and fiber, are increasing at a very rapid rate. Both situations require the maintenance in the United States of a strong and healthy family farm agriculture and the conservation of soil and water resources. Otherwise the required national effort for farm rehabilitation in the face of an emergency would be extremely costly and agonizing.

At the same time, a healthy and strong family farm agriculture currently is able to and does increase the production of farm products at a faster rate than population is increasing. The result is that farm families find that the terms of trade are very unfavorable to them except in the rare periods when the entire national economy is expanding by more than 10 percent a year in terms of national income.

Certainly no one wishes to waste the time and energy of American farmers nor the soil and water resources of the Nation's farms by producing commodities that are not needed or will not be used. Farmland taken out of commercial production cannot be allowed to remain idle generally, or resource depletion will occur. Moreover, as family farmers attempt to maintain their take-home pay by individual action, they cannot afford to absorb drastic acreage cuts to "keep supplies in line with effective demand" unless the land taken out of production can be put to some income-producing use.

Land not needed for immediate production should be given protective and development treatments that will conserve and improve it for the Nation against future need. Not the farmer alone, but the entire population of the Nation, has a valid stake in the conservation and improvement of such land.

The general outlines of a workable all-commodity farm marketing goal and voluntary conservation acreage-reserve program are quite simple. It would provide that prior to November 15 of each year the Secretary of Agriculture would:

1. Make an official determination of the volume of farm commodities that will move in the channels of trade in the year ahead, assuming full employment conditions, at average prices received by farmers of not less than parity-income equivalent prices and of the percentage of the total acreage of farmland (cropland, meadow and pasture and grazing land), that will not be needed in the year ahead for commercial production. The former he would proclaim as the national all-commodity farm marketing goal and the latter as the conservation acreage reserve and would:

2. Offer to farm operators the equivalent of earnable net family income at parity-income equivalent prices, plus taxes and other land overhead costs for land of that type in the area, in return for the farmer's devoting the specified acreage to its optimum conservation use instead of using it for commercial production. This would include the retirement from commercial use of hay and pastureland as well as grain and row crops.

3. If putting the conservation reserve into optimum conservation condition requires specific installations or land treatment, the program should authorize the making of ACP-type payments to cover the cost.

4. The program would be entirely voluntary for individual farmers. Moreover, if some farmers wanted to retire more land from commercial production than their pro rata shares, they would be enabled to do so, if some other farmers in the county, State, or Nation released the reserve for which they were eligible due to voluntary nonparticipation.

5. Landlords who dispossess tenants would not be eligible to participate in the program.

6. The conservation acreage reserve just described would be combined with a permanent authorization of the agricultural conservation practices program payments to farmers who undertake special soil and water conserving practices, facilities, and installations on both the reserve acreage as well as on land used for commercial production. Payments for such practices on the conservation reserve should cover their entire cost.

7. Utilizing the services of the Federal Farm Income Improvement Board and the elected State, county, and community-farmer committees, the Secretary of Agriculture would stand ready to contract for farmland, including hay and pasture as well as crops, at the required incentive level of acreage payments. Any farmer in the county could offer as much of his land as he cared to for rent to the Government to become part of the conservation acreage reserve. If more land was offered to the county committee than the total county conservation reserve, the committee would allocate the county reserve among all the farmers who applied by a fair formula.

8. In return for the payment or conservation award, the farmer would refrain from using the acres for commercial farm production and would place the land in its optimum conservation condition. If special conservation practices or facilities were required, the farmer could avail himself of the financial assistance of the ACP program. The essence of the proposal is that each year the Federal Government will lease unneeded commercial farmland and hold it in optimum soil conservation practices of the area, perhaps in a cover crop.

9. The national all-commodity farm marketing goal would be allocated to farmers and evidenced by all-commodity farm marketing goal certificates. This certificate would show for the crop year the volume of all farm commodities the farmer could sell on basis of certificates of sale obtained free of charge from his county farmer committee. If he chose to produce and sell beyond his certificated share, he would be able to buy over-goal certificates of sale from the county committee by payment of a farm income stabilization fee equal to 75 percent of the income protection level for the commodities for the sale of which application was made.

The proposed all-commodity farm marketing goal and conservation acreage reserve program can be the major mechanism for consciously and continuously adjusting total farm production of supplies to total demand therefor, particularly when the demand is simultaneously expanded through domestic and foreign food consumption programs and held high by full employment and expanding international trade.

Value to farmers

For more than 30 years our Nation and its Congress have held that a parity price is a fair price—fair to consumers and producers alike—and that farmers deserve to be enabled to earn a parity of income. The all-commodity farm marketing goal and conservation acreage reserve program could be used to keep farm prices at a full income parity average year in and year out. However, to do so in recession years would be a great hardship on consumers. Moreover, tailoring farm production down to less than a volume that consumers would buy at parity prices in a year of full employment would be restrictionist and itself contribute to deepening the recession. Therefore, my proposal does not provide for cutting production below the volume that a full employment economy will buy at 100 percent of parity income equivalent prices. Failure of the demand due to unemployment to attain this level of prices would be made up with compensatory parity income deficiency or production payments.

Establishment of a comprehensive farm market proration or supply adjustment program of this type would go a long way toward reducing the severe cuts required by marketing goal programs for individual commodities and specific crops, and practically eliminate the tendency of such programs to shift the so-called surplus problem from one crop to another and, rather soon, also to poultry, dairy, and livestock as has been done under existing programs. Such a program would help greatly to bolster farmers' collective bargaining activities under the marketing agreement and order programs and otherwise.

The national all-commodity farm marketing goal and conservation acreage reserve could be used to adjust production by any desired pro-

portion either up or down. The result in farm prices and incomes of different applications is shown in the table which follows:

Net change in market supply of farm products †	Change in farm price	United States farm gross income		United States farm net income	
		Amount	Change	Amount	Change
	<i>Percent</i>	<i>Billions</i>	<i>Percent</i>	<i>Billions</i>	<i>Percent</i>
+2 percent.....	-13.0	\$30.2	-11.3	\$7.9	-32.5
+1 percent.....	-6.5	32.1	-5.6	9.8	-17.2
0.....	0	34.0	0	11.7	0
-1 percent.....	+6.5	35.8	+5.4	13.5	+15.5
-2 percent.....	+13.0	37.6	+10.8	15.3	+30.8
-4 percent.....	+26.0	41.3	+21.6	18.9	+61.5
-5 percent.....	+32.5	43.2	+27.0	20.7	+76.9
-6 percent.....	+39.0	44.8	+30.7	22.5	+92.3

† Above and below the approximate 1956 position.

Stated briefly, my proposal is that as a first line of operation in farm market proration or supply adjustment that we use an all-commodity farm marketing goal and conservation acreage reserve to tailor total United States farm sales to the volume that augmented foreign and domestic markets will buy at parity income equivalent prices in a year of full employment.

Each farm family or farm would be given a specific marketing goal for total sales and could sell any commodity whatever that he was otherwise eligible to sell within such overall farm marketing goal. Land determined not to be needed for the marketing goal would be eligible for an expanded and improved conservation acreage reserve to the extent that funds were appropriated for that purpose.

II. MARKETING AGREEMENTS AND ORDERS

For some commodities, producers themselves can probably do a great deal through collective bargaining techniques to improve their position.

Approximately 70 Federal marketing agreement and order programs for fluid milk and 30 for fruits and vegetables are in operation under the Agricultural Marketing Agreement Act of 1937, as amended.

A marketing order makes the marketing agreement applicable to all handlers.

In many cases—especially in milk—marketing orders without accompanying marketing agreements are in operation.

Before an order can be put in effect, it must be approved by two-thirds of the producers affected.

Existing law specifies that orders can be applicable only to the following agricultural commodities and products thereof: Milk, fruits (including filberts, almonds, pecans, and walnuts, but not including apples, other than apples produced in the States of Washington, Oregon, and Idaho, and not including fruits, other than olives, for canning and freezing), tobacco, vegetables (not including vegetables, other than asparagus, for canning or freezing), soybeans, hops, honeybees, and naval stores.

A Federal order can regulate only such handling of a commodity "as is in the current of interstate or foreign commerce, or which directly burdens, obstructs, or affects interstate or foreign commerce."

The underlying objective as stated in the law is to establish and maintain such orderly marketing conditions as will bring parity prices to producers.

Milk.—The areas covered by milk marketing orders range from large metropolitan districts, e. g., New York, Chicago, Philadelphia, to areas with no large cities, e. g., upstate Michigan and the Black Hills of South Dakota.

All orders specify the minimum prices to producers for the different classes of milk coming into the market. The milk is classified according to use—class 1, for milk sold in fluid form; class 2, etc., for the excess used in ice cream, butter, canned milk, and other manufactured products. In many markets, the excess is quite large in the flush season. There are no orders applicable to milk produced solely for manufacturing.

Producers receive a "blend" price based on the amount used as fluid milk and that used for manufacturing. The price to a particular producer is subject to adjustment for volume, grade, location, and so forth. Federal orders do not specify resale prices to consumers.

A considerable number of States have State milk-control laws and some markets operate under State, rather than Federal regulations. Under some of the State laws resale prices to consumers as well as prices to producers are controlled. The New York market is under joint Federal-State control.

Fruits and vegetables.—Of 31 agreements and orders in effect January 1, 1957, 6 were for citrus fruit, 4 for dried fruit, 4 for tree nuts, 8 for potatoes, and 10 for other fresh fruits and vegetables.

The law provides that each fruit or vegetable-marketing agreement must be limited to the smallest practical regional production or marketing area.

In contrast to milk, fruit and vegetable-marketing agreements and orders cannot include provisions fixing minimum prices to producers. Instead, the law provides for:

1. Regulation of quantity and quality of the commodity which can be marketed.
2. Allocation to each handler of the quantity which he may purchase and market.
3. Control and disposition of surpluses.
4. Establishing reserve pools.

(There is a special provision authorizing marketing quotas for individual producers of hops.)

Under certain conditions the quantity and quality of imports of fruits and vegetables covered by marketing agreements and orders may be regulated.

California has laws authorizing agreements and orders for processed fruits and vegetables which include the establishment of prices and quotas for individual producers.

Fruit and vegetable processors have successfully opposed the broadening of the Federal law to cover canned and frozen fruits and vegetables (with the exceptions noted above), and the inclusion of pricing provisions.

Legislation and administration: Some suggestions for change

Make marketing orders applicable to any agricultural commodity (or regional or market classification thereof) wherever effective proposals can be developed by joint private-public consultation and the proposal is approved by two-thirds of the producers affected.

Establish single commodity marketing goals for commodities for which agreements and orders are in operation, and use them as marketing quotas for individual producers where needed.

Authorize the establishment of minimum prices to producers in the marketing order for any commodity (as is now done in Federal orders for milk).

Authorize the establishment of handlers' resale prices in the agreement and order for any commodity, as is now done in some State milk orders. This would tend to stabilize, and possibly reduce, marketing margins which continue to increase in spite of more integration and presumed increased efficiency in processing and marketing; also, it would provide needed protection of consumers.

Make agreements and orders joint Federal-State operations wherever practicable instead of the smallest area, as in the present law.

Strive to establish national marketing orders, covering the marketing of a commodity through the Nation. A national order for any commodity should give recognition to the varying production and marketing conditions in different areas.

III. INDIVIDUAL COMMODITY MARKETING GOALS

Even though a fully effective all-commodity marketing goal program were in operation and the producers of some commodities were adequately protected by marketing orders and other collective bargaining programs, the probability exists that in particular years one or more remaining individual commodities may well get out of proper supply adjustment. To protect against this possibility I suggest the need for standby authority for producers of the various commodities to make use of individual single-commodity marketing goal programs.

Existing law extends the authority to use marketing quotas and acreage allotments to the producers of only 6 farm commodities: Wheat, cotton, tobacco, sugar, rice, and peanuts. In addition provision for acreage allotments is spelled out in law for corn; and authority to use them for any other crop whose price is supported is extended by law to the Secretary of Agriculture with no detailed procedure specified as to when and how to put them into operation. I am suggesting this authority for marketing goals or a similarly effective market pro rata device should be extended to the producers of all individual farm commodities.

Under the existing program, the wheat, cotton, or sugar producers who cooperate in the program are allowed to take out of production of that crop a certain percentage of the acreage they earlier used for it. Such producers are permitted to put these diverted acres into any use they desire, including other soil-depleting commercial crops.

The requirement that marketing goals must be approved by two-thirds of the producers of a commodity before such goals go into effect should be continued.

I suggest the desirability that the principle of sugar-program-type of progressive graduation in individual farm goals be extended to all

commodities so that producers who sell larger volumes will take a bigger percentage cut than producers of a smaller volume with realistic minimum individual farm goals.

If individual farm marketing goals are to be truly effective in keeping supplies in balance with demand, the blended average price of producers who sell more than their marketing goal must be sufficiently lower than the higher price available to those who stay within their goals to discourage all but a few from making overgoal sales. This will be much easier to do where production payments are used as the primary support method. I suggest that this level ought to be only 25 percent of the support level, enforced by collection of an overgoal marketing fee of at least 75 percent of the parity income equivalent price.

Existing law provides for the national marketing quota of a covered commodity to be determined as expected exports plus expected domestic sales plus a normal carryover minus existing carryover. Thus already piled up carryover is a factor that reduces the marketing quota for any year.

I suggest that establishment and maintenance and building up of a national safety reserve be considered as a separate subject—operated on its own merits. Supplies accumulated in Government ownership should be insulated from the market and not considered in establishment of marketing goals. Government-owned stocks now in existence should be put into an insulated set-aside, not a disposition set-aside as is now the case.

Therefore, national marketing goals for each commodity should be set to equal expected exports plus expected domestic consumption at a full employment level of the economy plus allowance for needed addition to carryover or safety reserve stockpile. Under present law, quotas can be cut down to help reduce existing carryover. This should not be done.

Under existing law, the marketing quota of an individual farmer is the estimated production at normal yields of his acreage allotment.

It is my mature and considered judgment that the procedure should establish for each farmer a specific bushelage or poundage marketing goal governing the volume he could sell without purchase of overgoal certificates in a given year regardless of how many or how few acres he used to produce it.

Acreage allotments put the emphasis on the wrong factor of production—land instead of people—land becomes the scarce factor thus leading to an attempt to maximize land income rather than the return to the human factor. Moreover, other resources can be easily substituted for land so that acreage allotments are not as effective a tool as we need to control market supply.

The defects of acreage allotment-determined marketing goals show up most dramatically when considered in the application of goals to milk and butterfat sales, sales of hogs and cattle, and in areas of high incidence of crop failure owing to recurrent drought and other natural disasters.

In the case of milk and butterfat, there is no necessity whatever to attempt to have control of the number of milk cows, either nationally or on the individual farm.

In high risk cotton and wheat areas, the producer never knows at the time he plants his acreage allotment what his production and sales

might be. If his marketing goal is established as the production from allotted acres, there is no basis, either nationally or on the individual farm, to know how much volume of sales will move into the commercial market.

A wheat farmer in the area of intermittent drought never knows when he plants whether his yield will be nothing, 2 bushels per acre, 15 bushels or 22 or 42. With a 200-acre allotment, his marketing goal might thus vary from as little as 0 or 200 bushels to as much as 6,000 or 8,000 bushels from year to year. This is a most unstabilizing and completely unnecessary result of existing acreage allotment based marketing quota laws for wheat, cotton, and rice.

The purpose of a marketing goal is to regulate the volume of sales of a commodity by charging a heavy penalty on sales above the goal. A national determination is made as to what volume of the commodity will be needed for domestic and export needs in the year ahead. This is expressed in bushelage or poundage terms. This national marketing goal should not be translated into a national acreage allotment but should be distributed to States and counties and individual farms as a specific marketing goal. If no producer exceeded his marketing goal, the volume actually marketed would equal the national marketing goal.

Under existing law, the volume actually marketed from allotment acres might be substantially below or substantially above the national marketing quota depending upon acreage yields. In crops and areas where yields do not vary greatly from year to year this has posed no great difficulty. But as the widespread drought of 1954, which reached even into Georgia and Virginia, indicated, the acreage allotment device is a blunt and clumsy device at best, even in usually humid areas.

For the individual producer, marketing goals based on acreage allotments simply do not make much sense nor do they allow him to fit the program effectively into his farm management plan. If the individual wheat producer, for example, knew before planting time that his goal was 4,000 bushels, he would be able to choose the acres on which he wants to try to produce it. One year he might choose to use 200 acres of his most fertile land and another year to use 400 acres of his less fertile soil. If growing conditions look especially promising, he might wish to plant 500 acres of his land into wheat, knowing full well that at average yields his total production that year would greatly exceed his marketing goal. He would market his goal volume and would store, on the farm, the excess production for sale in a later year when due to weather, disease or pests his yields would be greatly reduced.

Demand-expansion helpful but not sufficient

To stabilize farm family income at the parity level, it is, of course, necessary to have written in the law mandatory 100 percent of parity farm income protection for the family farm production of all farm commodities. Temporary market gluts can develop. Farm family needs for cash can cause unduly heavy marketings at harvest time. Speculator and trader manipulations can unduly depress market prices until the farmer has sold. Special program devices such as Government purchases of commodities, Government purchase agreements, and Government financed nonrecourse price support loans are needed to overcome these contingencies. To provide the additional

income protection above these market price-propping devices required to keep farm income at the parity level, seasonally, and in the event of unemployment or errors in forecasts, I favor use of parity income deficiency payments. Use of such payments, in workable combination with price-support loans and purchases, would allow already produced commodities to flow into export and domestic consumer markets at lower than the support level equivalent price and would give consumers and exporters the advantage of the increased supply instead of allowing such stocks to depress farm income to disaster levels or else pile up in unnecessarily large Government stocks.

Relieve strain and reduce costs of income protection program

However, the tendency for farm productivity in the United States to outrun population growth, expansion of exports, and the growth of market money demand, even when expanded in the feasible ways, would place a constant strain upon the income protection and price-support program, if supplemental actions were not taken to keep supplies in line with augmented market demand. Either unneeded stocks of commodities would pile up in Government ownership under the loan and purchase programs or else the cost to the Government of the required income supplement payments would become greater than the rest of the Nation would permit.

To meet this situation and to maintain farm family income at full parity requires that the tendency for farm productivity to outrun augmented market demand at parity prices must be blunted or curbed by methods that are acceptable to farmers and consumers and that contribute to the attainment of other widely held national aims and welfare objectives. To do this is the function that should be assigned to farm market proration or supply adjustments.

The conservation acreage reserve would be an effective way to combine the Nation's conservation objective with the need to temporarily blunt or dampen down the rate of increase in national total farm production.

Buttressed by the all-commodity marketing goal program, operation of a program of this type would cause the year's total national farm production to be lower than it would otherwise be. For each percentage of effective reduction in supply marketed resulting from this program, prices received by farmers on the average would be lifted by 6 percent or more.

However, the all-commodity marketing goal and conservation acreage reserve would apply to all crops, hay and pasture acres, as a whole. Market supplies of individual crops and livestock could still rise more rapidly than the increase in augmented demand for that specific commodity. This is particularly true of commodities a large share of the production of which must be sold in foreign markets. It is also true of commodities where weather and other growing conditions in areas of major production are highly variable.

To meet these residual commodity oversupply problems is the proper role and function for individual-commodity farm marketing goals, marketing agreements and orders and other forms of individual-commodity market proration.

Where all of the demand-expanding programs do not increase demand sufficiently to keep up with increasing production of a commodity as dampened down by operation of the all-commodity market pro-

ration program, I submit that the Nation should not require or permit farmers to use their time and natural resources and other capital to produce commodities that cannot be sold and used except at such low prices that will bring chronic poverty to farm families, destruction of soil and water resources, and ultimate bankruptcy.

I suggest, therefore, that the authority to use the powers of government to keep supplies in line with demand by means of a self-imposed three-price system carried out by means of individual-commodity farm marketing goals should be extended to the producers of all farm commodities for use as a last resort in the situation described immediately above, to be adopted by producers in referendums in any case where desired and workable.

What are marketing goals

Many confusing and misleading statements have been made in the demagogic propaganda of opponents of farm-income-protection and price-support programs in the discussions and debates of the past two decades. One result is that the public has little, if any, factual information as to what farm marketing goals and quotas really are.

Farm marketing goals are in reality a sort of self-imposed three-price system for a farm commodity, the operation of which is expected to discourage uneconomic overproduction. A determination is made as to the volume of the commodity which if marketed will fill export needs, if any, preserve an adequate national stockpile or safety reserve of the commodity, and fill the expressed needs of domestic United States consumers at a price that will be consistent with the continued production of a sustained abundance of the commodity, and consequently will prevent farm bankruptcy, depletion of natural resources, and reduced farm family living standards, and thus prevent the development of a condition of chronic poverty on American farms and deterioration of the national food and fiber plant and the family farm pattern of American agriculture.

Under an individual-commodity farm marketing goal system, each farmer is appraised, well before planting or breeding time, of the amount of the commodity he is authorized to market at the parity income equivalent price. If the farmer sells only this volume of the commodity, he can do so at the support price. If he wants to produce and sell more than the determined volume, he may do so but only by selling all of his marketings of that commodity at the market price. Any sales above the marketing goal must be made subject to the payment of a fee to purchase an overgoal certificate for the privilege of selling above goal. This fee is, in effect, deducted from whatever price the farmer receives in the market for overquota sales. Moreover, the entire marketings of that commodity by the farmer who exceeds his marketing goal or quota must be sold at the market price, which may be lower than determined support price owing to the operation of payments as a method of support or because market price has fallen below the announced support price available through Government loans, purchase agreements, or purchases.

Marketing goals are not a system of federally imposed farm production controls. Any farmer can produce and sell any amount of the commodity that he wishes. But to do so he must be willing to accept a lower return per unit than that made available to the farmer who holds his annual marketing within his agreed-upon goal.

To make effective his three-price system, based upon individual-commodity marketing goals, requires several nationwide determinations and actions. First, somebody must decide under the law the total national marketing goal that fits the circumstances of the particular commodity and the particular year. Second, somebody must make known to each farm family the information as to its share of the national goal. Third, somebody must hold a referendum or vote to determine whether the producers of that commodity wish to impose marketing goals upon themselves that year. Fourth, if goals are approved by producers, somebody must administer the machinery that makes the three-price provisions effective with respect to the marketings of each producer. Fifth, maintenance of the higher or class I price or return requires the operation of a Federal farm price-support program. Sixth, enforcement of the lowest or class III of the three prices requires both withholding of support program eligibility and the collection of fees on overgoal marketings of individual producers.

For the system to work all of these functions must be performed and applied to all producers of the commodity, either by the Government or by some other agency with the authority and power to do so.

APPENDIX C

TABLE C-1.—National income by distributive shares, 1929-56

[Billions of dollars]

Year	Compensation of employees	Proprietors' income		Rental income of persons	Corporate profits ¹		Net interest	Total national income
		Farm ¹	Business and professional		Before tax	After tax		
1929.....	51.1	6.1	8.8	5.4	9.6	8.3	6.4	87.8
1930.....	46.8	4.3	7.4	4.8	3.3	2.5	6.0	75.7
1931.....	39.7	3.3	5.6	3.8	- .8	-1.3	5.8	59.7
1932.....	31.1	2.0	3.4	2.7	-3.0	-3.4	5.4	42.5
1933.....	29.5	2.6	3.2	2.0	.2	- .4	5.0	40.2
1934.....	34.3	2.9	4.6	1.7	1.7	1.0	4.9	49.0
1935.....	37.3	5.3	5.4	1.7	3.1	2.2	4.8	57.1
1936.....	42.9	4.3	6.5	1.8	5.7	4.3	64.9	67.6
1937.....	47.9	6.0	7.1	2.1	6.2	4.7	4.7	73.6
1938.....	45.0	4.4	6.8	2.6	3.3	2.3	4.6	67.6
1939.....	48.1	4.5	7.3	2.7	6.4	5.0	4.6	72.8
1940.....	52.1	4.6	8.4	2.9	9.3	6.5	4.5	81.6
1941.....	64.8	6.6	10.9	3.5	17.0	9.4	4.5	104.7
1942.....	85.3	9.9	13.9	4.5	20.9	9.5	4.3	137.7
1943.....	109.6	11.8	16.8	5.1	24.6	10.5	3.7	170.3
1944.....	121.3	11.8	18.0	5.4	23.3	10.4	3.3	182.6
1945.....	123.2	12.4	19.0	5.6	19.0	8.3	3.2	181.2
1946.....	117.7	14.9	21.3	6.2	22.6	13.4	3.1	179.6
1947.....	128.8	15.5	19.9	6.5	29.5	18.2	3.8	197.2
1948.....	140.9	17.7	21.6	7.2	32.8	20.3	4.5	221.6
1949.....	140.9	12.9	21.4	7.9	26.2	15.8	5.2	216.2
1950.....	154.3	13.7	22.9	8.5	40.0	22.1	5.9	240.0
1951.....	180.4	16.1	24.8	9.1	41.2	18.7	6.8	277.0
1952.....	195.1	15.1	25.7	9.9	35.0	16.1	7.4	290.2
1953.....	208.1	13.3	25.9	10.2	37.0	16.7	8.7	302.1
1954.....	206.8	12.7	25.9	10.6	33.5	16.0	9.8	299.0
1955.....	223.1	11.9	27.3	10.2	42.5	21.0	10.9	324.1
1956.....	241.4	11.6	28.0	10.3	43.0	21.0	11.9	343.6

¹ Revised series; revisions not reflected in total national income 1929-51. Includes net change in farm inventories.

² Inventory valuation adjustment not included.

Source: U. S. Department of Commerce.

TABLE C-2.—*Net income originating in agriculture and net income of the farm population, 1910-56*

[Millions of dollars]

Year	Net income originating in agriculture					Net income of farm population		
	Net income of farm operators ¹	Farm wages	Interest on farm mortgage debt	Net rent to non-farm landlords	Total net income	From agricultural sources	From non agricultural sources	From all sources
1910	4,158	755	203	320	5,436	4,703		
1911	3,342	758	225	331	4,656	3,888		
1912	4,409	789	252	343	5,793	4,975		
1913	3,680	804	276	340	5,100	4,253		
1914	4,106	804	296	355	5,561	4,677		
1915	4,220	815	314	403	5,752	4,797		
1916	4,469	904	341	534	6,248	5,103		
1917	8,204	1,127	378	825	10,534	9,001		
1918	8,787	1,337	417	859	11,400	9,736		
1919	8,985	1,515	476	928	11,904	10,061		
1920	7,758	1,790	574	504	10,626	9,009		
1921	3,322	1,170	653	304	5,449	4,138		
1922	4,299	1,127	680	368	6,474	5,081		
1923	5,028	1,251	679	430	7,388	5,895		
1924	4,817	1,248	647	520	7,232	5,681		
1925	6,698	1,267	612	470	9,047	7,575		
1926	5,907	1,330	598	425	8,260	6,810		
1927	5,679	1,302	593	520	8,094	6,569		
1928	5,966	1,290	590	496	8,342	6,844		
1929	6,142	1,300	582	486	8,510	7,024		
1930	4,254	1,177	570	321	6,322	5,060		
1931	3,346	914	553	136	4,949	3,981		
1932	2,038	669	526	55	3,288	2,510		
1933	2,573	617	472	158	3,820	3,012		
1934	2,941	679	430	256	4,306	3,428	1,900	5,328
1935	5,303	775	396	347	6,821	5,858	2,000	7,858
1936	4,332	868	364	383	5,947	4,954	2,300	7,254
1937	6,048	988	341	380	7,757	6,754	2,500	9,254
1938	4,405	979	320	318	6,022	5,101	2,300	7,401
1939	4,489	988	305	379	6,161	5,189	2,500	7,689
1940	4,570	1,029	293	448	6,340	5,299	2,700	7,999
1941	6,573	1,249	284	647	8,753	7,455	3,100	10,555
1942	9,924	1,631	272	890	12,717	11,074	3,800	14,874
1943	11,822	2,027	246	1,044	15,139	13,248	4,200	17,448
1944	11,807	2,202	230	1,043	15,282	13,352	4,400	17,752
1945	12,411	2,299	221	1,064	15,995	14,021	4,200	18,221
1946	14,923	2,544	219	1,356	19,042	16,721	4,300	21,021
1947	15,458	2,808	225	1,408	19,899	17,383	4,900	22,283
1948	17,695	3,016	232	1,311	22,254	19,704	5,100	24,804
1949	12,866	2,865	243	1,092	17,066	14,651	5,200	19,851
1950	13,716	2,750	264	1,153	17,883	15,459	5,800	20,759
1951	16,111	2,931	291	1,284	20,617	18,003	5,600	23,603
1952	15,120	2,801	319	1,462	19,702	17,044	6,100	23,144
1953	13,263	2,792	347	1,213	17,615	15,094	6,000	21,094
1954	12,684	2,714	376	1,159	16,933	14,438	5,800	20,238
1955	11,852	2,736	410	1,067	16,065	13,590	6,300	19,890
1956	11,600	2,790	429	1,180	15,999	13,374	6,700	20,074

¹ Includes net change in farm inventories.

Source: U. S. Department of Agriculture.

TABLE C-3.—Realized gross income of farm operators from farming, 1910-56

[Millions of dollars]

Year	Cash receipts from marketings	Government payments	Realized non-money income ¹	Realized gross income ²	Year	Cash receipts from marketings	Government payments	Realized non-money income ¹	Realized gross income ²
1910.....	5,780	0	1,697	7,477	1934.....	6,357	446	1,738	8,541
1911.....	5,584	0	1,599	7,183	1935.....	7,120	573	1,973	9,666
1912.....	6,008	0	1,655	7,663	1936.....	8,391	278	2,043	10,712
1913.....	6,238	0	1,681	7,919	1937.....	8,864	336	2,129	11,329
1914.....	6,036	0	1,682	7,718	1938.....	7,723	446	1,932	10,101
1915.....	6,392	0	1,668	8,060	1939.....	7,872	763	1,921	10,556
1916.....	7,746	0	1,897	9,643	1940.....	8,382	723	1,933	11,038
1917.....	10,736	0	2,574	13,310	1941.....	11,111	544	2,173	13,828
1918.....	13,467	0	2,980	16,447	1942.....	15,565	650	2,552	18,767
1919.....	14,538	0	3,287	17,825	1943.....	19,620	645	3,097	23,362
1920.....	12,600	0	3,307	15,907	1944.....	20,536	776	3,100	24,412
1921.....	8,058	0	2,463	10,521	1945.....	21,663	742	3,367	25,772
1922.....	8,575	0	2,434	11,009	1946.....	24,770	772	3,782	29,324
1923.....	9,545	0	2,574	12,119	1947.....	29,664	314	4,044	34,022
1924.....	10,225	0	2,511	12,736	1948.....	30,253	257	4,076	34,586
1925.....	11,021	0	2,646	13,667	1949.....	27,864	186	3,532	31,582
1926.....	10,558	0	2,698	13,256	1950.....	28,405	283	3,417	32,105
1927.....	10,733	0	2,562	13,295	1951.....	32,928	285	3,847	37,060
1928.....	10,991	0	2,562	13,553	1952.....	32,556	275	3,901	36,732
1929.....	11,312	0	2,583	13,895	1953.....	31,183	213	3,730	35,126
1930.....	9,055	0	2,377	11,432	1954.....	29,944	257	3,516	33,717
1931.....	6,381	0	2,004	8,385	1955.....	29,542	229	3,441	33,212
1932.....	4,748	0	1,623	6,371	1956.....	30,372	554	3,443	34,369
1933.....	5,332	131	1,618	7,081					

¹ Value of farm products consumed directly in farm households and gross rental value of farm dwellings. Changes in farm inventories not included.

² Changes in farm inventories not included.

Source: U. S. Department of Agriculture.

TABLE C-4.—*Production expenses of farm operators, 1910-56*

(Millions of dollars)

Year	Feed purchased	Live-stock purchased	Fertilizer and lime	Repairs and operation of capital items	Depreciation and other consumption of farm capital	Hired labor	Taxes, interest, rent ¹	All other ²	Total expenses
1910.....	426	199	152	251	416	755	718	614	3,531
1911.....	350	188	168	251	443	758	771	652	3,581
1912.....	419	217	161	278	469	789	820	680	3,833
1913.....	406	250	175	289	481	804	873	695	3,973
1914.....	414	215	195	297	482	804	912	710	4,029
1915.....	411	207	165	343	524	815	1,001	701	4,167
1916.....	517	260	193	395	597	904	1,179	791	4,836
1917.....	614	414	232	464	714	1,127	1,542	985	6,092
1918.....	1,106	522	311	536	902	1,337	1,637	1,156	7,507
1919.....	1,097	567	358	615	1,040	1,515	1,858	1,281	8,321
1920.....	1,254	422	390	695	1,211	1,790	1,634	1,441	8,837
1921.....	710	202	249	550	1,039	1,170	1,543	1,171	6,634
1922.....	676	319	234	557	934	1,127	1,631	1,130	6,608
1923.....	819	304	263	637	943	1,251	1,699	1,130	7,046
1924.....	1,116	313	264	654	952	1,248	1,750	1,139	7,436
1925.....	988	382	299	711	872	1,267	1,671	1,144	7,334
1926.....	891	396	298	774	886	1,330	1,622	1,159	7,356
1927.....	892	465	267	787	890	1,302	1,733	1,105	7,441
1928.....	977	588	318	827	900	1,290	1,722	1,105	7,727
1929.....	919	504	300	886	916	1,300	1,719	1,087	7,631
1930.....	791	362	297	785	955	1,177	1,539	1,003	6,909
1931.....	448	253	202	635	856	914	1,278	913	5,499
1932.....	348	193	118	521	734	669	1,092	768	4,443
1933.....	422	199	120	550	644	617	1,069	693	4,314
1934.....	542	183	176	602	650	679	1,111	727	4,670
1935.....	528	312	188	704	664	775	1,177	713	5,061
1936.....	755	283	261	732	728	868	1,187	760	5,574
1937.....	805	332	279	855	796	988	1,173	869	6,097
1938.....	557	368	258	881	833	979	1,086	866	5,828
1939.....	732	465	273	927	781	988	1,140	856	6,162
1940.....	998	517	306	1,006	796	1,029	1,192	905	6,749
1941.....	1,089	635	334	1,099	874	1,249	1,394	1,001	7,675
1942.....	1,625	877	417	1,244	1,370	1,631	1,628	1,150	9,942
1943.....	2,135	908	505	1,407	1,403	2,027	1,767	1,335	11,487
1944.....	2,427	812	576	1,528	1,463	2,202	1,772	1,415	12,195
1945.....	2,738	1,011	657	1,626	1,340	2,299	1,842	1,409	12,922
1946.....	3,022	1,170	683	1,981	1,224	2,544	2,193	1,507	14,324
1947.....	3,746	1,379	755	2,396	1,616	2,808	2,366	1,765	16,831
1948.....	3,996	1,589	826	2,795	2,060	3,016	2,349	2,012	18,643
1949.....	3,024	1,528	895	2,847	2,430	2,865	2,208	2,112	17,909
1950.....	3,330	2,000	978	2,969	2,743	2,750	2,336	2,142	19,248
1951.....	4,168	2,443	1,085	3,314	3,242	2,931	2,571	2,504	22,258
1952.....	4,302	1,917	1,229	3,448	3,404	2,801	2,836	2,539	22,476
1953.....	3,755	1,320	1,246	3,445	3,539	2,792	2,649	2,497	21,246
1954.....	3,906	1,563	1,274	3,332	3,645	2,714	2,657	2,436	21,527
1955.....	3,728	1,530	1,266	3,393	3,752	2,736	2,664	2,562	21,631
1956.....	3,919	1,611	1,247	3,511	3,821	2,790	2,817	2,583	22,299

¹ Taxes on farm property, interest on farm mortgage debt, and net rent to nonfarm landlords (including Government payments).² Seed purchased, short-term interest, business share of electricity and telephone, and other supplies and services.

Source: U. S. Department of Agriculture.

TABLE C-5.—*Net realized income of farm operators,¹ total and per farm, in current dollars and in purchasing power, 1910-56*

Year	Income in current dollars		Income in 1947-49 dollars		Year	Income in current dollars		Income in 1947-49 dollars	
	Total	Per farm	Total	Per farm		Total	Per farm	Total	Per farm
	<i>Million dollars</i>	<i>Dollars</i>	<i>Million dollars</i>	<i>Dollars</i>		<i>Million dollars</i>	<i>Dollars</i>	<i>Million dollars</i>	<i>Dollars</i>
1910.....	3,946	616	9,719	1,517	1934.....	3,871	571	7,727	1,140
1911.....	3,602	561	8,872	1,381	1935.....	4,605	676	9,047	1,328
1912.....	3,830	596	9,341	1,453	1936.....	5,138	762	10,094	1,498
1913.....	3,946	613	9,624	1,495	1937.....	5,232	788	9,966	1,502
1914.....	3,689	572	8,804	1,366	1938.....	4,273	655	8,529	1,307
1915.....	3,893	603	9,117	1,412	1939.....	4,394	682	8,931	1,387
1916.....	4,807	744	10,184	1,576	1940.....	4,289	675	8,630	1,359
1917.....	7,218	1,114	12,296	1,898	1941.....	6,153	978	11,544	1,834
1918.....	8,940	1,378	12,868	1,974	1942.....	8,825	1,423	14,444	2,329
1919.....	9,494	1,459	11,452	1,760	1943.....	11,875	1,950	17,438	2,864
1920.....	7,070	1,085	7,553	1,159	1944.....	12,217	2,035	17,015	2,834
1921.....	3,887	597	5,776	857	1945.....	12,850	2,154	17,202	2,883
1922.....	4,401	677	7,008	1,078	1946.....	15,000	2,531	18,094	3,053
1923.....	5,073	781	7,927	1,221	1947.....	17,191	2,927	17,668	3,008
1924.....	5,300	818	8,281	1,278	1948.....	15,943	2,747	15,479	2,667
1925.....	6,333	979	9,581	1,481	1949.....	13,673	2,389	13,714	2,396
1926.....	5,900	913	9,105	1,409	1950.....	12,857	2,276	12,742	2,256
1927.....	5,854	907	9,204	1,425	1951.....	14,802	2,674	13,456	2,431
1928.....	5,826	901	9,103	1,407	1952.....	14,256	2,630	12,820	2,365
1929.....	6,264	962	9,911	1,522	1953.....	13,880	2,615	12,527	2,360
1930.....	4,523	691	7,653	1,169	1954.....	12,190	2,344	10,845	2,085
1931.....	2,886	437	5,670	858	1955.....	11,581	2,277	10,340	2,033
1932.....	1,928	288	4,432	663	1956.....	12,070	2,432	10,578	2,131
1933.....	2,767	410	6,246	927					

¹ Net change in farm inventories not included.

Source: U. S. Department of Agriculture.

TABLE C-6.—Cash receipts from farm marketings, by groups of farm products, annual averages, 1952-56

Farm product	Cash receipts from marketings	Percent-age of total
	Million dollars	Percent
Livestock and livestock products.....	16,772	54.6
Cattle and calves.....	5,330	17.4
Dairy products.....	4,357	14.2
Poultry products, total.....	3,293	10.7
Eggs.....	1,808	5.9
Chickens.....	1,092	3.5
Turkeys, other poultry.....	393	1.3
Hogs.....	3,177	10.3
Sheep, lambs, and wool, total.....	453	1.5
Sheep and lambs.....	336	1.1
Wool.....	117	.4
All other livestock and products.....	162	.5
Crops.....	13,947	45.4
Cotton lint and seed.....	2,789	9.1
Lint.....	2,484	8.1
Cottonseed.....	305	1.0
Feed crops.....	2,398	7.8
Corn.....	1,450	4.7
Other feed grains ¹	615	2.0
Hay.....	333	1.1
Food grains.....	2,263	7.3
Wheat.....	1,981	6.4
Rice.....	261	.8
Rye and buckwheat.....	21	.1
Vegetables.....	1,781	5.8
White potatoes.....	409	1.3
Other vegetables.....	1,372	4.5
Fruits and tree nuts.....	1,256	4.1
Apples, peaches, pears.....	404	1.3
Citrus fruits.....	342	1.1
Other.....	510	1.7
Tobacco.....	1,147	3.7
Oilbearing crops.....	1,065	3.5
Soybeans.....	784	2.6
Other oilbearing crops ²	281	.9
Greenhouse and nursery products.....	575	1.9
Forest products.....	278	.9
Sugar crops.....	203	.7
All other crops.....	192	.6
Total.....	30,719	100.0

¹ Barley, oats, sorghum grains.² Peanuts, flaxseed, tung nuts.

Computed from data compiled by the U. S. Department of Agriculture.

TABLE C-7.—Number of farms and the farm population, by major regions of the United States, selected years, 1910-57

[In thousands]

Year	Number of farms ¹				Farm population ²			
	North	South	West	United States	North	South	West	United States
1910.....	2,891	3,098	373	6,362	-----	-----	-----	32,077
1920.....	2,763	3,207	478	6,448	12,695	17,063	2,216	31,974
1925.....	2,741	3,131	499	6,372	12,240	10,762	2,188	31,190
1930.....	2,562	3,224	503	6,289	11,870	10,364	2,295	30,529
1935.....	2,819	3,422	571	6,812	12,534	17,162	2,415	32,161
1940.....	2,580	3,007	510	6,097	11,760	10,400	2,387	30,547
1945.....	2,484	2,881	494	5,859	10,092	13,053	2,150	25,295
1950.....	2,268	2,652	462	5,382	10,102	12,793	2,163	25,058
1954.....	2,043	2,317	423	4,782	9,007	10,903	1,980	21,890
1957.....	-----	-----	-----	-----	-----	-----	-----	20,396

¹ As reported by the Bureau of the Census.² Apr. 1. From farm population estimates prepared cooperatively by the U. S. Department of Agriculture and the Bureau of the Census.

TABLE C-8.—Indexes of prices received by farmers for farm products and the parity ratio, 1910-56

[1910-14=100]

Calendar year	Wheat ¹	Feed grains	Cotton	Tobacco	Fruit	Hogs ²	Beef cattle ³	Dairy products	Poultry and eggs	All farm products	Parity ratio
1910.....	104	97	118	84	100	113	88	100	104	104	107
1911.....	100	94	105	84	105	86	83	94	90	94	96
1912.....	92	109	90	102	97	93	99	101	100	99	98
1913.....	91	94	101	122	105	104	112	104	101	102	101
1914.....	112	106	86	108	93	104	118	101	105	101	98
1915.....	110	110	76	82	82	90	113	101	101	99	94
1916.....	165	115	116	108	97	116	123	111	115	119	103
1917.....	235	201	185	182	115	192	155	145	155	178	120
1918.....	236	219	247	242	162	223	179	177	185	206	119
1919.....	249	217	252	303	172	227	181	200	208	217	110
1920.....	209	209	262	233	188	178	158	202	222	211	99
1921.....	119	87	106	164	164	106	102	149	160	124	80
1922.....	111	91	162	185	164	116	104	139	139	131	87
1923.....	106	115	227	189	136	96	106	159	145	142	89
1924.....	143	132	226	173	131	102	106	148	147	143	89
1925.....	165	139	186	168	165	151	118	156	162	156	95
1926.....	139	103	127	170	140	163	122	156	157	145	91
1927.....	136	118	134	164	138	133	138	162	142	140	88
1928.....	114	131	156	172	154	118	173	165	161	148	91
1929.....	119	124	150	171	131	130	172	166	161	148	92
1930.....	76	109	104	140	149	122	140	142	128	125	83
1931.....	44	71	64	98	97	79	100	111	98	87	67
1932.....	43	44	49	84	78	46	77	86	81	65	58
1933.....	85	57	68	107	74	49	68	87	74	70	64
1934.....	97	97	101	156	93	57	75	101	89	90	75
1935.....	95	112	98	171	89	120	109	114	116	109	88
1936.....	117	110	99	163	102	130	106	125	115	114	92
1937.....	110	135	94	200	117	131	127	131	111	122	93
1938.....	64	73	70	173	72	107	119	115	110	97	78
1939.....	79	72	74	152	74	86	129	110	96	95	77
1940.....	78	86	83	134	81	75	137	120	98	100	81
1941.....	108	94	111	157	94	126	160	140	122	124	93
1942.....	125	117	156	247	127	180	194	163	152	159	105
1943.....	155	156	167	319	207	190	216	* 198	191	* 193	113
1944.....	162	175	172	348	233	181	196	* 222	177	* 197	108
1945.....	171	168	179	360	228	194	* 219	* 229	198	* 207	109
1946.....	219	212	238	376	240	242	* 263	* 268	201	* 236	113
1947.....	264	275	274	374	186	333	334	273	223	276	115
1948.....	223	273	272	380	166	320	402	301	242	287	110
1949.....	216	176	246	398	196	240	359	252	221	250	100
1950.....	230	198	282	402	194	249	422	249	186	258	101
1951.....	243	237	336	436	181	277	520	286	228	302	107
1952.....	241	242	310	432	191	246	441	302	206	288	100
1953.....	235	213	268	429	209	296	290	274	221	258	92
1954.....	244	211	274	439	214	299	280	252	176	249	89
1955.....	229	189	272	437	210	208	283	253	188	236	84
1956.....	227	188	268	453	219	199	270	259	177	235	82

¹ Average for season beginning July 1. July 1909-June 1914=100. Index computed from prices compiled by the U. S. Department of Agriculture.

² Index computed from prices compiled by the U. S. Department of Agriculture.

³ Includes wartime production payments.

⁴ Wartime production payments not included.

Source: U. S. Department of Agriculture data, except as noted.

TABLE C-9.—Indexes of prices paid by farmers, 1910-56

[1910-14=100]

Year	Commodities used in production					Com- modities used in family living	Real estate taxes ¹	Interest on real estate debt ²	Wage rates, bired labor	All Items (parity index)
	Feed	Live- stock	Fertili- zizer	Farm machin- ery	All pro- duction items					
1910.....	98	92	98	100	97	99	90	83	96	97
1911.....	100	85	98	100	98	99	91	91	98	98
1912.....	103	97	100	100	102	100	99	101	101	101
1913.....	97	111	101	100	101	100	103	109	104	101
1914.....	102	115	103	100	102	102	117	116	101	103
1915.....	101	114	108	103	104	104	118	122	101	105
1916.....	109	124	123	108	115	115	128	132	112	116
1917.....	175	159	136	123	156	143	136	145	141	148
1918.....	187	181	172	155	180	170	151	159	177	173
1919.....	208	183	182	160	195	202	160	180	206	197
1920.....	208	161	181	166	195	228	200	216	241	214
1921.....	105	88	152	160	128	164	244	248	156	155
1922.....	113	108	127	143	127	153	259	260	154	151
1923.....	135	111	134	148	138	156	261	261	172	159
1924.....	139	116	126	155	140	156	266	250	182	160
1925.....	143	124	139	154	145	161	265	236	181	164
1926.....	122	131	138	154	141	158	270	228	183	160
1927.....	128	148	120	155	141	155	271	223	184	159
1928.....	139	181	131	154	148	156	277	219	184	162
1929.....	136	177	130	153	146	154	279	213	186	160
1930.....	122	132	126	152	135	144	281	206	177	151
1931.....	86	92	114	150	113	124	277	197	139	130
1932.....	64	76	100	142	99	106	254	185	104	112
1933.....	73	69	93	138	99	108	220	164	88	109
1934.....	103	70	105	144	114	122	188	147	99	120
1935.....	106	117	104	148	122	124	178	135	107	124
1936.....	109	112	98	150	122	124	180	125	114	124
1937.....	124	127	103	153	132	128	181	117	129	131
1938.....	93	125	102	158	122	122	187	110	130	124
1939.....	93	139	101	155	121	120	185	106	127	123
1940.....	100	143	98	153	123	121	189	102	129	124
1941.....	108	161	98	155	130	130	187	98	151	133
1942.....	132	188	109	164	148	149	189	94	197	152
1943.....	156	214	116	170	164	166	185	84	262	171
1944.....	173	202	118	174	173	175	185	79	318	182
1945.....	172	221	120	176	176	182	192	75	359	190
1946.....	200	250	121	182	191	202	213	74	387	208
1947.....	236	312	134	206	224	237	237	76	419	240
1948.....	250	387	146	240	250	251	276	78	442	260
1949.....	206	344	150	270	238	243	298	82	430	251
1950.....	210	402	144	275	246	246	320	89	425	256
1951.....	236	490	152	297	273	268	335	98	470	282
1952.....	251	410	156	308	274	271	353	107	503	287
1953.....	227	290	157	311	253	270	371	117	513	279
1954.....	226	295	155	313	252	274	391	126	510	281
1955.....	212	291	153	317	249	273	409	136	516	281
1956.....	207	271	150	330	249	278	422	152	536	286

¹ Taxes payable per acre (levied in preceding year).² Interest payable per acre.

Source: U. S. Department of Agriculture.

TABLE C-10.—Resources used in agriculture, 1910-57

Year	Land in farms (million acres)		Farm labor force ² (millions)			Horses and mules ⁴ (million)	Index numbers, 1947-49=100		
	Crop- land used for crops	Grass- land pasture ¹	Family workers	Hired workers	All workers ³		Animal units of breeding live- stock ⁵	Machin- ery and motor vehicles ⁶	Annual nonfarm inputs ⁷
1910.....	330	284	10.2	3.4	13.6	24.2			
1911.....	337		10.2	3.4	13.5	24.8			
1912.....	337		10.2	3.4	13.6	25.3			
1913.....	340		10.2	3.4	13.6	25.7			
1914.....	342		10.1	3.4	13.6	26.2			
1915.....	348		10.1	3.5	13.6	26.5			
1916.....	348		10.1	3.5	13.6	26.5			
1917.....	357		10.1	3.4	13.6	26.7			
1918.....	370		10.1	3.3	13.4	26.7			
1919.....	374	328	10.0	3.3	13.2	26.5	97		
1920.....	368		10.0	3.4	13.4	25.7	94		
1921.....	368		10.0	3.4	13.4	25.1	93		
1922.....	365		9.9	3.4	13.3	24.6	97		
1923.....	365		9.8	3.4	13.2	24.0	102		
1924.....	365	331	9.7	3.3	13.0	23.3	98	58	
1925.....	370		9.7	3.3	13.0	22.6	92	57	
1926.....	372		9.5	3.4	13.0	22.0	92	59	
1927.....	373		9.3	3.4	12.6	21.2	94	59	
1928.....	376		9.3	3.4	12.7	20.4	94	61	
1929.....	379	379	9.4	3.4	12.8	19.7	92	62	
1930.....	382		9.3	3.2	12.5	19.1	92	62	
1931.....	384		9.6	3.1	12.7	18.5	93	58	
1932.....	384		9.9	2.9	12.8	17.8	95	52	
1933.....	378		9.9	2.9	12.7	17.3	98	50	
1934.....	375	410	9.8	2.9	12.6	17.0	98	49	
1935.....	377		9.9	2.9	12.7	16.7	86	51	
1936.....	375		9.4	3.0	12.3	16.2	90	54	
1937.....	379		9.1	2.9	12.0	15.8	87	59	
1938.....	372		8.8	2.8	11.6	15.2	87	58	
1939.....	363	461	8.6	2.7	11.3	14.8	93	61	
1940.....	368		8.3	2.68	11.0	14.5	95	65	
1941.....	367		8.0	2.65	10.7	14.1	94	69	
1942.....	370		7.9	2.56	10.5	13.7	104	80	
1943.....	377		8.0	2.44	10.4	13.2	117	82	
1944.....	379	529	8.0	2.23	10.2	12.6	114	84	
1945.....	372		7.9	2.12	10.0	12.0	108	83	
1946.....	369		8.1	2.19	10.3	11.1	107	86	
1947.....	373		8.1	2.27	10.4	10.1	103	92	
1948.....	378		8.0	2.34	10.4	9.3	98	101	
1949.....	387	485	7.7	2.25	10.0	8.5	99	107	
1950.....	378		7.3	2.09	9.3	7.8	102	114	
1951.....	382		7.0	1.99	9.0	7.0	103	123	
1952.....	380		6.7	1.92	8.7	6.2	102	126	
1953.....	380		6.6	1.94	8.6	5.4	100	126	
1954.....	380	526	6.5	1.93	8.5	4.8	104	126	
1955.....	377		6.3	1.90	8.2	4.3	106	128	
1956.....	370		6.0	1.85	7.9	3.9	104	129	
1957.....	359					3.6			

¹ Does not include grazing land not in farms (353,000,000 acres in 1954).

² Annual average number of workers.

³ Totals computed from unrounded data.

⁴ Jan. 1 of each year; all ages.

⁵ Not including horses and mules.

⁶ Tractors, trucks, automobiles, machinery and equipment on farms on Jan. 1 of each year. Computed by combining indexes given in the Farm Cost Situation, May 1957, p. 8 (1957 revised).

⁷ A rough approximation of annual use of inputs originating outside of agriculture. Computed by deflating farmers' expenditures by indexes of prices paid by farmers. Expenditure groups and price indexes, in parentheses, follow: Depreciation and repairs on service buildings (building and fencing materials), depreciation of motor vehicles (motor vehicles), depreciation and repairs on other machinery and equipment (farm machinery), petroleum fuel and oil and other motor vehicle operation (motor supplies), fertilizer and lime (fertilizer), and miscellaneous (farm supplies).

⁸ 1909.

⁹ Preliminary.

Source: U. S. Department of Agriculture unless otherwise indicated.

TABLE C-11.—Index numbers of production per unit of resources used in agriculture, 1910-56

[1947-49=100]

Year	Crop production per acre	Livestock production per breeding unit	Farm output per man-hour of labor	Farm output per unit of machinery and motor vehicles ¹	Year	Crop production per acre	Livestock production per breeding unit	Farm output per man-hour of labor	Farm output per unit of machinery and motor vehicles ¹
1910.....	79	-----	46	-----	1934.....	59	77	51	-----
1911.....	75	-----	44	-----	1935.....	76	84	59	-----
1912.....	87	-----	49	-----	1936.....	65	86	55	-----
1913.....	76	-----	45	-----	1937.....	88	87	64	-----
1914.....	83	-----	47	-----	1938.....	85	91	66	-----
1915.....	85	-----	50	-----	1939.....	85	91	66	-----
1916.....	76	-----	46	-----	1940.....	88	92	70	111
1917.....	80	-----	47	-----	1941.....	89	98	74	111
1918.....	77	-----	47	-----	1942.....	99	98	79	108
1919.....	77	68	48	-----	1943.....	91	95	78	114
1920.....	86	68	50	-----	1944.....	96	92	81	128
1921.....	73	71	48	-----	1945.....	95	96	86	129
1922.....	79	73	51	-----	1946.....	101	94	91	126
1923.....	79	73	51	-----	1947.....	95	97	92	114
1924.....	79	74	50	-----	1948.....	106	99	104	104
1925.....	80	77	50	-----	1949.....	99	104	104	82
1926.....	82	80	53	-----	1950.....	97	105	112	68
1927.....	81	81	54	-----	1951.....	98	109	113	63
1928.....	83	81	55	-----	1952.....	103	110	120	61
1929.....	79	84	55	-----	1953.....	103	114	123	61
1930.....	75	85	54	-----	1954.....	101	112	127	59
1931.....	83	86	58	-----	1955.....	106	113	132	61
1932.....	79	85	58	-----	1956 ²	107	117	136	62
1933.....	71	84	53	-----					

¹ See tables C-10 and C-12 for data from which computed. Ratios adjusted to average 100 in 1947-49.

² Preliminary.

Source: U. S. Department of Agriculture except as noted

TABLE C-12.—Index numbers of production of groups of farm products and of total farm output, 1910-56

[1947-49=100]

Year	Meat animals	Dairy products	Poultry and eggs	Feed grains	Food grains	Vegetables ¹	Fruits and nuts	Cotton ²	To-bacco	Farm out-put
1910.....	66	58	47	90	52	58	53	82	55	61
1911.....	66	59	49	77	51	55	65	111	45	59
1912.....	68	59	47	96	60	63	69	96	54	66
1913.....	71	61	47	75	61	59	53	100	48	60
1914.....	74	61	47	81	72	62	77	113	50	66
1915.....	77	63	49	95	81	62	72	79	56	68
1916.....	77	63	47	80	54	58	65	80	58	62
1917.....	77	64	47	96	53	69	56	79	64	65
1918.....	80	64	48	85	76	67	61	84	70	66
1919.....	73	66	50	86	80	63	63	80	70	66
1920.....	68	65	49	100	70	70	73	94	73	70
1921.....	71	68	51	91	67	65	48	56	49	62
1922.....	79	70	55	86	72	75	79	68	60	68
1923.....	81	72	58	91	62	72	79	71	74	69
1924.....	78	74	57	77	69	74	73	95	61	68
1925.....	73	76	58	91	55	72	68	113	67	70
1926.....	75	77	62	83	67	74	89	126	63	73
1927.....	78	79	64	85	71	78	68	91	61	72
1928.....	78	80	62	90	73	81	81	101	68	75
1929.....	77	82	63	83	66	81	76	104	75	74
1930.....	78	84	65	73	72	82	75	98	81	72
1931.....	82	86	63	84	76	83	94	119	76	79
1932.....	83	86	63	95	62	83	76	91	49	76
1933.....	86	87	62	73	45	80	77	91	68	70
1934.....	73	85	59	48	44	87	72	68	54	60
1935.....	66	86	59	80	53	88	91	75	65	72
1936.....	74	87	63	53	52	83	72	87	58	65
1937.....	71	86	63	87	72	89	95	133	78	82
1938.....	77	89	65	84	75	89	85	84	69	79
1939.....	87	90	69	83	61	88	98	83	94	80
1940.....	89	92	70	85	67	91	95	88	72	83
1941.....	94	96	77	91	76	92	102	75	62	86
1942.....	107	100	89	104	80	96	100	90	70	96
1943.....	120	99	102	96	69	103	87	80	70	94
1944.....	108	101	102	100	85	99	102	86	96	97
1945.....	103	103	106	97	89	101	93	63	98	96
1946.....	101	102	99	105	92	110	110	61	114	98
1947.....	100	101	98	81	108	98	104	83	105	95
1948.....	97	98	96	116	103	103	96	104	98	104
1949.....	103	101	106	103	89	99	100	113	97	101
1950.....	109	101	111	104	83	98	104	70	101	100
1951.....	117	100	116	97	82	92	106	106	115	103
1952.....	117	100	117	102	105	92	102	106	112	107
1953.....	116	105	120	101	96	96	104	115	103	108
1954.....	121	107	125	106	85	94	104	96	110	108
1955.....	127	108	123	112	80	96	104	103	109	112
1956 ³	123	110	136	111	83	106	111	94	106	113

¹ Potatoes, sweet potatoes, dry edible beans and field peas, truck crops, and farm gardens.² Cotton lint and cottonseed.³ Preliminary.

Source: U. S. Department of Agriculture.

TABLE C-13.—*Index of supply-utilization of farm food commodities, 1924-56*¹
 [Percentage of total utilization in 1947-49]

Calendar year	Production	Imports and inshipments	Total utilization ²	Domestic use			Exports and shipments ³	
				Food		Non-food ⁴		Total
				Civilian	Military ⁵			
1924	70.0	4.9	74.9	47.6		23.2	70.8	4.1
1925	70.7	5.3	76.0	48.1		25.6	73.7	3.2
1926	71.2	5.7	76.9	49.0		24.2	73.2	3.1
1927	71.7	5.6	77.3	48.7		25.1	73.8	3.5
1928	73.4	5.6	77.8	49.1		23.7	74.8	3.0
1929	71.4	6.2	78.1	50.0		25.1	75.1	3.0
1930	70.8	5.6	76.7	50.1		24.2	74.9	2.4
1931	73.9	5.3	77.0	50.6		24.3	74.9	2.1
1932	74.4	4.6	77.4	49.8		25.9	75.7	1.7
1933	69.5	5.0	77.1	50.2		25.5	75.7	1.4
1934	65.2	4.9	74.5	51.3		21.9	73.2	1.3
1935	68.5	6.4	71.2	49.4		20.8	70.2	1.0
1936	65.2	6.4	76.0	51.4		23.7	75.1	1.9
1937	74.4	6.9	75.3	52.2		21.8	74.0	1.3
1938	74.9	5.7	78.5	51.9		24.0	75.9	2.6
1939	75.9	6.0	81.4	54.3		25.1	79.4	2.0
1940	79.6	6.0	83.5	56.4		25.7	82.1	1.4
1941	83.7	6.8	87.9	57.1	1.1	27.2	85.4	2.5
1942	92.4	4.4	95.5	56.7	3.9	30.3	90.9	4.6
1943	94.6	6.0	104.6	57.0	6.4	35.2	98.6	6.0
1944	98.5	7.3	105.9	59.0	9.5	32.1	100.6	5.3
1945	96.2	6.1	103.7	59.8	8.8	30.0	99.5	4.2
1946	97.3	5.8	102.3	65.1	2.2	29.8	97.1	5.2
1947	93.7	6.1	102.3	65.6	2.4	28.3	96.3	6.0
1948	97.8	6.7	97.5	64.1	2.8	26.8	93.7	3.8
1949	94.9	6.9	100.2	64.7	2.8	28.4	95.9	4.3
1950	95.9	7.1	101.4	68.1	1.5	29.2	98.8	4.6
1951	94.3	7.2	104.7	65.7	2.9	29.5	98.1	6.6
1952	98.6	7.3	104.0	68.0	2.2	27.9	98.1	5.9
1953	100.0	7.7	104.8	69.8	2.0	27.8	99.6	5.2
1954	101.3	6.8	105.2	70.8	1.7	27.0	99.5	7.1
1955	104.9	7.1	109.6	73.4	1.5	27.6	102.5	7.1
1956 ⁶	109.0	7.4	115.2	75.6	1.5	29.0	106.1	9.1

¹ Covers farm commodities normally used for food in the United States, including such imported foods as coffee, tea, cocoa and bananas.

² Includes net change in stocks.

³ Includes civilian feeding in areas occupied by our Armed Forces.

⁴ Includes seed, feed, industrial alcohol, alcoholic beverages, etc.

⁵ Includes net purchases for U. S. Department of Agriculture export program.

⁶ Preliminary.

Source: U. S. Department of Agriculture.

TABLE C-14.—Approximate consumption of food per capita (retail-weight equivalent) and price-weighted index of food consumption per capita, 1909-56¹

Year	Dairy products, excluding butter (milk equivalent)	Meats, fish, and poultry, eviscerated basis ²	Fats and oils, including fat cuts and butter	Potatoes and sweet-potatoes	Citrus fruit and tomatoes	Other fruit and vegetables ³	Flour and cereal products	Total food, ⁴ retail-weight equivalent	Price-weighted index, ⁵ 1947-49=100
	Quarts	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	Pounds	
1909-----	191	158	60	212	61	317	300	1,641	89
1910-----	181	152	59	221	61	314	295	1,615	88
1911-----	175	156	61	181	63	326	291	1,583	88
1912-----	196	150	58	202	63	337	286	1,645	89
1913-----	192	148	59	209	63	306	283	1,608	87
1914-----	185	144	62	178	70	328	280	1,582	87
1915-----	184	140	62	206	68	323	278	1,593	86
1916-----	182	144	62	166	65	307	277	1,532	86
1917-----	186	140	57	171	68	305	268	1,535	85
1918-----	200	146	60	196	64	305	260	1,583	87
1919-----	190	145	61	178	66	307	259	1,562	88
1920-----	194	142	58	166	66	342	242	1,565	87
1921-----	194	138	57	179	67	302	229	1,520	85
1922-----	194	142	62	167	63	342	242	1,584	89
1923-----	191	149	66	192	72	323	241	1,587	91
1924-----	194	148	66	167	72	340	239	1,591	92
1925-----	194	144	66	170	68	333	235	1,578	91
1926-----	195	142	65	145	71	359	238	1,586	92
1927-----	195	140	66	160	71	322	239	1,562	91
1928-----	196	136	67	162	68	341	239	1,580	91
1929-----	201	135	68	174	80	334	236	1,590	91
1930-----	200	134	67	145	74	335	228	1,555	91
1931-----	198	132	68	151	82	345	226	1,564	90
1932-----	200	132	67	156	80	314	223	1,526	88
1933-----	200	137	67	151	82	306	213	1,509	88
1934-----	197	144	67	155	82	316	204	1,510	89
1935-----	202	124	62	162	91	333	204	1,525	87
1936-----	205	136	65	146	92	327	208	1,530	91
1937-----	208	132	65	143	92	348	203	1,540	90
1938-----	209	132	65	146	98	336	204	1,538	91
1939-----	212	138	68	138	111	348	201	1,571	94
1940-----	213	144	71	136	108	347	199	1,568	95
1941-----	217	149	70	143	108	345	199	1,591	97
1942-----	230	148	66	142	113	331	201	1,586	96
1943-----	236	156	67	142	118	306	208	1,605	97
1944-----	236	162	66	152	130	330	190	1,657	100
1945-----	254	159	61	136	133	345	201	1,668	101
1946-----	258	162	64	137	128	353	192	1,664	104
1947-----	247	161	65	137	123	335	173	1,618	102
1948-----	239	153	65	114	116	327	170	1,548	99
1949-----	240	154	65	119	109	321	169	1,541	99
1950-----	240	156	68	114	101	310	167	1,525	100
1951-----	244	151	65	117	109	306	165	1,517	98
1952-----	244	158	68	106	109	303	162	1,517	100
1953-----	240	168	65	111	110	301	158	1,518	101
1954-----	246	169	66	111	108	294	155	1,506	101
1955-----	249	172	68	112	112	290	152	1,514	102
1956 ⁶ -----	249	179	67	107	108	291	149	1,514	103

¹ For description of data and additional series, see Consumption of Food in the United States, 1909-1952, Agricultural Handbook No. 62, September 1953, and the supplement for 1956 (U. S. Department of Agriculture).

² Excludes fat pork cuts; includes game fish.

³ "Leafy, green, and yellow vegetables" plus "other vegetables and fruit."

⁴ Includes food groups not shown here, some of them not of domestic origin.

⁵ Derived from estimated retail weights of foods multiplied by average retail prices in 1947-49.

⁶ Preliminary.

TABLE C-15.—Per capita consumption of fibers and tobacco, 1920-56

[Pounds per capita]

Year	Fibers				Tobacco †			
	Cotton	Wool †	Synthetic fibers	All fibers	Ciga- rettes	Cigars	Other tobacco ‡	Total tobacco
1920.....	26.5	3.0	-----	30.0	1.89	2.45	4.33	8.67
1921.....	24.0	3.2	.2	27.9	2.07	2.00	4.14	8.21
1922.....	26.4	3.7	.2	31.0	2.14	2.16	4.28	8.58
1923.....	27.9	3.8	.3	32.6	2.51	2.21	4.26	8.98
1924.....	23.1	3.0	.4	27.1	2.69	2.06	4.06	8.81
1925.....	26.6	3.0	.5	30.8	2.96	1.99	4.03	8.98
1926.....	27.4	2.9	.5	31.6	3.17	1.99	3.87	9.03
1927.....	30.2	3.0	.8	34.8	3.42	1.93	3.61	8.96
1928.....	26.4	2.8	.8	30.9	3.58	1.91	3.44	8.93
1929.....	28.1	3.0	1.1	33.1	3.91	1.86	3.44	9.21
1930.....	21.3	2.1	1.0	25.1	3.84	1.67	3.34	8.85
1931.....	21.4	2.5	1.3	26.0	3.63	1.53	3.29	8.45
1932.....	19.7	1.8	1.2	23.5	3.21	1.24	3.19	7.64
1933.....	24.3	2.5	1.7	29.2	3.49	1.23	3.07	7.79
1934.....	21.0	1.8	1.6	25.0	3.94	1.29	3.11	8.34
1935.....	21.7	3.3	2.0	27.6	4.11	1.30	2.80	8.21
1936.....	27.1	3.2	2.5	33.4	4.61	1.40	2.81	8.82
1937.....	28.3	3.0	2.4	34.2	4.81	1.40	2.74	8.95
1938.....	22.5	2.2	2.5	27.7	4.70	1.31	2.68	8.75
1939.....	27.7	3.0	3.5	34.8	4.95	1.32	2.56	8.83
1940.....	30.0	3.1	3.6	37.2	5.16	1.36	2.60	9.12
1941.....	38.9	4.9	4.5	48.6	5.95	1.42	2.41	9.78
1942.....	41.8	4.5	4.8	51.2	7.01	1.41	2.27	10.69
1943.....	38.6	4.7	5.1	48.4	7.99	1.28	2.19	11.46
1944.....	34.6	4.5	5.4	44.6	8.04	1.22	1.96	11.22
1945.....	32.3	4.6	5.9	42.8	9.15	1.26	2.05	12.46
1946.....	34.0	5.2	6.6	46.0	9.24	1.37	1.59	12.20
1947.....	32.4	4.8	7.3	44.5	9.16	1.29	1.50	11.95
1948.....	30.4	4.7	8.3	43.6	9.35	1.31	1.46	12.12
1949.....	25.7	3.4	7.3	36.4	9.33	1.16	1.44	11.93
1950.....	30.9	4.2	9.8	45.0	9.36	1.18	1.42	11.96
1951.....	31.5	3.1	9.6	44.3	9.98	1.19	1.31	12.48
1952.....	28.5	3.0	9.3	40.9	10.41	1.26	1.25	12.92
1953.....	27.9	3.1	9.5	40.5	10.46	1.26	1.18	12.90
1954.....	25.4	2.3	9.1	37.0	9.73	1.22	1.16	12.11
1955.....	26.5	2.5	11.2	40.3	9.58	1.21	1.15	11.94
1956.....	26.0	2.6	10.0	38.7	9.42	1.19	1.07	11.68

† Apparel and carpet wool, scoured basis.

‡ Consumption per person 15 years old or older in the United States and overseas forces.

§ Smoking, chewing, and snuff.

¶ Preliminary.

Source: U. S. Department of Agriculture.

TABLE C-16.—Exports and imports of individual farm products as percentages of United States production, 1950-54 average ¹

Commodity	Exports	Imports	Commodity	Exports	Imports
	<i>Percent</i>	<i>Percent</i>		<i>Percent</i>	<i>Percent</i>
Rice.....	39.9	0.9	Noncitrus fruit—Continued		
Tallow and grease.....	32.7	(?)	Canned.....	[§] 3.7	(?)
Wheat (including flour).....	30.3	1.4	Peanuts [¶]	8.1	3.8
Cotton lint.....	29.3	1.1	Corn [†]	3.5	(?)
Flaxseed [‡]	29.1	(?)	Eggs.....	1.8	.2
Dry peas.....	26.2	1.0	Dairy products, total.....	1.4	.5
Grain sorghums.....	26.1	(?)	Dried milk:		
Tobacco, unmanufactured.....	24.1	[¶] 4.8	Whole.....	45.5	(?)
Lard.....	20.4	(?)	Nonfat solids.....	13.1	(?)
Soybeans [‡]	18.7	(?)	Evaporated milk.....	5.2	(?)
Dry edible beans.....	16.7	.9	Butter.....	.2	(?)
Cottonseed [‡]	14.0	(?)	Cheese.....	2.3	4.2
Barley (including malt, etc.).....	12.2	8.2	Poultry.....	[§] 4	(?)
Citrus fruit, total.....	[§] 8.5	(?)	Red meats, total.....	.5	1.9
Fresh.....	[§] 12.0	(?)	Oats (including oatmeal).....	.5	3.9
Processed.....	[§] 5.0	(?)	Wool, apparel.....	[¶] 7	¹⁰ 154.4
Noncitrus fruit, total.....	[§] 8.4	(?)	Sugar.....	1.9	254.6
Fresh.....	[§] 3.6	(?)	All farm products ¹¹	7.4	¹² 3.9
Dried.....	[§] 26.7	(?)			

¹ Computed from data in Foreign Agricultural Trade Statistical Handbook, Statistical Bulletin No. 179, Foreign Agricultural Service, U. S. Department of Agriculture, August 1956, by dividing 5-year total exports and imports by 5-year total production. Foreign trade year begins Jan. 1, July 1, or 1st day of crop year.

² None, or less than 0.1 percent.

³ Includes oilseed equivalent of oil; oilseed cake and meal disregarded.

⁴ Imports on declared weight basis, production on farm weight basis.

⁵ Simple average of percentages of sales, 1951-54.

⁶ Not computed.

⁷ Production includes all corn.

⁸ Simple average of percentages, 1950-54.

⁹ Exports of all wool, some on clean and some on actual weight basis, as percentage of total wool production.

¹⁰ Imports include "not finer than 40s," both free and dutiable.

¹¹ Computed from data in Measuring the Supply and Utilization of Farm Commodities, Agriculture Handbook No. 91, Agricultural Marketing Service, U. S. Department of Agriculture, November 1955. Includes USDA shipments.

¹² Supplementary imports only.

TABLE C-17.—Value of agricultural exports and supplementary, complementary, and total agricultural imports, with comparisons, 1910-56

Year beginning July	Total domestic exports	Agricultural exports ¹	Agricultural as percentage of total	Agricultural imports ²			Supplementary imports as percentage of agricultural exports
				Supplementary ³	Complementary ³	Total	
	Million dollars	Million dollars	Percent	Million dollars	Million dollars	Million dollars	Percent
1910.....	2,014	1,029	51			767	
1911.....	2,170	1,048	48			882	
1912.....	2,429	1,121	46			909	
1913.....	2,330	1,112	48			993	
1914.....	2,716	1,474	54	602	390	992	41
1915.....	4,272	1,516	35	782	560	1,342	52
1916.....	6,227	1,966	32	945	647	1,592	48
1917.....	5,839	2,279	39	1,093	729	1,822	48
1918.....	7,081	3,579	51	1,197	733	1,930	33
1919.....	7,949	3,850	48	2,133	1,277	3,410	55
1920.....	6,386	2,606	41	1,443	616	2,059	55
1921.....	3,700	1,915	52	711	659	1,370	37
1922.....	3,887	1,798	46	1,155	922	2,077	64
1923.....	4,224	1,867	44	1,000	875	1,875	54
1924.....	4,778	2,280	48	999	1,058	2,057	44
1925.....	4,653	1,892	41	938	1,541	2,529	52
1926.....	4,867	1,908	39	977	1,304	2,281	51
1927.....	4,773	1,815	38	985	1,209	2,194	54
1928.....	5,284	1,847	35	1,030	1,147	2,178	56
1929.....	4,618	1,496	32	899	1,011	1,900	59
1930.....	3,032	1,038	34	512	650	1,162	49
1931.....	1,908	752	39	375	459	834	50
1932.....	1,413	590	42	282	332	614	48
1933.....	2,008	787	39	419	420	839	53
1934.....	2,085	669	32	498	436	934	74
1935.....	2,375	766	32	642	499	1,141	84
1936.....	2,791	732	26	867	670	1,537	118
1937.....	3,362	891	27	588	567	1,155	66
1938.....	2,885	683	24	486	513	999	71
1939.....	3,744	738	20	572	667	1,239	78
1940.....	3,959	350	9	629	845	1,474	180
1941.....	6,451	1,032	16	769	734	1,503	75
1942.....	10,028	1,497	15	963	370	1,342	64
1943.....	14,698	2,305	16	1,244	530	1,774	54
1944.....	12,549	2,191	18	1,111	618	1,729	51
1945.....	8,468	2,857	34	1,033	846	1,878	36
1946.....	12,725	3,610	28	1,387	1,317	2,704	38
1947.....	13,799	3,505	25	1,444	1,418	2,862	41
1948.....	12,690	3,830	30	1,532	1,469	3,001	40
1949.....	10,104	2,986	30	1,553	1,625	3,177	52
1950.....	12,598	3,411	27	2,289	2,858	5,147	67
1951.....	15,571	4,053	26	1,971	2,728	4,699	49
1952.....	15,126	2,819	19	1,911	2,392	4,303	68
1953.....	15,226	2,936	19	1,694	2,482	4,176	58
1954.....	14,927	4 3,144	21	4 1,509	4 2,272	4 3,781	48
1955.....	16,847	4 3,493	21	4 1,582	4 2,502	4 4,084	45
1956.....	4 20,655	4 4,724	23	4 1,539	4 2,261	4 3,800	33

¹ Beginning July 1942, includes "food exported for relief or charity by individuals and private agencies," in which small amounts of nonagricultural foods are included.

² Agricultural imports for consumption; general imports prior to July 1933.

³ Supplementary agricultural imports consist of all imports similar to agricultural commodities produced commercially in the United States, together with all other agricultural imports interchangeable to any significant extent with such United States commodities. Complementary agricultural imports include all others, about 95 percent of which consist of rubber, coffee, raw silk, cocoa beans, wool for carpets, bananas, tea, and spices.

⁴ Preliminary.

Source: U. S. Department of Agriculture.

TABLE C-18.—Exports of selected agricultural products, 1910-56

Year beginning July	Domestic exports, physical units					Exports, quantity indexes, 1951-53=100			
	Wheat and flour ¹	Cotton ²	Tobacco ³	Lard ⁴	Rice (rough basis) ⁵	All animal products	Fruits and vegetables	Vegetable oils and oilseeds	Total agricultural exports ⁶
	Million bushels	Thousand bales	Million pounds	Million pounds	Thousand bags				
1910.....	71	8.0	399	379	487				
1911.....	82	11.1	426	605	639				
1912.....	145	9.1	470	553	630				
1913.....	148	9.5	507	575	363				
1914.....	336	8.7	395	460	1,255				
1915.....	246	6.1	495	487	1,976				
1916.....	206	5.5	461	454	2,938				
1917.....	133	4.4	328	382	3,181				
1918.....	287	5.8	709	555	3,129				
1919.....	222	6.7	718	784	7,831				
1920.....	369	6.0	564	635	7,142				
1921.....	283	6.3	513	893	8,722				
1922.....	225	5.0	505	787	6,005				
1923.....	160	5.8	623	1,060	3,690				
1924.....	261	8.2	472	971	1,815	146	63	10	
1925.....	108	8.3	576	708	780	107	71	11	
1926.....	219	11.3	575	717	4,931	98	93	10	
1927.....	206	7.9	540	702	5,018	98	84	13	
1928.....	164	8.4	633	783	6,362	88	113	10	
1929.....	153	7.0	677	848	4,690	90	75	8	
1930.....	131	7.1	634	656	4,552	66	103	7	
1931.....	136	9.2	473	578	4,450	52	91	7	
1932.....	41	8.9	436	552	2,879	47	80	8	
1933.....	37	8.0	503	584	1,633	44	82	7	
1934.....	22	5.0	395	435	1,988	32	68	3	
1935.....	16	6.3	473	97	1,369	16	90	4	
1936.....	22	5.7	446	112	840	16	68	3	
1937.....	107	6.0	507	137	4,764	19	87	5	
1938.....	116	3.5	514	205	4,767	31	109	6	
1939.....	54	6.5	352	277	4,484	24	74	23	
1940.....	41	1.2	189	201	5,651	31	38	10	
1941.....	36	1.2	321	393	6,552	203	70	11	
1942.....	33	1.5	318	652	6,961	263	59	28	
1943.....	51	1.1	388	757	7,069	322	76	42	
1944.....	57	1.9	539	902	10,201	237	94	33	
1945.....	319	3.7	596	651	11,469	238	115	15	
1946.....	366	3.7	655	451	12,291	151	118	21	
1947.....	480	2.0	438	383	13,055	126	124	27	
1948.....	505	5.0	520	277	14,378	116	80	77	
1949.....	308	6.0	541	617	16,224	95	78	89	
1950.....	374	4.3	524	467	13,167	114	80	99	
1951.....	480	5.7	584	689	24,058	97	100	96	
1952.....	324	3.2	498	634	25,122	84	98	76	
1953.....	220	3.9	515	423	22,708	119	102	128	
1954.....	275	3.6	516	465	14,385	164	107	179	
1955.....	345	2.3	7 648	562	18,585	204	127	223	
1956.....	546	7.9	-----	7 611	7 38,000	7 197	7 142	7 261	7 169

¹ Includes flour milled from imported wheat.² Crop year beginning Aug. 1, 500-pound bales.³ Farm sales weight. Crop year beginning Oct. 1 (July 1 for flue-cured and cigar-wrapper types) from 1923 onward.⁴ Calendar year.⁵ Crop year beginning Aug. 1 from 1937 onward.⁶ Data prior to 1924 computed from old series on 1924-29 base by use of a multiplier based on overlap in 1924.⁷ Preliminary.

Source: U. S. Department of Agriculture except as noted.

TABLE C-19.—Imports of selected agricultural products, 1910-56

Year beginning July	Imports for consumption, physical units				Imports, quantity indexes, 1924-29=100 ¹		
	Wool, apparel ¹	Tobacco	Sugar ²		Supple- mentary	Comple- mentary	Total
			Foreign sources	Territories			
	Million pounds	Million pounds	Thousand tons	Thousand tons			
1910.....	94	48	2,076	818			
1911.....	51	58	2,061	896			
1912.....	112	68	2,155	922			
1913.....	61	61	2,373	914			
1914.....	166	46	2,692	927			
1915.....	307	48	2,620	951			
1916.....	364	49	2,765	1,035			
1917.....	342	87	2,464	1,099			
1918.....	378	84	2,576	907			
1919.....	337	94	3,497	944			
1920.....	207	59	3,873	964			
1921.....	217	65	2,961	1,011			
1922.....	189	76	4,851	929			
1923.....	243	54	3,829	862			
1924.....	94	77	4,172	1,070	91	88	89
1925.....	172	70	4,435	1,356	100	96	98
1926.....	170	93	4,529	1,307	100	102	102
1927.....	110	81	4,241	1,352	98	104	101
1928.....	87	79	3,912	1,554	110	111	111
1929.....	100	63	4,388	1,393	101	110	106
1930.....	70	74	3,894	1,681	75	110	95
1931.....	43	73	3,260	1,731	69	108	90
1932.....	14	60	2,873	1,922	60	94	79
1933.....	59	56	2,836	1,787	74	106	92
1934.....	29	58	3,200	1,802	83	97	90
1935.....	42	68	2,763	1,815	98	106	103
1936.....	111	69	2,999	1,868	118	115	116
1937.....	150	68	3,280	1,883	80	102	92
1938.....	31	76	3,073	1,810	77	102	91
1939.....	98	81	2,975	1,872	87	113	102
1940.....	223	78	3,006	1,855	104	146	128
1941.....	614	71	3,997	1,852	104	100	102
1942.....	733	81	1,928	1,607	122	44	78
1943.....	643	71	3,431	1,510	125	61	89
1944.....	582	77	3,930	1,547	106	67	84
1945.....	725	76	3,226	1,647	94	82	87
1946.....	924	92	2,697	1,504	98	105	102
1947.....	528	75	4,217	1,812	87	110	100
1948.....	596	88	3,320	1,733	86	114	102
1949.....	348	87	3,809	1,893	96	111	104
1950.....	551	94	3,783	2,173	115	121	119
1951.....	469	106	3,725	1,918	98	115	108
1952.....	439	106	3,897	2,004	109	113	111
1953.....	349	105	3,881	2,249	96	105	101
1954.....	228	110	3,799	2,097	89	93	91
1955.....	255	⁴ 115	4,029	2,155	⁴ 93	⁴ 109	⁴ 102
1956.....	260	⁴ 122	4,260	2,245	⁴ 90	⁴ 101	⁴ 96

¹ Actual weight, calendar year. Does not include wool stored in the United States for the British, 1942-46. Includes wool "not finer than 40s," both free and dutiable.

² Crop year, 1910-34, calendar year, 1935 and later.

³ Base period is calendar 1924-29.

⁴ Preliminary.

Source: U. S. Department of Agriculture.

TABLE C-20.—Balance sheet of agriculture, United States, Jan. 1, 1940-57

[Billion dollars]

Year	Assets					Total assets, total claims	Claims			
	Real estate	Live-stock	Machinery and motor vehicles	Financial assets ¹	Other ²		Real estate debt	CCC loans ³	Other debt ⁴	Proprietors' equities
1940	33.6	5.1	3.1	4.2	7.0	53.0	6.6	0.4	3.0	43.0
1941	34.4	5.3	3.3	4.8	7.3	55.1	6.5	.6	3.3	44.7
1942	37.5	7.1	4.0	5.6	8.3	62.5	6.4	.6	3.5	52.0
1943	41.6	9.6	4.9	7.5	9.7	73.3	6.0	.8	3.2	63.3
1944	48.2	9.7	5.3	9.9	10.7	83.8	5.4	.6	2.9	74.9
1945	53.9	9.0	6.3	12.5	11.4	93.1	4.9	.7	2.7	84.8
1946	61.0	9.7	5.2	14.9	11.1	101.9	4.8	.3	2.9	93.9
1947	68.5	11.9	5.1	15.8	12.4	113.7	4.9	.1	3.5	105.2
1948	73.7	13.3	6.9	16.0	15.1	125.0	5.1	.1	4.1	115.7
1949	76.6	14.4	9.3	16.1	15.5	131.9	5.3	1.2	4.9	120.5
1950	75.3	12.9	11.2	16.0	15.3	130.7	5.6	1.7	5.2	118.2
1951	86.8	17.1	12.8	16.3	16.5	149.5	6.1	.8	6.2	136.4
1952	96.0	19.5	14.9	16.8	18.1	165.3	6.7	.6	7.3	150.7
1953	96.6	14.8	15.4	17.1	19.0	162.9	7.3	1.2	7.6	146.8
1954	94.7	11.7	15.9	17.5	19.8	159.6	7.8	2.4	7.0	142.4
1955	98.8	11.2	16.0	17.9	20.7	164.6	8.3	2.2	7.3	146.8
1956	102.7	10.7	16.5	18.4	19.9	168.2	9.1	1.9	7.9	149.3
1957	109.5	11.2	17.0	18.7	20.4	176.8	9.9	1.6	8.0	157.3

¹ Deposits, currency, United States savings bonds and investments in cooperatives.² Stored crops (including those under CCC loan on or off farm) and household furnishings and equipment.³ Loans held or guaranteed by the Commodity Credit Corporation.⁴ Indebtedness to principal lending institutions and to individuals, merchants, dealers, and others. Estimates for latter group based on fragmentary data.

Source: U. S. Department of Agriculture.