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Part II–B

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Section 4. Consumption
Section 5. Transportation

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SECTION 3. AGRICULTURE

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BY

DOUGLAS B. DIAMOND

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TRENDS IN OUTPUT, INPUTS, AND FACTOR PRODUCTIVITY IN SOVIET AGRICULTURE

I. Introduction

Since 1950 agricultural production in the U.S.S.R. has increased by about 70 percent. The increase has been spread unevenly over this period, about two-thirds of the increase having occurred in the 5 years following Stalin's death (1954–58). Progress since 1958 has been disappointing to the Soviet leadership. Per capita output in 1965 was less than in 1958, and in the last 3 years, the U.S.S.R. has had to import more than $11½ billion worth of grain from Canada, Australia, and other non-Communist countries.

The steady growth in the Soviet population, the continued rise in per capita income, and the rapidly rising expectations of the populace have combined to generate high demands on agriculture. A large part of this demand is directed to the reduction in the proportion of starchy staples (potatoes and bread) in the diet and a concomitant rise in the proportion of quality foods (meat, butter, and fresh fruits and vegetables). Thus, the Soviet leadership must respond to domestic pressures for a better—and more costly—product mix as well as free itself from major dependence on Western sources of food.

Contrary to popular belief, the Soviet regime in this 15-year period has not neglected agriculture. Since 1950 annual inputs into agriculture have grown by one-third and have included several costly new programs that required heavy support from industry. What has been lacking has been a well-conceived and well-sustained effort directed to such basic problems in Soviet agriculture as raising the level of technical skill and improving the system of management and incentives.

The difference between the 70-percent growth in output since 1950 and the one-third growth in inputs is, of course, the effect of the increased productivity of the resources devoted to Soviet agriculture. Today, the combined productivity of the land, labor, capital, and other conventional inputs in agriculture is about 25 percent greater than in 1950. This means that the package of resources used in agriculture in 1966 would yield one-quarter more output than the same resources used in 1950. All of this gain in productivity occurred before 1959; in the last few years increases in output have been attributable solely to additional inputs.

Some of the elements involved in changes in factor productivity in Soviet agriculture are: (1) Improvement in production techniques and the application of new knowledge over a wider area; (2) a rise in the level of education and training of the labor force; (3) improvement in the training and skill of managers and administrators; (4) improvement in the system of management and incentives; (5) economies of scale resulting from, say, an increase in the size of the in-

dividual farm or from a pooling of repair facilities for farm machinery; and (6) improvements in the efficiency with which inputs are combined and used.

The purpose of this paper is to present estimates of output, inputs, and factor productivity in Soviet agriculture since 1950 and to analyze the relationships among these elements for the 15-year period and for important subperiods. Section II provides indexes of agricultural output, divided between crops and livestock; a separate index of output is calculated using a 3-year moving average to reduce the effect of year-to-year fluctuations due to weather conditions. Section III presents estimates of inputs in Soviet agriculture: labor, fixed capital (buildings and machinery), land, current purchases (fertilizer, petroleum products, etc.), and livestock. Section IV brings together the results of sections II and III and presents indexes of factor productivity. Section V examines some of the reasons for variation in factor productivity since 1950, in particular the reasons for the failure of factor productivity to rise in the last few years. Four appendixes give technical details on the calculation of the indexes and the selection of the proper formula.

II. Agricultural Output During 1950–65

A. Measures of Agricultural Output

1. The Soviet gross output index

The index of gross value of agricultural output published by the U.S.S.R. is not accepted by Western analysts as a reliable indicator of agricultural growth. The problems are twofold. In the first place, the official gross value concept includes intra-agricultural uses of farm products (for example, feed for livestock) and thus leads to various degrees of double counting between any 2 years.[1] In addition, the official index covers the value of activities not relevant for inclusion in a measure of farm output—unfinished production and land preparation for the following year.[2]

A more serious problem with the official measure of gross output, however, is the unreliability of official production data for some of the major agricultural commodities. There is evidence of large and varying amount of exaggeration in official claims of grain output. Similarly, though to a lesser extent, an upward bias is believed to be present in the output data for oilseed crops, meat, and milk. The evidence also suggests that most of the exaggeration in official production series has been a post-1958 phenomenon and that the published data for the period 1950–58 are, for the most part, reasonably reliable. Acceptance of the official claims of absolute output since 1958 leads not only to inflation of levels of output for any given year in the period 1958–65

[1] An official index net of all purchases from within agriculture and from other sectors has, however, been published for some years.

[2] TsSU, "Narodnoye khozyaystvo v 1964," Moscow, 1965, p. 812 (hereafter referred to as "Narkhoz 1964" or for other years in the series of official Soviet statistical yearbooks). In addition, an admixture of prices is used in computing the official measure—actual 1958 prices paid for marketed produce, average cost of production for nonmarketable output. The latter two sets of unit values diverged significantly in 1958. "Planovoye khozyaystvo," No. 6, 1963, p. 64–70.

but also exaggerates the trend when comparison is made with 1950–57. The specific deficiencies of Soviet output data for selected commodities have been thoroughly analyzed by Western students and need not be reviewed here.[3] Among the charges leveled by one or more of the above sources are: (1) padding of production data at the farm and local level (meat, milk), (2) outright falsification of data at both farm and national levels (grains), and (3) faulty sampling procedures in obtaining official estimates in the important private sector (principally animal products, potatoes, and vegetables).

2. Construction of an adjusted net output index

The physical commodity series underlying the agricultural production indexes presented in this paper rely in part on independent estimates for selected products (the individual grains); in part on estimates that reflect downward adjustments of official claims for other products (oilseeds, meat, milk); and for the balance of the list on the acceptance of official data.[4]

The indexes shown in table 1 are based on the physical output for major crops and animal products, including changes in inventories of livestock, weighted by 1958 prices. In order to obtain a net measure of the physical amounts available for sale or home consumption, deductions were made for the amounts of grain, potatoes, and milk fed to livestock and for the amounts of grain and potatoes used as seed.[5] The commodity groups included in the index probably embrace more than 95 percent of the total value of farm products available for sale and home consumption; the major exclusions are fruits and oilseed crops other than sunflowers.

Errors in the estimates of production for individual commodity groups may be significant. Major or minor adjustments in the official claims were made for commodities covering 45 percent of the ruble value of average annual net production for each year in the period 1950–55 and 73 percent in 1958–65. Moreover, crude estimating techniques were necessarily used for deriving the deductions in the use of potatoes and grain as livestock feed, the value of which varies between 6 and 12 percent of total net agricultural production.

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[3] See the following references:
Joseph W. Willett, "The Recent Record in Agricultural Production" in Dimensions of Soviet Economic Power, Joint Economic Committee, U.S. Congress, 1962, p. 96–98.
Central Intelligence Agency (hereafter CIA), ER 62–33, "Recent Developments in Soviet Agriculture," Washington, D.C., November 1962, pp. 8–10.
D. Gale Johnson, "Agricultural Production" in Economic Trends in the Soviet Union (edited by Abram Bergson and Simon Kuznets) Harvard University Press, 1963, pp. 212–13, 233.
Arcadius Kahan, "Soviet Statistics of Agricultural Output" and commentary by Luba O. Richter in Soviet Agricultural and Peasant Affairs (edited by Roy D. Laird) University of Kansas Press, 1963.
CIA, ER 64–33, "Production of Grain in the U.S.S.R.," Washington, D.C., October 1964, appendix A.
U.S. Department of Agriculture, "The 1964 Eastern Europe Agricultural Situation," ERS—Foreign 73, Washington, D.C., 1964, pp. 9–13.

[4] Acceptance of unadjusted official estimates does not necessarily mean that the evidence clearly implies that output claims for the commodities involved are valid. Often the evidence is ambiguous concerning the accuracy of certain official series (for example, production of potatoes) so that, lacking clear-cut indicators to the contrary, most investigators have accepted the official estimates.

[5] See appendix A for more details concerning the methodology used in computing the index of agricultural output.

TABLE 1.—*U.S.S.R.: Indexes of net agricultural production, 1950–65*[1]

[1950=100]

	Total	Crops	Livestock		Total	Crops	Livestock
1950	100	100	100	1958	155	143	172
1951	97	91	106	1959	149	122	185
1952	104	102	110	1960	150	124	184
1953	106	97	119	1961	163	135	200
1954	109	99	123	1962	161	129	204
1955	126	118	137	1963	159	118	199
1956	141	138	145	1964	170	157	186
1957	141	126	160	1965	171	141	212

[1] For commodity composition and procedures for deriving indexes, see appendix A.

Despite these caveats, the indexes are believed to be reasonably reliable indicators of trends in the availability of farm products for sale and home consumption during 1951–65. Nevertheless, they should not be taken as precise indicators of change between any 2 years.

The production index is computed with 1958 price weights so as to conform as nearly as possible with the 1959 price weights used in constructing the index of total resources employed in agriculture.[6] Although a case can be made for the use of relative prices of a more recent vintage, alternative indexes constructed with 1963 and 1965 price weights had about the same overall configuration as the index in table 1.[7]

B. TRENDS IN NET AGRICULTURAL PRODUCTION

Net agricultural production increased by about 70 percent between 1950 and 1965. The major part of this growth took place during the last half of the 1950's when output expanded by 40 percent. During the first half of the present decade, the rate of growth slowed, and by 1965 production was only 14 percent above 1960. In order to reduce the effect of annual variations in weather on the annual index of output, rates of growth shown in table 2 have been computed by use of 3-year moving averages as well as on the basis of estimated output in single years.

TABLE 2.—*U.S.S.R.: Average annual rates of growth of net agricultural output, selected periods, 1951–65*[1]

	Straight annual average	Moving average for 3 years[2]
1951–64	3.8	3.7
1951–53	2.0	2.4
1954–56	9.2	8.7
1957–59	4.2	4.8
1960–64	2.6	1.7
1961–65	2.7	.....

[1] The base year for the calculations shown in each line is the year before the stated initial year of period, i.e., the average annual rate of increase for 1951–53 is computed by relating production in 1953 to base year 1950.

[2] Average annual rates of growth were computed by relating the 3-year average for the terminal year (for example, output in 1953 as the average for 1952, 1953, and 1954) to a similar 3-year average for the base year (1950).

[6] The price relatives for 1959 (actual prices paid) were, with the exception of eggs, about the same as the relatives for the *base* prices established in 1958.

[7] See appendix A.

The 3-year average dampens, but does not completely eliminate the effect of changes due to weather.[8] A comparison of the value of net farm output during the three successive 5-year periods affords a still broader view of relative changes over the past 15 years:

A comparison of the value of net farm output, 1950–64

[In billions of rubles]

	Net output for 5-year period [1]	Average annual output
1950–54	133.08	26.62
1955–59	184.02	36.80
1960–64	205.32	41.06

[1] Billions of rubles in 1959 prices. Computed by moving the total value of output for sale and home consumption in 1959 (38.48 billion rubles) from appendix C by the index of output in table 1.

Annual net production in the period 1955–59 averaged 38 percent above the average annual level in 1950–54. But in 1960–64 average annual output was only 12 percent above the average annual level in 1955–59.

Although there have been cyclical swings in weather and growing conditions within each of the 5-year periods, it is doubtful if weather factors accounting for more than a minor part of the marked divergence between levels of production in 1950–54 and 1955–59 on the one hand, and 1955–59 and 1960–64 on the other. During 1950–54 there were (roughly) 2 years of slightly favorable growing conditions (1950 and 1952); and 2 years when more or less normal conditions prevailed (1953 and 1954) and 1 subnormal year (1951).[9] In each of the later two 5-year periods (1955–59 and 1960–64) there were single years of exceptionally favorable growing conditions (1958 and 1964), another pair of above average crop years (1956 and 1961), and 2 years in each period when conditions could be described as more or less normal (1955 and 1957; 1960 and 1962). The last period, however, included 1 year of exceptionally poor growing conditions (1963), probably not matched by any other single year in the entire period 1950–65. If the value of net output in the single year with the most unfavorable growing conditions in each of the three 5-year periods (1951, 1959, and 1963) is deducted from the values shown above, the aggregate increases in output in 1955–59 and 1960–64 comes to 35 and 14 percent, respectively, as compared with 38 and 12 percent for the full 5-year periods.[10]

[8] About three-quarters of the sown area in the Soviet Union in 1958 was in areas similar in climate and soil to the Great Plains States of North Dakota, South Dakota, Nebraska, Montana, and Wyoming, and the Prairie Provinces of Canada. The North American counterpart, due to variations in weather conditions, have had a long history of strong cyclical swings in crop yields. Acreage data from Narkhoz, 1958, p. 398. Climatic analogues from D. Gale Johnson, "Climatic and Crop Analogies for the Soviet Union: A Study for the Possibilities of Increasing Grain Yields," the University of Chicago, Office of Agricultural Economics, Research Paper No. 5716, Dec. 16, 1957, p. II, 7–8.

[9] "Normal" in the sense that there were adverse weather conditions in at least one major producing region and above-average growing conditions in others.

[10] Under Soviet conditions there is usually a 1-year lag between a bumper crop and its effect on production of animal products. Hence, in the single "worst crop" year chosen from each of the three periods output of livestock products actually increased in two of the three (1951 and 1959), reflecting the carryover of good supplies of feedstuffs from the previous year.

III. Agricultural Inputs During 1950–64

The increase in farm output since 1950 has been associated with large increases in four of the five major categories of inputs considered in this paper—fixed capital (buildings and machinery), land, purchases of materials from outside agriculture, and livestock herds. Use of the most important factor—labor—has fluctuated only narrowly throughout the 15-year period. Indexes for each of the five inputs are presented in table 3. Although full documentation of the estimates underlying these indexes await future publication, a general description of the data used for each series is presented below, with further elaboration in appendix B.

Table 3.—*U.S.S.R.: Indexes of inputs used by agriculture, 1950–64* [1]

[1950=100]

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Labor:															
Man-days [2]	100	N.A.	91	93	95	100	101	98	98	98	94	94	94	91	91
Employment [3]	100	96	93	93	92	93	94	96	101	99	95	94	96	94	95
Fixed capital [4]	100	111	122	134	146	164	187	209	234	260	286	310	342	384	432
Current purchases	100	110	112	138	145	152	158	169	184	193	203	221	239	262	279
Land [5]	100	105	107	109	114	126	131	131	132	133	135	137	146	144	141
Productive livestock [6]	100	105	110	113	121	131	141	151	162	170	172	176	184	187	187

[1] The various series of "physical" or value measures from which these indexes are derived are shown in table 14.
[2] All man-days expended in farm activity.
[3] Limited to persons principally or exclusively engaged in farm activity
[4] Average of stocks at end of given and previous year. Includes value of draft animals.
[5] Sown acreage weighted by average grain yields 1949–58.
[6] Average of stock values at end of given year and previous year.
N.A.—Not available.

A. LABOR INPUTS

Indexes of labor inputs are presented in two series in table 3: one is based on the number of persons principally or exclusively engaged in farm activity (the farm labor force) and the other is based on an estimate of the number of man-days worked. Although the two series do not diverge substantially during 1950–64 there are important differences in concept because: (1) the average number of days worked per year by each member of the farm labor force may vary and (2) a substantial proportion of total days expended in producing farm commodities is accounted for by persons principally occupied in nonagricultural pursuits and, hence, not counted in the farm labor force.[11]

The labor force in agriculture is comprised mostly of persons from households attached to socialized agricultural enterprises (collective farms, state farms, etc.). Although the number of days worked per

[11] See appendix B for a more complete explanation of the coverage of the measure for farm employment. In the U.S.S.R. there are a large number of households not attached to farming enterprises which maintain small holdings of sown acreage (plots of kitchen-garden size) and livestock. Besides providing a secondary source of income, these small subsidiary holdings frequently supply certain perishable foods (especially milk, potatoes, and vegetables) otherwise unavailable for various periods of time in local retail outlets. Local shortages of perishable foodstuffs in state-controlled retail outlets frequently occur because of malfunctioning of the distribution system; less frequently they occur because of serious shortfalls in state procurements resulting from crop failures.

person in socialized farm activity has fluctuated narrowly since 1950 there have been annual variations in number of days worked by members of these households in their own subsidiary enterprises. These fluctuations, in turn, have for the most part been related to the changes in official restrictions on size of "private" holdings of land and livestock.[12]

In 1958 between 82 and 83 million persons probably participated at some time during the year in farming activity as compared to only 41.5 million persons engaged principally or exclusively in agricultural pursuits.[13] Although persons from nonagricultural households work only a nominal number of days in farm activity per year the magnitude of the numbers involved (equal again to the farm labor force) makes their contribution of considerable importance.[14]

The preference of one measure over the other depends on the purpose to be served. For productivity accounting in the conventional sense, the man-day series is the more relevant measure. But from the viewpoint of alernative returns foregone to the economy the use of the series on persons principally or exclusively engaged in agriculture may be more appropriate. For example, the planners may view labor expended (in man-days) on subsidiary farm activity by households outside of agriculture as having zero return in other uses, i.e., they may believe the alternative to work on the plot is leisure.[15]

B. OTHER INPUTS

The index of capital stock shown in table 3 reflects the gross value of reproducible physical assets (buildings, structures, equipment) and draft animals. Values are expressed in replacement cost ("constant" 1955 prices) gross of depreciation and net of retirements The productive livestock index is based on the inventory value of herds of mature "productive" animals excluding draft animals. Young animals and those being raised exclusively for slaughter are also excluded.

The index for materials purchased from sectors outside of agriculture is based on purchases of fertilizer, electric power, fuels and lubricants, current repair services, and industrially processed feedstuffs. The sample of goods and services covered in the index included 92 percent of the total ruble outlays by farms for current purchases in the base year (1959).

In the case of land, the index is obtained by weighting the sown acreage in 25 regions with average grain yields, i.e., the index number

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[12] Although there is contradictory evidence as to whether man-day inputs have varied on these plots when expressed as days per hectare or per head of livestock, the evidence, on balance, I believe, suggest slight fluctuations during the period 1950–64. For a view to the contrary (i.e., moderate to large fluctuations in man-days per unit) see Nancy Nimitz, "Farm Employment in the Soviet Union, 1928–63," RM–4623–PR, The Rand Corporation, Santa Monica, Calif., November 1965.

[13] The estimate of 82 to 83 million total is for persons age 12 or over and represents more than one-half of the total population of 154 million age 12 or over for the U.S.S.R. in 1958. (Population estimates are from Foreign Demographic Analysis Division, Bureau of the Census—unpublished.)

[14] I have estimated that about 730 million days were expended in farm activity by these households in 1958 or about 7 percent of the *total* number of man-days expended in farming activity. The implied average of about 18 days per person can be compared to an average of about 230 days worked per participant (age 12 and over) in collective farms, either in employment on the farm or in their family's holdings of small land allotment and livestock.

[15] Official policy toward private activity in agriculture has vacilliated during the period under review and appears to be related more to ideological considerations than economic calculations.

for each year is calculated by weighting the area sown in each region that year by the average grain yield for that region in 1949–58. This method ought to yield reliable results for two reasons: (1) the preponderance of grain acreage in total acreage (about 64 percent for the period 1950–64), and (2) the relative homogeneity of at least three-fourths of acreage with respect to prevailing climate and soil.[16]

C. WEIGHTING OF INPUTS

The five series of inputs are combined by use of 1959 weights that represent the monetary or imputed costs attributed to each of the inputs. Data are available on actual expenditures for labor and for current purchases from other sectors of the economy, but not for the other inputs because there is no explicit accounting in the U.S.S.R. for returns to land, fixed capital, and productive livestock. In order to obtain an "expenditure" weight for the latter two, rather arbitrary assumptions were adopted. First, the income share or service flow for these two factors was derived by assuming alternative interest rates of 8 and 13 percent, and depreciation allowances for capital (excluding draft animals) were then added in order to obtain a gross return on total capital stock.[17] The return to land was taken as a residual—value of agricultural output minus the expenditures or service flows for the other four categories of inputs.[18]

The shares of each input in total costs of production under the assumptions about alternative weights (interest rates) for capital assets and livestock are shown in table 4.

TABLE 4.—*U.S.S.R.: Shares of inputs in total agricultural costs, 1959*

[In percent]

	Rate of interest	
	8 percent	13 percent
Input:		
Labor	57.3	57.3
Fixed capital	8.4	11.8
Current purchases	14.1	14.1
Land	17.3	12.1
Livestock	2.9	4.7
Total [1]	100.0	100.0

[1] The shares expressed as coefficients in the production function in 4 significant places are shown in appendix C.

[16] See footnote 8, above. In a market economy an appropriate measure would take into account quality differences in land by use of relative prices in a base year. The base-year value could be extrapolated by use of a quantity indicator that reflected further qualitative changes from investment or disinvestment in land (drainage, irrigation) as well as changes in relative prices paid for products if all hectares of sown acreage were not substitutable in their production.

[17] See appendix C for explanation of choice of alternative rates of return of 8 and 13 percent.

[18] The value of agriculture output for purposes of distributing income among the several factors considered is defined as the value of sales by the farm sector as intermediate product to other producing sectors (e.g., light and food industry) plus sales directly to consumers plus value of production consumed by producers (consumption-in-kind) plus subsidies to farm enterprises. See appendix C for computations.

Four alternative indexes of total inputs are presented in table 15, Appendix D, with (1) interest rates of 8 and 13 percent and (2) use of two measures of labor input, man-days and numbers of persons principally engaged in farm activity.[19] In the following section, primary attention is focused on one of the four indexes—that based on an 8-percent rate of return on capital and livestock and the use of man-days as the measure for labor. This procedure simplifies the textual presentation, but table 16 (Appendix D) gives calculations of factor productivity using all four indexes of inputs alternatively. All of the four series, however, show about the same overall trend in factor productivity for 1951–64.[20]

IV. Trends in Inputs, Output, and Factor Productivity

For the period 1951–64 as a whole, inputs in Soviet agriculture increased by roughly one-third compared to a growth in output of 70 percent. If the growth of output had been based solely on the use of additional quantities of conventional inputs, only about one-half of the gains would have been achieved. The difference between the observed average annual rate of increase in agricultural production of about 3½ percent (moving 3-year average) and of additions to inputs of 2 percent was due to an average annual increase of some 1½ percent in productivity. But the averages for the whole 14-year period obscure important differences in trends of output, inputs, and productivity for several subperiods (see table 5).

A. 1951–53

In the closing years of Stalin's rule (1951–53) small advances in inputs and factor productivity, averaging about 1½ and 1 percent per year, respectively, combined to give an overall boost in production of nearly 2½ percent per year. This period was marked by a 7-percent reduction in labor input (both employment and man-days) and a one-third increase in capital assets. But the moderate gains in 1951–53 were not in keeping with the ambitions of the post-Stalin leadership or the demands of the populace.[21]

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[19] All indexes are obtained by combining the several series in a geometric formula. The implications of the choice of production function and the weighting system are discussed in appendix C.

[20] In other words the trend in combined inputs for 1951–64 is approximately the same when any one of the four series are considered (see table 16, appendix D).

[21] Net production in 1953 was about 14 percent above 1940 on comparable territory and approximately the same on a per capita basis. For the index of production relating 1940 to 1953, see Johnson, in "Economic Trends * * *," op. cit., p. 211.

TABLE 5.—*U.S.S.R: Estimated indexes of output, input, and factor productivity in agriculture, 1951–64*

A. CUMULATIVE INDEXES WHEN 1950=100

	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Index of output: [1]														
Straight annual	97	104	106	109	126	141	141	155	149	150	163	161	153	170
Moving average for 3 years	101	103	108	115	127	138	147	150	153	156	160	160	163	166
Index of total inputs when labor is expressed as: [2]														
Man-days	(3)	99	105	109	116	120	121	123	125	125	128	132	132	134
Employment	101	101	105	107	111	115	119	125	126	126	128	133	134	137
Indexes of factor productivity: [2]														
Man-days	(3)	104	103	106	109	115	121	122	122	125	125	121	123	124
Employment	100	102	103	107	114	120	124	120	121	124	125	120	122	121

B. AVERAGE ANNUAL RATES OF GROWTH (PERCENT)

	1951–55			1956–60			1961–64		
	1951–55	1951–53	1954–55	1956–60	1956–58	1959–60	1961–64	1961–62	1963–64
Output (3-year moving average)	4.9	2.4	8.7	4.2	5.8	1.8	1.7	1.5	1.8
Total inputs when labor is expressed as:									
Man-days	3.0	1.6	5.1	1.5	2.0	0.8	1.8	2.8	0.8
Employment	2.1	1.6	2.8	2.6	4.0	0.4	2.1	2.7	1.5
Factor productivity: [2]									
Man-days	1.7	1.0	2.9	2.8	3.8	1.2	−0.2	−1.6	1.2
Employment	2.7	1.0	5.2	1.7	1.7	1.7	−0.6	−1.6	0.4

[1] Data from table 1.

[2] Data from tables 15 and 16, appendix D. Index of output for computing factor productivity based on 3-year moving average. Index of inputs is a weighted index of the 5 categories of conventional inputs—land, capital, current purchases, livestock, and labor measured, alternatively, in man-days and numbers of persons principally engaged in farm activity. The coverage for the man-day measure includes total days worked in production of farm products regardless of whether worked by persons with farming as a principal or secondary source of income. For purposes of this table the inputs are combined (in a geometric function) using an 8 percent interest charge for capital and livestock.

[3] Not available.

B. 1954–55

A surge in additional commitments of resources in 1954–55 raised aggregate inputs an average of more than 5 percent per year. Most notable was the expansion of sown acreage, highlighted by the "new lands" program, which in 2 years, increased the use of land under crops by 18 percent. Although employment remained steady, partial relaxation of restrictions on private activity in agriculture and increased incentives in the socialized sector brought about an 8-percent increase in man-days over the 2-year period. In addition, the new regime sustained the rapid increase, begun in 1953, in sales to the farm sector of petroleum, fertilizer, and other industrial products. The high rate of growth in inputs combined with a marked improvement in productivity (up 3 percent a year) resulted in an average annual rate of increase in output of more than 8½ percent for the 2-year period.

C. 1956–60

For the following 5-year period (1956–60), productivity continued to expand at about the same rate as in 1954–55 (3 percent), but the average annual growth of inputs fell from 5 percent to 1½ percent. This fall was accompanied by a sharp decline in the average annual rate of increase in output—from an average of 8½ to 4 percent. However, the deceleration was gradual and average annual productivity rose by nearly a percentage point during 1956–58 (3.8 percent compared to 2.9 percent in 1954–55).[22] These gains in productivity are at least partly attributable to favorable weather in 1956–58.

Whatever the underlying causes of this relatively rapid productivity gain in 1954–58 and especially in 1956–58, the striking success in increasing farm output by some 46 percent with the use of only 17 percent more resources led Khrushchev to base future plans on overoptimistic assumptions. His principal innovations, the expansion of sown acreage in the "new lands" and the substitution of corn for other grain and fodder crops, apparently were huge successes and may have accounted for at least one-quarter of the increase in output in the period 1954–58.

In this atmosphere of euphoria, future commitments were made to the consumer—the U.S.S.R. would catch up with the United States in per capita meat and milk production in 3 or 4 years—and a marked slackening of the rate of growth of inputs was planned. In 1959 and 1960 inputs increased by less than 1 percent per year compared with 3 percent annually during 1954–58.[23] The leveling off in total inputs was highlighted by a 6-percent reduction in the number of persons principally engaged in farm activity that reversed the upward trend of 1954–58 in numbers employed.

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[22] These are the comparative rates when output is centered on a 3-year average. Use of *actual* output in the base year 1955 and terminal year 1958 would show an average annual productivity gain of nearly 5 percent.

[23] Inputs, using man-days as the indicator of labor use, rose by about 1½ percent in 1959 and leveled off in 1960; total inputs, using persons principally engaged in agriculture as the indicator of labor use, were the same in 1960 as in 1959 after a 1-percent rise in 1959.

D. 1961–64

When centered on a *3-year average*, output in 1960 was some 3½ percent above 1958; but *actual* production had declined about 3½ percent in 1959 and had remained about the same in 1960. The failure of agricultural production during these 2 years to maintain the forward momentum of the earlier period apparently convinced the regime that additional resources were needed. Beginning in 1961 reductions in the farm labor force were halted; annual deliveries of new machinery to agriculture, which had declined by 20 percent in the period 1958–60, were boosted so that by 1962 they had nearly recovered the 1958 level. Meanwhile, Khrushchev introduced another major change in land use—a radical shift in the pattern of cultivated acreage. The new campaign called for a sharp reduction in area given over to sown grass, oats, and clean fallow and a comparable expansion in more intensive crops—small grains, corn, sugarbeets, peas, and field beans. This program, launched during the 1962 crop year, had the net effect of expanding total sown acreage by about 14 million hectares in 2 years thus increasing land inputs by an average of 2.5 percent a year.

As a result of these and other measures total inputs expanded by more than 7 percent over the period 1961–64, an acceleration to an average annual rate of growth of nearly 2 percent a year compared with less than 1 percent in 1959–60. Output, however, did not grow as fast as inputs and overall productivity declined by about 0.2 percent a year.

E. TRENDS FOR 5-YEAR PERIODS

In section I comparisons of changes in average annual output were made for the three 5-year periods 1950–54, 1955–59, and 1960–64. This was done in an effort to dampen cyclical effects on agricultural output from changing weather conditions.

When productivity comparisons are made for 5-year periods, as was done above for output, the following results are obtained:

(1) Total inputs for each of the years in the period 1955–59 averaged about 18 percent above the average for each year in the period 1950–54; output averaged 38 percent higher. Therefore, additions to production not attributable to additional inputs came to an average of 20 percent for each of the years in the latter half of the decade compared to each of the years in the period 1950–54.

(2) For each of the years in the following 5-year period (1960–64) total resources committed to the farm sector were on the average 7½ percent above each of the years in the period 1955–59; output averaged 12 percent higher. Increases in production not explained by additional resources came to 4½ percent.[24]

(3) The ratios of additional output per unit of additional input came to 17 percent in 1955–59 and 4 percent in 1960–64.

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[24] If the single year in each period with the most unfavorable weather conditions is excluded (1951, 1959, and 1963) from both the input and output side, the additions in production (35 and 14 percent, respectively) not attributable to additional resources comes to 18 and 6 percent, respectively.

F. LIMITATIONS ON THE MEANING OF THE RESULTS

Interpretation of the trends in output per unit of input of combined resources is subject to limitations imposed by assumptions concerning the nature of the aggregate production function for Soviet agriculture as a whole. The most important limitation is imposed by the assumption that all agricultural inputs can be aggregated into a single production relation. The serious reservations about the specification of a single production relation for the agricultural sector of any country apply particularly to the Soviet Union because of the artificial compartmentalization of agriculture into three "sectors." Roughly one-third of gross agricultural output is produced by the "private" sector, comprising individual holdings of 1½ acres or less, frequently combined with one or two head of livestock. The balance of farm output is produced in large enterprises in the socialized sector (collective and state farms). The former is organized nominally as a "producer's cooperative," whereas the latter is organized along the lines of a state-operated industrial enterprise.

The most distinguishing characteristic among these three forms of organization lies in the use and remuneration of labor services. In the small subsidiary holdings of individual households labor is intensively applied to the point of fairly low physical returns; remuneration is directly tied to output. In the case of the collective farm, labor is used according to the dictates of the collective farm chairman; labor is remunerated as the residual claimant of the farm's gross income, receiving whatever is left after claims have been met. In the case of the state farm, which is operated directly by the Government, the labor force is used in a fashion comparable to the industrial labor force; remunerated at a fixed wage or salary invariant to the net earnings of the farm.[25]

More relevant to the problem of aggregation of all farm labor is the strikingly different degree of mobility of the labor force in each of the two types of socialist enterprises. The collective farm peasantry is the only large social group of Soviet society that is not issued internal passports, the formal prerequisite for freedom of movement and choice among alternative employment opportunities.[26] In contrast, the state farm worker has the same legal status as the industrial or other nonagricultural employee and, hence, faces considerably less restriction on entry into nonfarm employment.

The differences in the method of remnueration of labor services and in the degree of labor mobility have had a marked effect on average wages in collective and state farms. A Soviet study in 1963 indicated that in "recent years" the average payment per man-day for collective-farm labor in all farm activity—private plot and collective farms—was only two-thirds of the average wage of workers in local industry,

[25] The wage workers on state farms do receive bonuses for overfulfilling output goals usually expressed in physical terms. Managerial salaries are related to gross earnings of the state farm.

[26] Murray Feshbach, "The Soviet Statistical System: Labor Force Recordkeeping and Reporting Since 1957," Bureau of the Census, International Population Statistics Reports, series P–90, No. 17, Washington, D.C., 1962, p. 14.

whereas the average daily wage of state farm workers came to nearly 90 percent of that of workers in local industry.[27]

Given the disparities in the organization and payment of labor among the three sectors an aggregation into a single measure of all labor engaged in farm activity may impart a bias to the computed index of total inputs.[28] The coefficient or "weight" assigned to labor in the formula used to compute factor productivity assumes that the value of marginal product of labor is equal to the average net productivity in each of its uses. Intuitively, in the case of the private sector, this may well not be true; i.e., amount added to total product by the addition of 1 more man-day of labor may be considerably below the average net product for all man-days in private farm activity. Moreover, the lack of mobility between collective and state farms, the considerably higher wage for comparable labor in the latter, and the evidence that persons in the labor force of the collective farm would (if permitted) shift to state farms indicates that alternative returns for use of labor (as *between* collective and state farms) are not equal to the value of marginal product in each of the two sectors. Thus, a shift over time in the proportion of total labor used in socialized agricultural enterprises from collective to state farms (to a more "efficient" combination of resources) would show up as an increase in factor productivity. In other words, a shift over time from a disequilibrium combination of resources toward an equilibrium combination will result in a rise in output per unit of total inputs (other things being equal).

Another limitation on the acceptability of the series on factor productivity stems from the assumption that the cost of an individual input—the basis for determining the weight or "coefficient" assigned each of the categories of inputs—represent the value of its marginal product. If there is a divergency between the price paid by farms for a factor of production and its net return (value of its marginal product) agriculture is again said to be in "disequilibrium."

Recent work done on estimating the aggregate agricultural production function in the United States shows that large differentials exist between the price paid by farmers for certain resources and the value of their contribution to production. In the case of fertilizer, for example, the ratio of marginal product to cost was as high

[27] R. V. Alekseyeva and A. P. Voronin, "Nakopleniye i razvitiye kolkhoznoy sobstvennosti," Moscow, 1963, p. 29. Local industrial enterprises are concentrated in rural areas and their labor force is relatively unskilled.

Much of this difference in wages between collective and state farms can be explained by the higher productivity of labor in state farms due to the use of relatively more machinery and other forms of capital.

[28] The shares of man-day inputs in farm activity attributable to the three sectors in benchmark years is estimated to have varried as follows:

Sector	Percentage share		
	1950	1959	1964
Private	30.7	35.2	35.3
Collective farm	61.8	50.4	43.1
State agriculture	7.5	14.4	21.6
Total	100.0	100.0	100.0

as 5 to 1.[39] A misspecification of the weights in the production relation used in this paper due to the assumption that the contribution of each factor is equal to its relative share in total costs could be a source of bias in the results. This is because several categories of inputs have had markedly different trends over time.

Finally, the weight assigned to land varies arbitrarily because its contribution to output was calculated as a residual. This variation in the residual is caused by the absence of an explicit rate of return on fixed capital and livestock. Thus, the alternative rates of interest of 8 and 18 percent resulted in a varying "weight" assigned to land.

Although there is no apparent way of determining the net effect of the above (or other) sources of error of measurement, the principal findings (as to conformation of trends in productivity) would probably be maintained if such errors could be eliminated.

V. Factors Contributing to Changes in Measured Productivity

Assuming that errors of measurement of the type cited above do not radically affect the overall magnitude of changes in productivity or the configuration of the trend for the period 1951–64, what can be said about the forces underlying the observed changes in output and productivity. To recapitulate the main findings in sections II and III:

(*a*) The rate of annual increase in farm output in the U.S.S.R. accelerated after 1953 to a peak output in 1958, followed by a decline in 1959, a leveling off in 1960, and new peaks in 1961 and 1965. A 3-year moving average (to dampen the "weather effect") showed an average annual rate of increase of about 4½ percent for the 1950's (nearly 7 percent a year for the period 1954–58) followed by a marked decline to about 1½ percent per year for the first half of the 1960's;

(*b*) Except for the 2-year period, 1954–55, when there was a spurt in use of inputs of more than 5 percent a year, annual increases in conventional inputs fluctuated between 1 and 3 percent;

(*c*) A comparison of trends in output and inputs shows that overall factor productivity increased about 2¼ percent for the 1950's (nearly 3½ percent for the period 1954–58) followed by a slight decline in the first half of the 1960's. Thus, all of the increase in output in the period 1961–64 can be explained by additions of conventional inputs.

Although factors that account for the underlying changes in efficiency in the use of resources are complex and not readily measurable, they can, nevertheless, be identified conceptually. Some of the more important to be considered in the Soviet setting are: (1) changes in the quality of labor services underlying the physical measures of man-days and employment; (2) changes in the formal organization and

[39] Zvi Griliches, "Research Expenditures, Education, and the Aggregate Production Function," The American Economic Review, December 1964, p. 968. Griliches has estimated that the "disequilibrium gap" (ratio of value of marginal product to factor price) for fertilizer in U.S. agriculture has declined from about 5 to 1 in 1949 to 2.7 to 1 in 1959 and 2.4 to 1 in 1962. Griliches derived a statistically estimated production function in which he estimated the coefficients for each of several inputs "independently" of their relative shares in total costs. The method used in the present paper—derivation of the coefficients by use of observed input market prices or their relative shares in total costs—is comparable to the approach used by the Department of Agriculture in estimating "factor productivity" in U.S. agriculture.

management of agriculture affecting the efficiency with which resources are combined; and (3) changes of policy in the use of land and livestock tending to dampen or augment the flow of their service.

A. QUALITY OF LABOR SERVICES

The measures used in this report for the input of labor (employment and man-days) do not take into consideration possible variations in the intensity or quality of work done. In the institutional setting of Soviet agriculture such variations may result either from changes in the system of rewards and penalties or in qualifications of the labor force. Changes in the quality of the labor force are a function of the age and sex composition as well as the level of skills. The latter, in large part, depends on the level of educational attainment, either in occupational training or general education.

1. Changes in incentives

Incentive arrangements in the collective farm system have varied over the period covered in this paper and have presumably influenced the effort put forth by the average participant in the labor force.[80]

In the period 1953–58 there were many incentive measures designed to induce the collective farm peasant to contribute more days of participation in collective farm work and a higher quality of labor service. The incentive measures adopted included sharp increases (a tripling between 1952 and 1958) in commodity prices paid collective farms and individual producers as well as abolition of compulsory deliveries and tax concessions for private plot owners. The attitude of the individual member toward participation in the work of the collective farm was strongly influenced by the penalty for not contributing the compulsory minimum number of days in collective farmwork—loss of his private plot. These measures gave the peasant a rise in real income between 1953 and 1958 that was relatively larger than the rise in real income of urban wage and salary workers. (See table 6.)

TABLE 6.—*U.S.S.R.: Real wages per member of the collective farm labor force, 1953–63* [1]

[1963=100]

Year	Real wages	Year	Real wages
1953	100	1959	194
1954	115	1960	183
1955	149	1961	224
1956	181	1962	224
1957	182	1963	232
1958	206		

[1] Source: Nimitz, op. cit., p. 97. The in-kind payments are valued in state retail prices. Data in source are expressed in current prices and have been deflated by use of a combined index of retail prices in state stores and collective farm markets. Wages are for participation in collective farm work only and exclude returns from other economic activity; e.g., work in the private plot.

[80] Even under the most favorable conditions, however, there is a tenuous connection between effort and reward for the individual member of a collective farm. As indicated above, the peasant is a residual claimant of the farm's income after all other farm expenses have been met (including involuntary savings for future investment). Moreover, the average payment per workday on the collective farm is determined in such a manner that extra effort on the part of one individual member is not apt to be commensurately rewarded.

The marked increase in wages per man-day in the period 1953–58 undoubtedly had a positive effect on the attitude of the collective farm peasant toward work in the socialist sector. But the evidence suggests that after 1958 the already large disparity between average real wages for collective farmers and other groups has again increased. Accordingly, there were increased indications that the tempo of out-migration of the relatively more skilled workers increased.[32]

Concomitant with the sharp turning point in 1958 in remuneration for collective farm work was a change in the official attitude toward private agriculture, including the small holdings of land and livestock of households attached to collective farms. Pressures were applied to reduce the average size of private plots and holdings of livestock. This situation had the double effect of directly retarding growth in output and reducing the incentive of the peasant to participate in collective farm activity so as to have his "own enterprise." By 1960 the size of the privately sown acreage and livestock holdings per household was about 14 and 8 percent, respectively, less than in 1958. (See table 7.) After the fall of Khrushchev in October 1964 the new administration quickly announced its intention to relax the rules on private holdings.

TABLE 7.—*U.S.S.R.: Index of average size of private holdings per collective farm household, 1953, 1957–64*

[1953=100]

Year	Sown acreage	Livestock [1]	Year	Sown acreage	Livestock [1]
1953	100	100	1960	90	125
1957	102	132	1961	91	134
1958	104	136	1962	92	141
1959	102	130	1963	93	138
			1964	89	(2)

[1] Average of total cattle, hog, sheep, and goat inventories at beginning and end of year valued in base procurement prices of 1958. The coverage of households excludes about 2 percent of the number of households included in the acreage and livestock data.
[2] Not available.

2. Changes in the quality of the labor force

(*a*) *Changes in age and sex composition.*—The flow of services from a farm labor force may vary over time due to changes in the age and sex composition. In some farm activities males and females are substitutes, in others, they are not. Similarly, there are many farm activities in which youths and oldsters lack the physical capability to undertake at all or are less effective than mature, able-bodied persons. The man-day and employment measures used in this paper are not differentiated according to the age and sex of the individuals in the farm labor force and, hence, changes in composition over time are not reflected in the index series.

Estimates can be obtained for the distribution of the Soviet farm labor force between males and females for the following three age groups: youths, 12 to 15 years of age, the able-bodied ages (males,

[32] The moderate upturn in collective farm wages after 1960 is in part spurious. After 1958 the money share of earnings from collective farmwork rose sharply and payments in grain and other products declined. Adequate supplies of farm products in the villages—e.g., grain for flour or for feeding livestock—in exchange for the increased money payments were often not available and a ruble increase thus was not equal to a ruble value of physical product. (Ibid., p. 100.)

age 16 to 59, and females, age 16 to 54), and the overaged. (See table 8.)

TABLE 8.—*U.S.S.R.: Estimated distribution of the farm labor force by age and sex, selected years, 1950–62* [1]

[Share of total (percent)]

	1950	1953	1955	1958	1960	1962
BY AGE						
Youths, age 12 to 15	16	15	10	8	10	11
Able-bodied	74	73	77	73	69	66
Of which—						
Males, age 16 to 59	24	25	28	29	28	28
Females, age 16 to 54	50	48	49	44	41	38
Over-aged	10	12	13	19	21	23
BY SEX						
Males (age 12 and over)	35	36	37	38	39	40
Females (age 12 and over)	65	64	63	62	61	60

[1] Author's estimates (unpublished). Persons in households attached to socialized agricultural enterprises exclusively or principally engaged in farm activity either in the socialist enterprise or in their family's private holding.

Changes in the composition of the farm labor force between 1950 and 1964 are explained in part by structural changes in the population as a whole and in part by migration from agricultural to nonagricultural employment or vice versa. The evidence indicates only small to moderate changes in rates of labor force participation by each of the age groups.

The moderate increase after 1950 in the proportion of able-bodied males in the farm labor force reflects the slow recovery of the Soviet Union from its critical "male deficit." The losses during the two World Wars, the revolution, and the collectivization campaign of the early 1930's so decimated the male population that by 1950 there were only 60 males per 100 females in the Soviet population, 35 years of age and over.[33]

The cyclical variations during 1950–62 in the proportion of the farm labor force comprised of youths was primarily due to relatively high birth rates in rural areas between the end of the collectivization drive (1934) and World War II; depressed rates during the war; and recovery in rates in the postwar period. The sharp increase in the proportion of over-aged persons in the farm labor force is due in part to demographic changes common to the population as a whole and in part to selective immigration from outside of agriculture.

Because of the direction of these structural changes in age and sex of the labor force (see table 8) a qualitative adjustment upward in the employment index shown in table 5 would seem to be in order for this period. The rise in the proportion of males, 16 to 59 years of age, and the decline in the share of youths suggests that the average "physical" capability of the labor force improved. Much of the increase in the share of oldsters during this period was due to the growth in numbers of those just over the upper limit for the

[33] James W. Brackett, "Demographic Trends and Population Policy in the Soviet Union," in Dimensions of Soviet Economic Power, op. cit., p. 519.

able-bodied (age 54 for females and 59 for males); what they may have lacked in physical ability as compared with youths was probably more than offset by skills acquired through experience.

Similarly, a downward adjustment appears appropriate for the period 1958–62 to allow for the decline in the proportion of workers in the able-bodied category. The lower average quality per member of the labor force brought about by this decline in the share of able-bodied—from about three-fourths to two-thirds—probably more than offset the gain due the slightly higher proportion of males.

(*b*) *Changes in the Average Level of Educational Attainment and Training.*—Results of recent research on the sources of economic growth in the United States have highlighted the significance of the educational level of the labor force in explaining changes in productivity overtime.[34] Griliches[34a] found that one-fifth of the increase in productivity of conventional inputs in U.S. agriculture between 1949 and 1959, could be attributed to increases in the level of formal schooling of the farm labor force.

A major improvement in the educational attainment of the Soviet farm labor force took place between the census years of 1939 and 1959. Although benchmark data are not available for postwar years before 1959, the evidence indicates that most of this gain came in the years 1950–58. The fragmentary data for the period after 1959 suggest that in recent years the increase in educational attainment has slowed down (see table 9).

TABLE 9.—*U.S.S.R.: Indicators of educational attainment of the collective farm labor force, selected years, 1939–64*[1]

[Share of total (percent)]

Years of schooling	1939	1959	1962	1963	1964
0 to 6.9	98	77	77	76	74
7 or more	2	23	23	24	26

[1] Source: Soviet statistical abstracts. Data are not available for level of education of the state farm labor force.

Enrollment in grades 5 to 7 at rural schools averaged 3.8 million pupils per year during 1945–49, 8.1 million pupils during 1950–54, and 4.6 million pupils during 1955–58. The spurt in annual enrollments in the early 1950's reflected a combination of high rates of birth in the late 1930's and an official campaign to expand enrollments after the fourth year of schooling. The sharp reduction in annual enrollments in the following 4 years can be explained by the depressed birth rates during the war and immediate postwar years. Given the 2-year lag in the cycle of peak enrollments and initial entry into grades 5 to 7, a relatively large influx into the labor market of persons with at least 7 full years of schooling probably occurred in the period 1952–56.[35]

[34] Edward F. Denison, "The Sources of Economic Growth in the United States and the Alernatives Before Us," Committee for Economic Development, Supplementary Paper No. 13, New York, 1962. Chapter VII.

[34a] Griliches, op. cit., p. 971.

[35] The majority of youths graduating from grade 7 would probably have been 14 to 15 years of age. The proportion of primary school graduates in rural areas enrolling in secondary schools (grades 8 to 10) in the mid-1950's appears to have been relatively low. In 1955–56 enrollments in grades 8 to 10 at rural schools amounted to 27 percent of enrollments in grades 5 to 7, 3 years previously (1952–53).

Similarly, the slow progress after 1959 in raising the proportion of the collective farm labor force with 7 or more years of formal schooling was due in part to the sharp decline in the average annual enrollments in grades 5 to 7 in the period 1955–60 and in part to an increase in out-migration particularly among the young with a relatively high level of educational attainment. The above pattern of school enrollments, graduations, and out-migration would bring about similar qualitative changes in the two subperiods (1950–58 and 1959–64) in the labor force in both the collective and state farms.

Another indication of change in the qualifications of the farm labor force between 1950–58 and the years following is the increase in the number of professionally and vocationally trained personnel residing on farms—technicians (agronomists, zootechnicians, and veterinarians) and mechanics and machine operators. The number of technicians in agriculture grew rapidly in the period 1953–57 under the impetus of post-Stalin programs aimed at relocating agricultural specialists who had been trained but were employed in nonfarm activities. A leveling off in the number of specialists in 1958–60 was followed by a moderate increase in 1961–64, as shown in table 10.

TABLE 10.—*U.S.S.R.: Average annual rate of increase in the number of specialists and trained machine operators and mechanics on farms, selected periods, 1950–64* [1]

	Specialists [2]	Machine operators and mechanics [3]
1951–53	(4)	7.9
1954–57	[5] 30.7	8.1
1958–60	0.1	3.4
1961–62	4.7	1.6
1963–64	2.6	5.2

[1] Source: Soviet statistical yearbooks, various editions.
[2] Agronomists, zootechnicians, and veterinarians with specialized secondary or higher eductional degrees.
[3] Mechanics, tractor drivers, combine operators, and truck chauffeurs. Engineers and the small number of persons whose sole classification is "mechanic" are excluded. The large majority of qualified mechanics are found among the persons classified as "machine operators."
[4] Not available.
[5] 85 percent of the increase in the number of specialists between 1954 and 1957 came in the 2-year period 1954–55.

The large increase in parks of power machinery on farms in the period 1954–57 was matched by an equally large boost in mechanics and machine operators. But as in the case of specialists there has been a slowing in recent years of the earlier rates of increase in machine operators and mechanics trained in vocational schools or on farms. As a result, the ratio of trained operators and mechanics to the stock of power-driven machinery on hand has declined. The following tabulation shows the number of trained operators and mechanics on farms per unit of equipment (tractors, trucks, and grain combines) in selected years:

Operators and mechanics per unit of equipment

Year:	
1950	1.25
1953	1.15
1957	1.13
1960	1.08
1964	0.98

In addition to the decline of average numbers of machine operators per unit of power equipment there has been an apparent decline in their average quality. This deterioration in quality is in part due to inexperience due to the high rate of turnover. For example, in state and collective farms of the Russian Republic in "recent years 84 tractor drivers left for every 100 new ones to arrive * * * (this is) caused by shortages of housing * * * and often by low pay for machine operators." As a result "the level of qualification is not sufficient. Two-thirds of the tractor drivers on state farms have a third-class qualification." [36]

The decline in the ratio of qualified operators per machine led to a reduction in services per machine and thus a lengthening of operations during critical periods of planting, cultivation, and harvesting. Between 1960 and 1964 the average use of tractors per day of operation (e.g., acreage plowed) declined by 21 percent on collective and state farms (2.9 hectares to 2.4 hectares) and the average number of daily shifts per tractor during the period 1960–63 fell to 1.32 in collective farms compared to 1.46 shifts in 1957 in the defunct machine tractor stations.[37] Thus, the lack of timeliness in field operations and the depressing effect on crop yields, a perennial problem in Soviet agriculture, may have worsened in recent years.

B. ORGANIZATION AND MANAGEMENT

It is difficult to say whether the numerous reorganizations in Soviet agriculture since 1950 have engendered net gains or losses in efficiency or have had no effect.[38] On balance, the frequent changes in the administrative structure and personnel of organizations directing farms from above probably disrupted the normal flow of decision-making. But with the exception of one innovation (discussed below) the evidence is not persuasive that Khrushchev's long series of organization and management moves were any more disruptive in the period when factor productivity was declining (1961–64) than in the earlier periods.[39]

These numerous and varied reorganizations clearly have not altered the essential characteristics of the management of socialized agricul-

[36] "Plenum Tsentral'nogo Komiteta Kommunisticheskoy Partii Sovetskogo Soyuza," Mar. 24–26, 1965, Stenograficheskiy Otchet, p. 111. The third-class category includes only those drivers recently trained and with less than *1 year's experience.*

[37] Ekonomika Sel'skogo Khozyaystva, No. 12, 1965, p. 20. The reduction in average use of tractors and combines was also in part attributable to a deterioration in the repair and maintenance of machinery discussed in sec. B, below.

[38] There have been at least 11 major organizational changes in Soviet agriculture in the past 15 years. For a good account of the various organizational changes in Soviet agriculture during the Khrushchev era see:
CIA, ER 63–23, "Vacillations in the Organization of Soviet Agriculture, 1953–63," Washington, D.C., 1963.
Howard R. Swearer, "Agricultural Administration Under Khrushchev," in Soviet Agricultural and Peasant Affairs, op. cit.
Alec Nove, "Some Thoughts on Soviet Agricultural Administration," in Soviet Agriculture: The Permanent Crisis, New York: Praeger, 1965.

[39] The organizational changes after 1960 tended to weaken the position of the Government bureaucracy and enhance the position of the party in directing farm activities. It could be argued that the latter were technically less qualified than the "technocrats" in the Ministry of Agriculture and other Government bureaus and, thus, the quality of decisionmaking in the recent period had deteriorated.
In any case, the new regime is anxious to give the world the impression that most of the problems besetting Soviet agriculture in recent years stem from Khrushchev's frequent innovations in management and organization. The following quote from P. Ye. Shelest, First Secretary of the Ukrainian Party, is typcial: "The subjectivistic [i.e., Khrushchev] approach to the solution of the most important questions in * * * agriculture was manifested in the flagrant violation of the principles of planning, in sham administration, * * * in many reorganizations that had not been thought through. All this even now is costing our country and particularly the collective and state farms dearly." Plenum, op. cit., p. 86.

ture. Khrushchev, through major innovations in agricultural administration, apparently tried to establish a balance between central control and local autonomy in decisionmaking. But he failed in his attempts to partially decentralize the planning of farm production in 1955 and 1964 by permitting farm managers to decide their own crop and livestock production programs.[40] In general, deviations from the traditional pattern of detailed direction of farm activity from above have been unstable and have quickly resulted in reestablishment of central authority. Thus, as in other areas of the economy, centralized planning and control have remained the guiding principles.

In addition, the success criteria for managers of farm enterprises have remained essentially unchanged. These criteria provide managers of farm enterprises with little incentive to save on inputs.[41] The pay and bonuses of farm managers are keyed to the fulfillment of physical production goals and Government procurement plans. If the farm manager responds to these "success indicators" he cannot simultaneously respond to other goals such as "profits."[42] The manager's nonmonetary incentive is to please his superiors in the administrative hierarchy above the farm, especially that of the Communist Party; here again he pleases when he gets out physical production; cost considerations are secondary.

The evidence indicates that at least one of Khrushchev's major innovations in agricultural administration—the abolition of the machine tractor stations (MTS)—had a negative impact on factor productivity. The MTS system had been established by Stalin to provide a pool of machines and machine services for the collective farms. In 1958, Khrushchev proposed that the MTS be dismantled and that most of their machinery and functions be transferred to the collective farms.[43] Many of the largest MTS were distributed to nonagricultural organizations and state farms. The remaining facilities which were either assigned to collective farms or to a new network of Government-operated repair technical stations (RTS), could not maintain previous standards of machinery repair and maintenance. V. V. Matskevich, reappointed as Minister of Agriculture in the wake of Khrushchev's removal, claims that as a result of the dissolution of the MTS system, "the Government repair base * * * was shattered and repair services (for collective farms) essentially eliminated."[44] In Belorussia, for example, in 1964 nearly one-half of the volume of repairs of agricultural equipment was done by collective farms that "not only had no standard repair shop nor even the simplest repair shop, but only smithies."[45] At the same March plenum the First Secretary of the Armenian Republic provided further evidence:

> Experience showed that with the so-called reorganization of the machine-tractor stations a significant part of the repair base in fact was wasted and machine-tractor station buildings were changed into various warehouse facilities

[40] This failure was explicitly acknowledged by K. Obolenskiye, Director of the All-Union Scientific Research Institute of Agricultural Economics, in "Ekonomika sel'skogo khozyaystva," No. 3, 1965, p. 8.

[41] For a good discussion of success criteria for farm managers, see Alec Nove "Incentive for Peasants and Administrators," in Soviet Agricultural and Peasant Affairs, op. cit.

[42] The accounts of the collective farms do not show net revenues. Although such accounts exist for state farms, up to 1965 the prices paid to state farms were generally set at levels below those required to cover current ruble outlays of most farms. Moreover, most capital investment funds for state farms are provided as free grants from Government budget sources.

[43] In 1957, the average MTS serviced the needs of 10 collective farms.

[44] Voprosy Ekonomiki, No. 6, 1965, pp. 5–6.

[45] Plenum, op. cit., p. 76.

or at best were transferred to secondary needs of industry. For example, in the Armenian S.S.R. after the liquidation of the machine-tractor stations, we managed to preserve only 35 of the 52 well-equipped standard repair shops existing before 1959. The others were transferred to various organizations * * *. All this was done in an unorganized and poorly thought out manner, as a result of which agricultural production suffered enormous damage."[46]

Moreover, the decentralization of the repair facilities of the MTS apparently led to the loss of important economies of scale. In Tambov Oblast, the "cost of capital repairs of tractors during recent years has more than doubled in comparison with the cost of repairs in the MTS."[47]

C. POLICIES AFFECTING THE USE OF LAND AND LIVESTOCK

1. Expansion of numbers of livestock in the socialized sector

The propensity of Soviet planners to increase the size of livestock herds irrespective of the availability of feed supplies has probably contributed to the decline in growth of factor productivity in recent years. Because of the relatively low availability of feed per head of livestock in the Soviet Union a high proportion of feed must be used for the maintenance of herds rather than for production of milk, meat, and other products.[48] Under these conditions, if the number of livestock were to remain unchanged, the value of an additional unit of feed in terms of output of products would increase the average value of output per unit of all feed.

Milk output per cow in collective farms, for example, doubled between 1953 and 1959 due in part to increased quantities of feed per head and in part to improvements in the quality and a change in the seasonal distribution of feed. Khrushchev's program for a rapid expansion of corn acreage led to a three-fold increase in silage over the period 1953–59, thus providing a valuable qualitative addition to the feed ration.[49] The continued expansion of herds of livestock after 1959 in the face of stagnating or more slowly growing output of feed, however, resulted in lower efficiency in the use of feed and contributed to a lower rate of growth in the factor productivity. The following relevant data are available for cows held by collective farms:

TABLE 11.—*U.S.S.R.: Indexes of number of cows, average annual milk production, and feed per cow in collective farms, 1958–64*[1]

	1958	1959	1960	1961	1962	1963	1964
Total numbers	100	109	110	111	119	123	123
Milk output per cow	100	103	96	91	87	78	82
Use of feed per cow						(3)	(3)
Grain and other concentrates	100	117	101	73	48	(3)	(3)
Silage[2]	100	115	110	111	98	(3)	(3)
Hay	100	97	78	70	64	(3)	(3)

[1] Source: 1958–62, Finansy SSSR, No. 4, 1964, p. 12: 1963–64, Soviet statistical yearbooks, various editions.
[2] Includes silage and other succulent feed, such as potatoes, feed roots, and sugarbeets.
[3] Not available.

[46] Ibid., pp. 216–17.
[47] Ibid., p. 55. Part of this increase in cost could be attributed to a large increase in prices of purchased spare parts.
[48] If a cow produces only 1,000 kilograms of milk per year about three-fourths of the feed consumed is required for maintenance; but if output increases to 1,500 kilograms, only two-thirds of the feed consumed goes for maintenance. Johnson in Economic Trends * * *, op. cit., p. 230.
[49] See D. Gale Johnson and Arcadius Kahan, "Soviet Agriculture: Structure and Growth". Comparisons of the United States and Soviet Economies, Joint Economic Committee, U.S. Congress, Washington, 1959, pt. I, pp. 219–20.

The same conclusion emerges from data that show change in the total stock of animals and total outlays of feed in state and collective farms for the benchmark year 1953 and the period 1958–64. The fact that livestock numbers after 1958 rose at a faster rate than feed availabilities not only signaled an absolute decline in milk output per cow, but probably also declines in meat and other animal products per ruble of livestock inventories.

[1958=100]

	Index of livestock inventories[1]	Index of total feed expenditures[2]	Feed expenditures per unit of livestock
1953	80	75	94
1958	100	100	100
1959	113	108	96
1960	124	111	90
1961	134	112	84
1962	145	112	77
1963	138	100	72
1964	131	98	79

[1] Cattle, hogs, sheep, and goats on collective and state farms. Index of inventories reflects the mean of herd values (all ages) at beginning and end of year. Official purchase prices for collective farms in 1958 were used to aggregate the several types of herds.

[2] Feed expenditures expressed in total feed units as officially reported in Soviet statistical yearbooks (various editions). The data before 1961 excluded the feed obtained from pastures. Since the contribution of the latter to total feed supplies remained nearly the same in the period 1961–64, it was assumed that the absolute level of pasture supplies in 1961 remained the same for the period 1959–61. Pasture conditions were exceptionally good in 1958 and thus the feed units obtained from pasture for that year are roughly estimated at 30 percent above the 1959–61 level. There are indications that in 1953 pastures contributed roughly the same magnitude of feed units as in 1961.

2. Crop policies

Dramatic changes in the use of land for current or future production of crops have occurred over the past decade in the U.S.S.R. Although the impact of these changes cannot be evaluated in detail here, a summary appraisal can at least point the direction of their impact on overall factor productivity.[50]

In a series of programs inaugurated between 1954 and 1962, Khrushchev directed an expansion of more than 60 million hectares in sown acreage and a radical restructuring of crop patterns.[51] The "new lands" campaign, initiated in 1954, was quickly followed by an even more ambitious "corn program" in 1955. The former program resulted in the plowing up of some 42 million hectares of virgin and long-fallowed lands, mostly in Kazakhstan and Siberia. The "corn program" expanded the acreage of corn for grain, silage, and green feed from 4½ million hectares in 1962 to a peak of 37 million hectares in 1962. When the effects of these two programs on output began to taper off, Khrushchev initiated yet another program, the "plow-up" campaign of 1962. The latter was designed to shift the cropping pattern radically, principally through a drastic reduction in the area sown to perennial grasses and a restriction of the practice of clean

[50] For a brief but good description of several land use programs see Willett, op cit. For a more detailed and critical survey see Naum Jasny, Khrushchev's Crop Policy, Glasgow, 1965.

[51] This expansion of acreage contrasts sharply with an increase of less than 40 million hectares over the previous 40 years (1913–53; on comparable territory).

fallowing.[52] The newly released acreage was to be put under cultivated crops.

The first two major innovations in land use—the new lands and corn programs—had a favorable short-run impact, promoting sizable increases in output and productivity, but by the end of the 1950's the impact had tapered off, and the evidence indicates that in the early 1960's the new lands program even had a detrimental effect on output and productivity. These deleterious effects stem from the fact that in an effort to obtain additional amounts of "cheap" grain, Soviet planners—at Khrushchev's behest—ignored certain farming practices essential to maintaining yields in the new lands regions. Much of this area is comprised of marginal and submarginal soils subject to frequent droughts; good land management in analogous areas of North America (mostly the Prairie Provinces of Canada) demands that 30 or 40 percent of the cultivated area be in clean fallow. But the practice of fallowing was largely ignored in the new lands and by 1963 only 5 percent of the cultivated area was under fallow. Continuous cropping has resulted in the deterioration of the structure of the soil, heavy infestation of weeds, a decline in fertility, and a depletion of reserves of soil moisture.[53] Although the available information is inconclusive, the above practices have apparently brought about a downward trend in the yields per hectare of grain in the new lands as shown in table 12. In the 5-year period, 1959–63, grain yields in

TABLE 12.—*U.S.S.R.: Estimated production of grain from the "new lands" 1954–63* [1]

Year	Area sown to grain (million hectares)	Yield of grain (centners per hectare)	Production of grain (million tons)
1954	4.3	10.5	4.5
1955	18.5	4.3	8.0
1956	26.0	9.6	25.0
1957	26.0	5.0	13.0
1958	26.0	8.8	23.0
1959	23.0	7.0	16.0
1960	26.0	6 9	18.0
1961	26.0	5.8	15.0
1962	25.0	6.8	17.0
1963	25.0	4.0	10.0

[1] Source: CIA, ER 64–33, "The Production of Grain in the U.S.S.R.," October 1964, p. 17.

the new lands (as estimated by CIA) averaged 6.1 centners per hectare compared to 7.6 centners in the previous 5-year period.

On balance, the corn program proved successful, but the leveling off of acreage in areas in which corn is reasonably well adapted and the expansion in areas unsuitable for corn brought about a leveling off of the program's contribution to output at the end of the 1950's. Moreover, the peak seasonal needs for labor and machinery in culti-

[52] Under the practice of clean fallowing the land is not planted and is cultivated only as needed to prevent growing of weeds. The practice also permits accumulation of moisture in the soil.

[53] Kommunist, No. 4, 1963 p. 64.

vating and harvesting of corn overlaps the peak seasonal needs of other crops.[54] The failure in recent years to maintain earlier rates of increase in tractors and other types of field equipment combined with the overall reduction in the size of the labor force has put a strain on resources in major corn-growing regions. Thus, yields of corn and other crops with which corn competes in timeliness of field operations may have been adversely affected.

The third major innovation in land use—the "plow-up" program—was intended to replace "low-yielding" crops (sown grasses and oats) and fallow with "high-yield" crops (peas, beans, and sugarbeets). The program, announced in October 1961 and two-thirds completed during 1962, was roughly comparable to the new lands campaign in its requirements for additional manpower and machinery. Unlike the case of the new lands, however, the additional resources were not provided and there is no evidence that a significant increase in net output per hectare occurred. Moreover, abandonment of the grass rotation system in the northern U.S.S.R.—a key part of the program—may have resulted in serious depletion of soil nutrients because the use of additives (fertilizer and lime) was not expanded enough to replace the nutrients previously contributed by sown grasses. In the March 1965 Plenum of the Central Committee several speakers explicitly condemned the plow-up program as "damaging" and "disruptive" to livestock raising because fodder supplies were depleted both by the reduction in perennial grasses and by lower crop resulting yields from "violation" of crop rotations.[55]

Appendix A. Derivation of the Index of Soviet Agricultural Output

A. SOURCES OF DATA

1. Coverage

The index shown in Table 1 of the text is based on the quantities available for sale and home consumption of: grain, potatoes, vegetables, cotton, sugar beets, sunflower seed, flax fiber, meat, milk, wool, and eggs. In addition, changes in livestock inventories that may be held for investment purposes are included. The weights used in aggregating these quantities are state procurement prices established for collective farms in 1958. For purposes of productivity accounting it would be appropriate to include the concept of output changes from year to year in the inventory of farm commodities (including feedstuffs). Such data are available for socialized farms for selected years but are expressed in current ruble values aggregated in such a manner that deflation into "constant 1958 prices" is not feasible. Changes in stocks of farm commodities held by the Government are not published.

2. Gross output data

The official series for production of the above eleven commodity and livestock inventories are available for 1950–64 from the following official statistical yearbooks:

TsSU, *Sel'skoye Khozyaystvo SSSR.* Moscow, 1960.
TsSU, *Narodnoye Khozyaystvo v 1964.* Moscow, 1965.
For 1965 from:
TsSU, *SSSR v Tsifrakh v 1965.* Moscow, 1966.

[54] For example, harvesting of hay in late spring and early summer, fall plowing for spring sowing of small grains and fall seeding of winter wheat. For an appraisal of the corn program in the 1950's see Johnson in Economic Trends * * *, op. cit., p. 228.
[55] Plenum, op. cit., especially pp. 115, 170–172, and 220–221.

Official data on the gross production of the following products have been accepted without adjustments: potatoes, cotton, flax fiber, wool, and eggs. The derivative of the production estimates for the others is as follows:

(*a*) Grain—1950–55, 1957: Official data for gross output (excluding corn in the milk-wax stage) are accepted. 1956, 1958–65: Independently derived estimates as follows:

[Millions of metric tons]

Year	Official	Estimated	Year	Official	Estimated
1956	125.0	112.5	1962	140.2	109.0
1958	134.7	119.0	1963	107.5	92.0
1959	119.5	95.7	1964	152.1	120.0
1960	125.5	93.0	1965	120.5	100.0
1961	130.8	109.5			

The deduction for 1956 is a rough estimate of the excessive post-harvest losses resulting from inadequate transportation and storage facilities in the new lands areas to handle the bumper crop produced.

As was noted above, Western analysts are in general agreement that Soviet agricultural statistics have become increasingly unreliable since 1957, especially in official claims of production of grain. One source has this to say:

"Beginning with 1958, Soviet officially reported annual yields of grain, especially wheat and corn, have been considerably higher than yields for any other year in Soviet history. In addition, reported yields have shown a stability that is uncommon to any previous known period of comparable length and that seems to conflict with the fluctuations that would be expected from the dissimilar weather conditions in the individual years . . .

"A new estimating procedure apparently was introduced in 1958. Instruction No. 1684 of the Central Statistical Administration, dated 23 April 1958, includes information on the method to be used in estimating the grain crop. This instruction apparently has not been published for public dissemination."

(CIA, ER 64-33, *Production of Grain in the USSR*, October 1964, pp. 20–21.)

Because official production claims are so inflated independent estimates are obtained in the following manner:

"In estimating the actual amount of grain harvested in a given year, Western analysts use data on grain acreage and its distribution among kinds of grain and regions. Estimates of yields per hectare are based on reports on weather and the condition of the grain crop at various times during the season; on the progress in seeding and harvesting; on the amount and progress of grain procurements in the various administrative subdivisions; or statements made by Soviet officials; and on a qualitative consideration of changes in inputs (such as machinery, fertilizer, and seed) that would affect the grain harvest. Estimates are made of the yield of each of the major kinds of grain in the various regions of the USSR, and these estimates are compared with figures obtained for earlier years when crop and weather conditions in the different regions were similar to those prevailing in the year in question. These yields then are applied to the data on grain acreage in arriving at estimates of production of the various kinds of grain and consequently the total grain harvest." (*Ibid.* p. 15–16).

The above summarizes the approach used in deriving the estimates for gross grain output for the years after 1957. As the above report notes, a check on grain production estimates by estimating utilization "provide inconclusive results because the great number of estimates required in the calculations" (*Ibid.* p. 16) (waste, industrial uses, net exports, seed, feed, food and change in stocks). However, the fact that in recent years the Soviet Union has been a major net importer of grain (11 million tons after the poor 1963 harvest and contracts for another 7½ million tons after the mediocre 1965 harvest) provides adequate evidence that large stocks of grain have not been accumulated. This and other evidence on utilization provide benchmark indicators and give some assurance that the production estimates are reasonably accurate.

(*b*) *Sunflower Seed.*—1950–57: Official data for gross output are accepted. 1958–64: Production claims have been reduced by about 8 percent to allow for the excess moisture and trash that results when "bunker weight" (i.e., as measured in the harvesting machine) instead of "barn yield" is used in determining the size of the harvest. The discount used is that required for the year 1958 (*Ekonomika sel'skogo khozyaystva*, no. 6, 1959, p. 32). The 1964 statistical yearbook (*Narkhoz, 1964*, p. 316) indicates that "bunker" estimates have been used for all years since 1950. For present purposes a flat 8 percent is used only for the period 1958–65 although it also may be appropriate to discount for earlier years, and although the annual required discount may fluctuate from year to year to an unknown extent.

(*c*) *Sugar Beets.*—Official data on state procurements of sugar beets are used in place of gross production. It is assumed that sugar beets not procured by the state are fed to livestock or are used in production of seed.

(*d*) *Meat.*—Official production data (including fat and offal) have been adjusted by reductions of 10 percent for the years 1950–56, 11 percent for 1957, and a range of 12 to 15 percent for the period 1958–65. These represent notional allowances for assumed padding of official statistics. Under the pressure of Khrushchev's campaign for "catching up" with the United States in meat and milk output (initiated in 1957) it is believed that pressures on reporting officials at various levels to fulfill unrealistic goals led to a greater degree of falsification in years after 1956.

(*e*) *Milk.*—Official production data minus a deduction of 5 percent for 1950–56 and a variable rate of 6 to 10 percent between 1957–65. See note above for meat.

(*f*) *Changes in Inventory of Livestock.*—1950–62, 1964–65: Changes in inventory of livestock are estimated by changes in the number of cattle, hogs, sheep, and goats at the end of the given year in comparison with numbers at the end of the previous year. No allowance is made for changes in average value per head due to differences in average weight or other indicators of productivity.

1963: The major shortfall in grain output in 1963 provided the setting for a major reduction in numbers of productive livestock, especially hogs, between the end of 1962 and the end of 1963 (hog numbers declined more than 40 percent). Changes in the number of livestock in 1963 undoubtedly resulted from slaughtering young animals or animals of very light weight and foregoing the breeding of livestock. Thus it is not appropriate to weight this decline in numbers by the usual method of applying the value of animals of average size purchased by the state during 1953–59.

The method of determining the value of the decline in the number of livestock in 1963 is as follows. On the basis of the past relationships between the number of meat-producing animals at the beginning of the year and production of meat during this year, production of meat for 1963 was projected at 8.53 million tons (9.93 billion rubles). Assuming that the value of the meat produced in excess of this amount was equal to the value of the decline in the herd, the following value of net agricultural production is derived.

[In billions of rubles]

Item	1962	1963
Meat	9.47	9.93
Livestock	1.00	0
Other components	20.31	19.27
Total	30.78	29.20

3. Use of production for feeding of livestock

(*a*) *Grain and Potatoes.*—Estimates of utilization of grain and potatoes as feed were based on a number of considerations:

(1) net availabilities after deductions for other uses (industrial use, food, net exports, change in stocks);

(2) feed requirements implicit in the level of meat and milk output;

(3) scattered official evidence on total amounts fed for certain years or per head rates of feed utilized.

In making the needed deduction from the gross value of livestock for the value of grain and potatoes fed it was assumed that one-third of the grain used as feed from a given crop will be fed during the calendar year in which it is produced or during the period 1 July–31 December and that two-thirds will be fed during the following calendar year or during the period 1 January–30 June.

(*b*) *Milk.*—A flat deduction of 10 percent was made in the adjusted milk series as an allowance for feeding to livestock.

4. Use of production for seed

(*a*) *Grain.*—The amount of grain deducted for seed in a given year was estimated at 0.15 ton per hectare of the area sown to grain for harvesting in the following year. (*Pravda*, 11 Feb 64. and *Entsiklopedicheskiy sel'skokhozyaystvennyy slovar' spravochnik*, Moscow, 1959, p. 68, 408, 547, 703, 738, 1020.) There is evidence that actual average seeding rates in recent years have been significantly above this official "norm." Hence, the use of a standard rate may lead to an upward bias in net output of grain.

(*b*) *Potatoes.*—The amount of potatoes deducted for seed in a given year was estimated at 1.9 tons per hectare of sown area for harvesting in the following year. (S.A. Il'in, *Ekonomika proizvodstva kartofelya.* Moscow, 1963, p. 3, 5.)

5. Price weights used in aggregating quantitative data

Official purchase prices of 1958 were used as weights. These were established in 1958 by the government as base prices for collective farms from which actual procurement prices were to fluctuate. The new official prices were supposed to provide enough gross receipts for farm outlays for both current expenses (labor, materials) and investment goods (machinery, buildings). This attempt to establish "full cost" prices for collective farms was largely due to the abolition of the machine-tractor stations in 1958 which previously had provided machinery services to collective farms at nominal cost.

Because farm output lagged after 1958, further major adjustments in prices followed in 1962, 1963, and 1965. The 1958 prices had failed to generate enough gross income to cover additional investment needs and to provide a boost in lagging farm wages. Large increases in prices were adopted for livestock (1962 and 1965) ; cotton, sugar beets, and potatoes (1963) ; and grain and milk (1965). If it is assumed that the relative prices for, say, 1963 and 1965 better reflect the needs (planners preferences) and costs (relative scarcities), and thus the appropriate rates of substitution among the products, it can be argued that they would provide a more appropriate set of weights in computing a net index of production. But despite the rather dramatic shifts in commodity prices between 1958 and 1965 the use of price weights for 1963 and 1965 had relatively little impact on the overall index of net production as shown in Table 13.

TABLE 13.—*U.S.S.R.: Indexes of net agricultural output computed by use of alternative price weights, selected years, 1950–65*

[A—1958 base prices; B—1963 actual prices; C—1965 base prices]

[1950=100]

	Total output			Livestock			Crops		
	A	B	C	A	B	C	A	B	C
1950	100	100	100	100	100	100	100	100	100
1955	126	124	125	137	143	141	119	112	113
1960	150	146	149	184	191	186	124	120	120
1965	171	167	172	212	221	220	141	135	135

The moderate acceleration in the index of output of livestock products due to the change in relative prices after 1958 is offset by the dampening of the index of output of crops by use of the latter sets of prices. In addition there is close agreement among the three time series in turning points, especially those computed with the 1958 and 1965 price relatives.

B. DIVERGENCE OF THE NET INDEX BASED ON THE ABOVE ESTIMATES OF PRODUCTION FROM THE INDEX BASED ON ACCEPTANCE OF OFFICIAL PRODUCTION DATA

If above noted *adjustments* are made in the official gross production data for milk, meat, sunflower seeds, and grain for the years 1950–65 the average absolute level of production for each year in the period 1958–65 is 48 percent above the average absolute output for each year in the period 1950–55. If *unadjusted* gross output data are accepted the average differential comes to 59 percent—approximately one-fifth larger. To test for the impact on the overall change in absolute level of output resulting from the adjustments in the non-grain commodities (meat, milk, sunflower seed) a comparative calculation was made by accepting the official claims for the latter crops. The average increase in absolute output for each year in the period 1950–55 (compared to the average for each year in the period 1950–55) was 51 percent, suggesting that about three-fourths of the difference between the *adjusted* and *unadjusted* series is due to discounting of official claims for grain output; one-fourth to discounts in the official data for the other three commodities (meat, milk, and sunflower seed).

APPENDIX B. DERIVATION OF THE INDEX OF SOVIET AGRICULTURAL INPUTS

Detailed exposition of the derivation of the data underlying the several indexes of inputs is not possible in this paper. This appendix describes briefly the concepts and coverage of the individual series on which the indexes of inputs are based and explains the procedure for obtaining the factor-share weights for 1959 used in combining the individual series into an index of total inputs. The individual value and "physical" series from which the volume indexes in Table 8 were derived are shown in Table 14.

A. LABOR INPUT

Alternatives series have been constructed for the labor input based on: (a) the number of persons principally or exclusively engaged in farming activity, and (2) the actual expenditure of work-days in agricultural production (conventionally expressed in Western literature as "man-days"). The labor force series is based on relatively reliable data; the man-day estimates are less reliable, especially that part reflecting inputs of days in the private sector.

1. Numbers principally or exclusively engaged in farming activity

The concept of agricultural employment used in this paper includes persons 12 years of age or over who are principally or exclusively engaged during the year in farm activity, except for members of households whose head is principally or exclusively engaged in *non-agricultural* activities. The latter provision is designed to eliminate from the employment count those members of households whose only or principal employment consists of work on the "plot" (kitchen garden and/or small holdings of livestock) held by a household *not* attached to an agricultural enterprise in the socialist sector (or as an independent peasant) but whose family maintains a kitchen garden and/or holding of livestock as a *secondary* source of income.

TABLE 14.—*U.S.S.R.: Indicators of resources available to agriculture, expressed in ruble values or physical units, 1950–64* [1]

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
Capital stock [2] (billions of rubles, 1955 prices)	10.15	11.25	12.40	13.60	14.85	16.65	18.95	21.25	23.70	26.35	29.00	31.50	34.75	38.95	43.85
Land input: [3]															
Annual sown acreage (millions of hectares)	146.3	153.0	155.8	157.2	166.1	185.9	194.8	193.7	195.7	196.3	202.0	204.6	216.0	218.5	212.8
Index of weighted yields (1950=100)	100.0	100.6	100.7	101.0	100.1	99.3	98.7	98.9	98.9	99.1	97.5	97.8	98.6	96.7	97.0
Weighted acreages	146.3	153.9	156.9	158.8	166.3	184.6	192.3	191.6	193.5	194.5	197.0	200.1	213.0	211.3	206.4
Current purchases [4] (billions of rubles, 1959 prices)	2.59	2.85	2.90	3.58	3.76	3.95	4.10	4.39	4.77	5.00	5.26	5.72	6.18	6.78	7.22
Productive livestock [5] (billions of rubles, 1955 prices)	8.25	8.65	9.05	9.35	9.95	10.80	11.60	12.45	13.35	14.00	14.20	14.50	15.15	15.45	15.45
Labor: [6]															
Man-days (millions)	10,619	(7)	9,627	9,866	10,123	10,662	10,691	10,462	10,437	10,408	10,004	9,941	9,932	9,630	9,693
Number of persons principally engaged (thousands)	41,054	39,457	38,280	38,054	37,579	38,180	38,785	39,308	41,468	40,674	39,013	38,548	39,422	38,759	38,963

[1] The data in this table represent the underlying ruble values or physical units presented in table 3 as indexes. Because of rounding of the data in this table the implied index numbers (1950=100) may not be comparable to those shown in table 3 (computed from unrounded data).

[2] Includes value of fixed assets (machinery, buildings and other structures, land improvements such as irrigation and drainage) and value of draft livestock. Values are expressed in prices of July 1, 1955, with subsequent adjustments—mean of beginning and end-of-year values.

[3] Sown acreage in each year for each of 25 regions weighted by the average grain yield for each region in 1949–58.

[4] See text for categories of purchases included.

[5] See text for description of types of livestock included.

[6] Labor used in farm activity only. See text for discussion.

[7] Not available.

Members of households attached to agricultural enterprises (collective and state farms and other state agricultural enterprises) whose *head is principally* engaged in *non-farming* activity (capital investment activity, municipal services, or subsidiary industrial production) are *included if their principal* occupation is in farming.

The requirement for inclusion in the farm labor force count is rather lax; only a nominal participation is required in terms of days per year. The coverage is more in keeping with the concept of "work experience" as enumerated by the U.S. Bureau of the Census. The concept used since 1940 for the farm labor force in the United States counts family members in farm households as participants only if they work 15 hours or more in a family farm during the "census week".

2. Man-Days

A series of total days worked in farm activity in the USSR was derived for all years in the period 1950–64 except 1951. It represents a measure of the volume of time spent directly in production of agricultural products—crops and livestock—and in associated administrative activities. The days are undifferentiated as to the age and sex of the persons employed. The coverage includes not only time worked by the persons included in the employment series shown in Table 14 but also embraces the input of days by persons of households whose head is *principally engaged in non-agricultural activities* but who maintains (in non-agricultural enterprises) small holdings (kitchen garden and/or small holding of livestock). Also included are days worked in farm activity by members of households *attached to agricultural enterprises* with a *principal occupation in a non-farm production activity* (e.g., capital repair, municipal service) but who have a secondary source of employment in farm production activity.

B. CAPITAL STOCK

The ruble series for capital stock is comprised of two components: (1) value of fixed reproducible assets, and (2) value of draft animals.

1. Fixed assets

Official Soviet index numbers for agricultural fixed assets are available for 1928, 1940, 1952–53, 1958, and 1960–64. The ruble values underlying the index series are said to have been computed in "comparable prices", undepreciated and net of retirements. To get the series used in this paper, the ruble value of fixed assets at the end of 1962 was officially estimated, category by category, in 1955 prices. This base figure was then moved by the official index number series. Values for missing years were interpolated by use of official investment data (also in 1955 prices) and implicit retirement rates. The national census of capital stock in state sectors of the economy as of 1 January 1960 and a comparable census of collective farm assets as of 1 January 1962 have caused some adjustments in the official index series.

Detailed descriptions have been published of the inventory and revaluation of capital in the censuses of 1960 and 1962. Nothing is known, however, about the method used in obtaining the index series (undepreciated and in "comparable prices") used to extrapolate the benchmark values of fixed assets. As an independent check on the reliability of the official index, an index of machinery inventories was constructed and combined with an independently constructed index of buildings and other structures. The machinery index was computed for the years 1928–40 and 1950–59; the sample of machines weighted by prices of 1 July 1955 probably included 90 percent of the value of agricultural machinery and equipment during the two periods. Similarly, a rather crude measure of the value of the other major component of productive capital in agriculture—buildings and other structures—was obtained for the terminal years 1928 and 1959. Basic to the derivation of the index of structures is the use of the official investment series (expressed in prices of 1 July 1955). The independently constructed indexes, of stocks of machinery and structures were weighted by the relative shares of each in the total asset structure of agricultural enterprises at the end of 1962. The results of the exercise are compared with the official index of capital stock, excluding livestock:

Index of Capital Stock in Agricultural (1928=100)

Computed	
Machinery	728
"Productive" Structures	514
Structures and Machinery Combined	657
Official	
Structures and Machinery Combined	623

The differential in the indexes comes to about 5 percent and seems to be a reasonable, albeit rough, check on the official volume indexes of fixed assets published in the annual statistical abstracts.

2. Index of draft animals

The value of draft animals (horses, oxen) at the end of 1962 of 1.1 billion rubles (1955 prices) was moved by the inventory of horse numbers at the end of each year. The benchmark value in 1962 is equal to the value of draft livestock held by socialized enterprises of approximately 1.0 billion rubles plus 0.1 billion rubles as an estimate of the value of draft animals held by the private sector.

C. PURCHASE OF MATERIALS

The index of current purchases of materials from other sectors of the economy is comprised of five series: (1) fuels and lubricants, (2) current repairs of machinery and buildings including repair activity carried out by the farms on their own account (3) use of electric power for productive purposes (4) deliveries of fertilizer and (5) production of processed feeds (millfeed, oilcake) by industry.

1. Fuels and lubricants

The index of fuels and lubricants for 1950–56 was obtained by estimating the quantities of each fuel and lubricant used for tractors and combines and weighting them by use of regional delivery prices of 1 July 1955. The index for 1950–56 was extrapolated to 1964 by use of an index of total mechanical power on farms expressed in horsepower units.

2. Current repairs

The index for current repair outlays is based on the estimated series of outlays on fuels and lubricants. Reasonably reliable estimates of actual ruble outlays (expressed in current prices) for current repairs are available for 1950, 1955–58, and 1962. When crudely constructed price indexes are used to deflate the current ruble series the implied "constant price" index appears generally consistent with the movement of the index based on the use of petroleum products. Accurate data are not available on the rather substantial changes in prices of spare parts and other repair materials and on wage rates of repair workers. These data would be necessary to obtain reliable deflators for the current ruble expenditures in selected years.

3. Fertilizer

Data on deliveries of nitrogen, potassium, phosphorus, phosphorous meal, and several minor fertilizers (expressed in standard nutrient content) were aggregated into a total index by use of factory prices (f.o.b.) prevailing for each type of fertilizer in 1958–59 plus estimated average delivery cost per type of fertilizer from station to user.

4. Electric power

This series is based on the consumption of electric power (expressed in kilowatt-hours) for productive purposes. Electricity used for home lighting on farms and other "nonproductive purposes" is excluded.

5. Feedstuffs purchased

The index is based on estimated production of millfeed (net of losses) obtained from the milling of small grains and pulses and production of oilseed cake obtained from cotton and sunflower seed. These series were aggregated by use of 1958 prices paid by collective farms. Production used in constructing the series is limited to materials processed in government-operated facilities. All such production of millfeed and oilcake is assumed to be used for domestic feeding of livestock. Excluded from consideration are interfarm transfers of whole

grain and other feedstuffs that result from the resale of government procurements to farms. These purchases were counted as intra-agricultural sales and were deducted in computing net output, as explained in appendix A.

6. The overall index of material purchases

Indexes for the above five series of goods and services purchased from other sectors were available for 1950, 1953, 1955–64. The series for 1951–52 and 1954 were interpolated from adjoining years by use of the index of estimated outlays on petroleum products. The separate series were aggregated by use of the actual expenditure weights for 1959 (see appendix C, below). The weight used for fertilizer was the actual expenditure by agriculture for all chemical products (pesticides, herbicides, paint products, etc., as well as mineral fertilizers). The nonfertilizer elements are minor when expressed as a share of total outlays for chemical products.

D. LAND

The measure for land is the change in sown acreage in each of 25 regions weighted by average grain yields in each region for the period 1949–58. As noted in the text the similar characteristics with respect to climate and soil of most of the sown acreage in the Soviet Union leads to a relatively small change in weighted yields regardless of the major overall expansion and shifts regionally in sowings during the past decade. Moreover, grain yields in the areas that are rather sharply differentiated in climate and soil conditions (northern European Russia and the Transcaucasus) from the major agricultural regions are not significantly different from those prevailing in the major areas. As a result the weighted average yield moved narrowly, the high for the 15-year period coming in 1953 (8.65 centners per hectare) and the low in 1963 (8.28 centners per hectare).

E. LIVESTOCK

The measure reflects the value of productive livestock (excluding draft animals) held as breeding stock or for purposes of producing a flow of services over a series of years (e.g., dairy cattle for milk, sheep for wool). The proportion of the herds that is comprised of young stock before the reproductive age or animals raised solely for slaughter is excluded. The value of such livestock are included as working capital in official accounting procedures.

Appendix C. Index Formula and Selection of Weights

A. CHOICE OF INDEX FORMULA

The several inputs considered are aggregated into a production function of the following form:

(1) $$Q_t = A_t^a B_t^b C_t^c D_t^d E_t^e$$

Also, it is assumed that

(2) $$a+b+c+d+e=1$$

(3) $$a=\frac{P_A A}{P_O O},\ b=\frac{P_A B}{P_O O},\ \text{etc.}$$

The variables are defined as follows:

Q_t = predicted output in year t resulting from the use of given amounts of inputs considered (A, B, C, D, and E)
A_t = labor inputs
B_t = capital inputs (reproducible fixed assets and draft animals defined as a flow of services)
C_t = current purchases from non-agricultural sectors
D_t = land inputs
E_t = livestock defined as a flow. Excludes draft animals and other classes of animals considered as working capital
P_A = Price of input A, etc.
A = Quantity of input A, etc.
P_O = Price of output for sale or home consumption
O = Quantity of output for sale or home consumption

The small case letters shown represent the coefficients (or relative shares) for each of the categories of inputs in total output. The concept of output considered is value added by agriculture plus purchases from non-agriculture of materials for current use.

The second assumption implies constant returns to scale and if each of the factors is paid the value of its marginal product in the base period each coefficient will represent the proportionate share of total output. Thus, the third assumption defines each coefficient as the proportion of total costs of production attributable to each category of inputs.

B. ESTIMATION OF VALUE OF OUTPUT FOR SALE AND HOME CONSUMPTION IN 1959

Total value of production for sale and home consumption plus subsidies to state agriculture is estimated to have amounted to 38,482 million rubles in 1959 in current prices.

The estimate is made up of the following components:

	(*Million rubles*)
1. Sales to nonagricultural sectors as intermediate product	23,483
2. Net sales to consumers as final product	4,241
3. Consumption of farm products as income in-kind	9,800
4. Net foreign sales	660
5. Subsidies to state agriculture	298
Total	38,482

Line 1: Comprised of receipts of agricultural sector from sales to other producing sectors, primarily the food and textile industries. This sum of 23,483 million rubles is comprised of value of purchases by industry of 21,233 million rubles (expressed in final purchase prices paid to government procurement agencies) as estimated by Vladimir Treml' (*The 1959 Soviet Intersectoral Flow Table*, vol. 1, Research Analysis Corporation, November 1964 p. 97) plus estimated subsidies paid to procurement agencies of 2,650 million rubles to cover the difference between the prices paid to farms and the lower prices paid by industrial enterprises to procurement agencies (Abraham Becker, *Soviet National Income and Product 1958–62: Part I—National Income at Established Prices* RM–4394–PR, Rand Corporation, June 1965, p. 137) minus estimated turnover taxes of 400 million rubles added to prices paid by the food industry for purchases of grain from procurement agencies (unpublished estimate by Vladimir Treml').

Line 2: Sum of direct sales by agriculture to the population of 793 million rubles through "commission" stores (*Narkhoz. 1962*, p. 540) plus 3,448 million rubles of net sales through the collective farm market (3,831 million rubles gross sales from *Narkhoz, 1962*, p. 540 minus an allowance of 10 percent for trade margin).

Line 3: Unpublished estimate by Constance Krueger. Prices used are the average realized prices received by producers.

Line 4: Value of exports of agricultural products (expressed in domestic prices) is estimated by Vladimir Treml' as 660 million rubles (see contribution by Treml' in this volume).

Line 5: Government subsidies to state agriculture of 167 million rubles for the RSFSR inflated to 298 million rubles (*Narkhoz, RSFSR 1960*, p. 468) by assuming a proportional subsidy on state farm acreage in the other republics.

C. ESTIMATION OF COEFFICIENTS

	When rate of return on fixed capital and productive livestock is—	
	8 percent	13 percent
1. Labor	0.5725	0.5725
2. Fixed capital	0.0842	0.1185
3. Current purchases	0.1411	0.1411
4. Land	0.1731	0.1206
5. Livestock	0.0291	0.0473

Coefficients in Columns 1 and 2 are obtained by dividing the payment to each of the factors of production by the total value of production for sale and home consumption of 38,482 million rubles. The sum total of the payments to the factors is equal to the value of output.

1. Labor

Sum of wages paid to the labor force engaged in a farm activity on state agriculture and collective farms, sales by households of agricultural commodities, and farm income-in-kind. Wages for state agriculture of 3,201 billion rubles was derived as follows:

Average annual wage of 642 rubles plus payments to social insurance of 4.4 percent for a total return of 670.2 rubles per average annual worker. The average annual wage for 1959 is obtained as the mean for the years 1958 and 1960 (average monthly wages of 53.1 and 53.9 rubles, respectively, times 12,—*Narkhoz. 1964*, p. 555). The deductions for social insurance is equivalent to 4.4 percent of the annual wage (V. Krilikoskaya et. al., *Planirovaniye byudzheta gosudarstvennogo sotsial'nogo strakhovaniya*. Moscow, 1959, p. 18). Average annual number of workers in farming activity in 1959 came to 4,557 thousand in state and institutional farms and 219 thousand in machine and repair tractor stations (*Sel'skoye khozyaystvo, op. cit.*, pp. 450, 451, 458). It was assumed that the average estimated wage for state agriculture was also applicable for MTS and RTS workers.

The following returns to other types of farm labor are from unpublished estimates of Constance Krueger: wages paid to farm members and hired labor by collective farms attributable to farm activity (4,450 million rubles) plus share of net income from sale by households of farm products attributable to use of labor (4,580 million rubles) plus income-in-kind (9,800 million rubles).

2. Capital

Charges for capital stock are comprised of three items:

(1) depreciation charges on structures and equipment.

(2) interest on structures and equipment.

(3) interest on horses.

Using alternative interest charges of 8 and 13 percent, the flows come to:

	8 percent	13 percent
Depreciation	1,130	1,130
Interest	2,110	3,430
Total	3,240	4,560

(*a*) *Depreciation Charges.*—Depreciation charges were obtained by the use of a 4.5 percent rate and capital assets valued at 25,100 million rubles in 1959. The relevant rate for depreciation is assumed to be that used for replacement only excluding amortization allowances set aside for capital repair. The rate of 4.5 percent was implied for 1963 for state agricultural enterprises. In 1963, amortization allowances of 905 million rubles were set aside for state agricultural enterprises for replacement against a stock value of 20,200 million rubles (exclusive of livestock). Amortization deductions are from *Narkhoz. 1963*, p. 653. A similar rate appears to be appropriate for collective farms (4.7 percent in 1963 for collective farms of the RSFSR only—L. N. Kassirov and V. A. Morozov, *Khozyaystvennyy raschet v kolkhozakh i sovkhozakh*, Moscow, 1965, p. 45).

The rate for 1963 was deemed to be more appropriate than the implied lower rate for 1959. Major revisions (upward) in accounting for amortization were undertaken in 1963 in order to obtain a more realistic set of allowances.

The data cited above for value of assets (including draft animals) are from unpublished estimates of Scot Butler.

(*b*) *Interest Charges.*—As indicated above I have arbitrarily used alternative rates of return of 8 and 13 percent. Until this year (1966) there has not been an explicit charge levied on reproducible assets in the Soviet economy. Investment funds for state enterprises were for the most part provided either on a grant free basis from the State Budget or from retained profits of the enterprise. But under the provisions of the new planning system for industry a charge will be levied on *undepreciated* value of capital stock. For the enterprises to be transferred to the new system in 1966 the charge will vary from 3 to 8 percent, but this is a "minimum" to be increased in the future (*Finansy SSSR*, no. 3, 1966, pp. 23–24). Soviet economists are discussing a future range of interest rates of 6 to 12 percent with some arguing in favor of a higher rate of 15 percent.

The average rate of return in the U.S. on *depreciated* capital in manufacturing enterprises (before taxes) between 1946–58 came to 11 percent (George J. Stigler, *Capital and Rates of Return in Manufacturing Industries* Princeton, New Jersey, 1963, *errata statement* p. 8). The implied rate on undepreciated capital would, of course, be lower.

In the case of the Soviet Union one would expect to observe a higher rate of return than in the U.S. because of the greater degree of scarcity of this factor of production in the Soviet economy compared to other resources (e.g. labor). Moreover, the priorities of Soviet planners are such that the "recoupment rate" used by planners as a rule-of-thumb measure in choosing among alternative uses of investment is higher for agriculture than it is for, say, heavy industry.

3. Current purchases

Current purchases of materials from non-agriculture sectors of 5,428 million rubles are from Treml' in *The 1959 Soviet Intersectoral . . .*, (*op. cit.*,). Treml, has included services purchased from transportation, communications, internal trade, and distribution. For present purposes of obtaining net purchases by agriculture from the rest of the economy these are excluded on grounds that most of the expenditures reflect double counting of outlays (e.g. trade and transportation) which are included in purchases from other sectors (e.g. food industry).

4. Land

The return to land of 6,660 and 4,640 million rubles (Column 1 and Column 2) was obtained as a residual. It is the difference between total value of sales and home consumption for agriculture of 38,482 million rubles and the summation of the payments to the other factors (lines 1 to 3 and line 5).

5. Livestock

Comprised of interest charges of 1,120 and 1,820 million rubles, respectively. These are imputed charges based on assumed rates of return of 8 and 13 percent on total estimated value of herds of 14,000 million rubles which is the mean of end-of-year values for 1958 and 1959 of 13,800 and 14,200 million rubles, respectively. Value of herds of productive livestock estimated by Scot Butler (unpublished estimates).

Appendix D. Alternative Indexes of Inputs and Output Per Unit of Input

The index of total inputs and factor productivity shown in Table 5 of the text was based on a set of weights for the geometric index formula that reflected an interest rate of 8 percent on fixed assets and livestock and the use of man-days as the indicator for the input of labor.

In Table 15 the 2 indexes derived by use of the 8 percent rate of return (labor, alternatively, expressed as man-days and employment) are compared to those derived with a rate of return of 13 percent. The latter rate was arbitrarily chosen to test for the sensitivity of the results to variations in the assumed contribution of fixed assets and livestock and the return to land obtained as a "residual." The overall conformation of trends in inputs and output per unit of input are not seriously modified (see Table 16).

TABLE 15.—*U.S.S.R.: Indexes of output and inputs in agriculture, 1950–65*

[1950 = 100]

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Output:																
1. Straight annual	100	97	104	106	109	126	141	141	155	149	150	163	161	153	170	171
2. 3-year moving average	100	101	103	108	115	127	138	147	150	153	156	160	160	163	166	----
Inputs:																
3. Rate of return on capital and livestock, 13 percent:																
(a) Labor as numbers principally engaged	100	101	101	106	108	112	116	121	128	130	129	132	138	140	143	----
(b) Labor as man-days	100	(1)	100	106	110	117	121	123	126	129	128	132	136	137	140	----
4. Rate of return on capital and livestock, 8 percent:																
(a) Labor as numbers principally engaged	100	101	101	105	107	111	115	119	125	126	126	128	133	134	137	----
(b) Labor as man-days	100	(1)	99	105	109	116	120	121	123	125	125	128	132	132	134	----

[1] Not available.

TABLE 16.—*U.S.S.R.: Alternative indexes of agricultural output per unit of input, 1950–64*

[1950 = 100]

Output-Input	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
A. Output as 3-year moving average:															
1. Index of inputs, 13 percent rate of return:															
(a) Labor as numbers principally engaged	100	100	102	102	106	113	119	121	117	118	121	121	116	116	116
(b) Labor as man-days	100	(1)	103	102	104	108	114	120	119	119	122	121	118	119	119
2. Index of inputs, 8 percent rate of return:															
(a) Labor as numbers principally engaged	100	100	102	103	107	114	120	123	120	121	124	125	120	122	121
(b) Labor as man-days	100	(1)	104	103	106	109	115	121	122	122	125	125	121	123	124
B. Output as straight annual:															
1. Index of inputs, 13 percent rate of return:															
(a) Labor as numbers principally engaged	100	96	103	100	101	112	122	117	121	115	116	123	117	109	119
(b) Labor as man-days	100	(1)	104	100	99	108	117	116	123	116	117	123	118	112	121
2. Index of inputs, 8 percent rate of return:															
(a) Labor as numbers principally engaged	100	96	103	101	102	114	123	118	124	118	119	127	121	114	124
(b) Labor as man-days	100	(1)	105	101	100	109	118	117	126	119	120	127	122	116	127

[1] Not available.

SEVEN YEARS ON THE FARM: RETROSPECT AND PROSPECTS

BY

JERZY F. KARCZ

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SEVEN YEARS ON THE FARM: RETROSPECT AND PROSPECTS

The 7-year plan (1959–65) has just ended and preliminary goals for the eighth 5-year plan (1966-70) have been announced. This is, therefore, an appropriate time to survey the performance of Soviet agriculture since 1958 and to take a preliminary look at agricultural prospects in the first post-Khrushchev medium-term plan.[1]

I. The Results in Perspective

The 7-year plan was introduced with great fanfare in January 1959. The enthusiasm with which it was presented (and to some extent also received) in the U.S.S.R. is quite understandable if we recall that the sixth 5-year plan (intended to cover the years 1956-60) was scrapped exactly 20 months after its inception. One of the avowed goals of the sixth 5-year plan was "to overtake and surpass the most highly developed capitalist countries in per capita output." As it turned out, the sixth plan embodied a number of inconsistencies which Soviet planners were ultimately unable to reconcile. "Sufficient measures for the quickest liquidation of the existing disproportions in the national economy were not provided; the necessary concentration of capital construction was still not guaranteed and measures for exploiting the natural wealth of the country's eastern regions were not sufficiently worked out."[2]

Several of the important objectives of the 7-year plan and the results achieved are shown in table 1. The record of fulfillment is decidedly spotty. While failure to meet agricultural goals stands out, other important targets were not met either. Among these are: national income, output of consumer goods industry (group B), physical volume of retail trade turnover, and all targets for housing construction.[3] As table 1 also makes clear, population estimates on which the

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[1] I am greatly indebted to Nancy Nimitz, Gregory Grossman, and Abraham S. Becker for the critical reading of earlier drafts and for many useful comments. It is also a pleasure to acknowledge the helpful suggestions of Evsey Domar, John M. Montias, and Benjamin Ward. Final responsibility for remaining shortcomings is of course my own.

Anyone writing on agricultural policy benefits greatly from the substantial number of careful western studies of various aspects of Soviet agriculture. This is only partly reflected in my footnotes: I also wish to mention the work of Naum Jasny and Alec Nove. Many ideas presented here were clarified in discussions with fellow members of the faculty seminar in economics of the Project on Comparative Study of Communist Societies, University of California, Berkeley.

All value figures presented in this study are given in terms of new rubles, introduced on January 1, 1961.

[2] "Direktivy KPSS i Sovetskogo pravitel'stva po khoziaistvennym voprosam," (Moscow: 1958), IV: 781–783.

[3] The fulfillment of targets for producer's goods sector of industry (group A) is a result of the performance of the machine and instrument building sectors. As in earlier days, the official Soviet series for these sectors is likely to be biased in the upward direction as a result of the treatment of new products. That this has also been the case recently is confirmed by a statement in Voprosy ekonomiki, No. 12 (1965), p. 34.

The Soviet national income series is particularly suspect with respect to the increase in 1964. This was first given by Kosygin as "about 5 percent" (Pravda, Dec. 10, 1964); it was then raised to 7 percent by the Central Statistical Administration (ibid., Jan. 30, 1965). The final figure turned out as 9 percent (Narkhoz-1964, p. 575). In Alec Nove's words, this escalation amounts to the "greatest error and omission item of all times in the history of national income accounting."

7-year plan was based turned out to have been too low. In 1963, Soviet authorities found themselves with more mouths to feed than they had anticipated in 1958 (the excess was particularly significant among urban population).[4] Hence, it is possible to say that none of the targets for categories of our table 1 have really been met in per capita terms with the possible exception of output of industrial producer goods (group A).

Table 1 also reveals that while output targets in per capita terms were not met, targets for inputs (in terms of the usual division into the three main factors of production) were overfulfilled. While there was no target for sown area, sowings in 1965 exceeded the 1958 level by 7 percent (in 1963, the excess came to 11.7 percent). The increase in state and cooperative investment was more than 20 percent above plan, while the corresponding figure for the number of workers and employees is 16 percent (labor inputs in collective farm and private agriculture declined by 4.4 percent). Thus, the 7-year plan can also be described as a rather expensive attempt to meet high goals—expensive, that is, in terms of the effect on productivity.

TABLE 1.—*The Soviet 7-year plan: Objectives and achievements, 1958–65*

Item	Unit	1958 (actual)	1965 (plan)	1965 (actual)	Percent fulfillment	Actual increase as percent of planned
1. National income	1958=100	100.0	162–165	157.0	95–97	88–92
2. Capital investment [a]	Billion rubles, 7 years.	[b] 122.0	[c] 194–197	240.0	122–124	157–164
3. Workers and employees	Million persons	54.6	66.6	76.9	116	186
4. Sown area	Million hectares	195.6	(1)	209.1	[d] 107	(1)
5. Population, total	Million at mid-year.	207.0	225	231.0	103	133
6. Population, urban	do	98.0	108	123.0	114	250
7. Industrial output, total	1958=100	100.0	180	184.0	102	105
8. Industrial output, "A"	do	100.0	185–188	197.0	105–106	110–114
9. Industrial output, "B"	do	100.0	162–165	160.0	97–99	92–97
10. Gross farm output	do	100.0	170	114.0	67	20
11. Retail trade turnover	do	100.0	162	159.0	98	95
12. Housing construction, urban.	Million cubic meters, 7 years.	~[b] 286.0	650–660	557.0	84–86	72–74
13. Housing construction, rural.	Million houses, 7 years.	~[b] 3.8	7	3.5	50	[e]–9

[a] State and cooperatives.
[b] 1952–58.
[c] Excluding the value of project making work.
[d] Percent increase over 1958 (there was no target in the published version of the 7-year plan).
[e] Decline of 0.3 million instead of increase of 3.2 million.
[1] Not available.

As we have already noted, the performance of Soviet agriculture under the 7-year plan was especially disappointing. The record for individual products as well as for the more aggregated output measures is shown in table 2, which also shows data for 1964 (in order to avoid the impression of compairing a poor harvest year 1965 with the excellent one of 1958). Instead of the planned increase of 70 percent, the actual rise in gross output was 14 percent: In terms of annual growth rates, the planned and actual figures are: 7.9 and 1.85 percent. In per capita terms, the record is even worse: Output virtually stag-

[4] V. S. Tiukov, R. A. Loshkin, "Sovetskaia torgovlia v period perekhoda k kommunizmu" (Moscow: 1964), p. 151 state that the average annual population (i.e. mid-year) in 1963 was 225 million in lieu of the 220 million expected at the time when the plan was being prepared. Urban population exceeded expectations by 12 million, while rural population was 7 million below the anticipated figure.

nated throughout the 7-year plan period, and it is not impossible that more refined measures of Soviet farm output would even show a small deterioration.[5] Marketed output, expressed in per capita terms for urban population alone, also stagnated.

An additional perspective can be obtained from international comparisons. If we set Soviet performance in 7 years (1958–1965) against that of western and southern European countries in the 6-year period 1957–58 to 1963–64 we find that the Soviet record is surpassed by 11 out of 17 countries. Only Denmark, the Netherlands, Sweden, Portugal, Switzerland and Yugoslavia fail to match or exceed the Soviet performance in total agricultural output.[6] As we shall see, Soviet agriculture under the 7-year plan operated under particularly difficult constraints. Here it is sufficient to note that its accomplishments appear in a much more favorable light once the difficulties and problems arising from these very special environmental characteristics are taken into account.

TABLE 2.—*7-year plan in agriculture: Objectives and performance, 1958, 1964–65*

Item	Unit	1958 actual	1965 plan	1964 actual	1965 actual
1. Gross farm output	1958=100	100	170	113	114
2. Crops	1958=100	100	(1)	119	107
3. Animal products	1958=100	100	(1)	106	123
4. Gross farm output per capita	1958=100	100	156	102	102
5. Crops	1958=100	100	(1)	108	96
6. Animal products	1958=100	100	(1)	96	110
7. Marketed output	1958=100	100	(1)	126	(1)
8. Marketed output per capita [2]	1958=100	100	(1)	100	(1)
9. Grain output, official [3]	Million tons	134.7	163-172	152.1	120.5
10. Grain output, adjusted, USDA	do	115.0	(1)	115.1	98
11. Raw cotton output	do	4.4	5.7-6.1	5.3	5.7
12. Sugarbeet output	do	54.4	76-84	81.2	71.5
13. Sunflower output	do	4.6	(1)	6.1	5.4
14. Flax fiber output	Thousand tons	438	580	346	443
15. Potato output	Million tons	86.5	147	93.6	88.0
16. Vegetable output	do	14.9	30-32	19.5	17.0
17. Fruit and grapes	do	6.6	13.9	9.5	(1)
18. Meat output [4]	do	7.7	16.0	8.3	9.9
19. Milk output	do	58.7	100-105	63.3	72.4
20. Eggs output	Billion	23.0	37.0	26.7	29.0
21. Wool output	Thousand tons	322	548	341	356

[1] Not available.
[2] Urban population only.
[3] Net of corn other than grain corn. Soviet statistics on grain output are believed to be exaggerated and this may also be true of sunflower and some other products. In the more important case of grain, we also show an adjusted series.
[4] Slaughtered weight, including offal.

From many standpoints it is also useful to consider the developments in agriculture within the general context of trends in money incomes and outlays of Soviet households and in Soviet tax policy. Our estimates of trends in personal and disposable money incomes of Soviet households are presented in tables 3 and 4 (absolute magnitudes are

[5] What has been said in footnote 3 with respect to national income statistics for 1964 applies with lesser strength to the series on the gross output of agriculture. According to Brezhnev, in Pravda, Mar. 27, 1965, 1964 output exceeded that of 1958 by 10 percent. Narkhoz-1964, p. 246 shows a figure of 13 percent. It is hard to believe that errors and omissions here amounted to fully 30 percent.

[6] Food and Agricultural Organization of the United Nations, "Production Yearbook" 1964 (Rome: Food and Agricultural Organization of the United Nations), p. 32. It makes little difference whether we compare indices of total output or output per capita. On the other hand, the Soviet performance in 7 years is worse than any of the following groups in 6 years: Western Europe, Eastern Europe including the U.S.S.R., Oceania, Far East, Near East, Africa. On this basis, the Russians outperform only Latin America (even though the average annual increase there was greater than in the U.S.S.R.).

given in appendix table 1 and 2). For convenience these tables include also the years 1956 and 1957, or the 2 years of the abortive sixth 5-year plan. All estimates depend to a large extent upon the work of Nancy Nimitz and Abraham S. Becker of the Rand Corp., who compiled the underlying national income accounts for the U.S.S.R. during the period 1956–62.[7]

Table 3 shows that under the 7-year plan personal money income in the U.S.S.R. increased by 59.3 percent, or at the rate of 6.9 percent annually. The rise was especially rapid in the years 1958, 1965 and 1961, and relatively lowest in 1959 and 1963. Though the planned rate of increase in personal income is not known, it seems likely that the very rapid increase (due partly to the above plan rate of urbanization as well as to the increase in average wages in the noncollective farm sector of the economy) exceeded original expectations.[8] Increases in wages affected mainly, though not exclusively, the lower income brackets.[9]

In the face of a low propensity to save, any increase in personal money incomes that cannot be absorbed by a corresponding increase in the supply of goods and services on the consumer market can still be offset by appropriate tax measures. Table 3 (along with appendix tables 1 and 2) shows that the Soviet government was most reluctant to apply this remedy. The rapid increase in personal money incomes during the period 1956–58 occurred in the face of a reduction of the absolute as well as the per capita burden of direct taxes (defined to include the entire sale of subscription bonds to households); per capita direct taxes declined from 38 to 28 rubles during these years.[10] This is in sharp contrast with the period 1955–56 when renewed inflationary pressures (intensified by rising farm incomes) were met by the Government with increases in direct taxes. By 1957, Khrushchev's problems within the party leadership may well have led him to the adoption of a popular though unwise policy; alternatively, other political or propaganda reasons connected with the avowed Soviet aim of eliminating direct taxation of households altogether may also have played a role. In any event, the policy of reducing per capita direct taxes continued for some time: it was only in 1963 that these taxes re-

[7] Cf. "SNIP—1956–58," "SNIP—1958–62," and "SNIP—Seven year plan."

[8] In a pioneering effort, Abraham S. Becker placed the goals of the 7-year plan within the framework of national income accounts. The calculation suggests that the planned 1965 personal money income of households came to 120.8 billion rubles, while disposable money income of households would amount to 117.4 billion rubles. Appendix table 1 suggests that the goal for personal money income was exceeded by 9.1 percent and that for disposable income by 5.5 percent. Cf. "SNIP—7-year plan," tables 1 and 2.

[9] Minimum wages were raised in 1956—cf., Pravda, Feb. 15, 1956. Income tax reductions, designed to eventually eliminate all income taxes by 1965, were implemented only in 1960 and 1961—they were suspended in 1962 (cf. Izvestiia, Sept. 25, 1962). Benefits accrued mostly to lower income brackets. State farm wages (formerly among the lowest in the economy) were raised in 1961 and 1962—cf. Narkhoz–1962, p. 678. In the summer of 1964, salaries and wages of certain underpaid categories of wage and salary earners—such as doctors, teachers and clerks in the trade network—were also raised. Cf. Pravda, July 14, 1964.

[10] As has been indicated above, the Soviet government announced its intention to abolish direct taxes in May 1960. An earlier step in the same direction was taken in 1958 when compulsory subscription to state bond issues on the part of households was eliminated. The wisdom of this policy is highly questionable: the government was thus depriving itself of a useful tool of monetary policy. Were this policy completely implemented (it has not been so far) inflation could only be fought through reductions in money wages or increases in retail prices. Neither of these is a popular measure—in the U.S.S.R. or elsewhere. The effectiveness of indirect taxes, moreover, is somewhat reduced in the environment characterized by consumer reluctance to spend parts of his income on some heavily taxed items.

gained and surpassed their 1957 level. At that time, however, personal money income was 47 percent above 1957.

TABLE 3.—*Money incomes and outlays of households, U.S.S.R., 1956–65*

[1958=100]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Personal money income	86.3	93.5	100.0	104.1	110.3	121.2	130.4	137.7	144.6	159.3
2. Direct taxes [1]	132.8	120.5	100.0	102.6	104.5	108.1	111.6	121.3	130.0	138.6
3. Disposable money income	82.8	91.5	100.0	104.2	100.8	122.1	131.8	138.9	145.7	160.9
4. Sales to households	81.9	92.3	100.0	106.4	116.1	120.7	130.0	137.5	146.6	[2]
a. Food products	82.9	91.7	100.0	105.3	114.0	119.6	129.3	139.8	148.3	[2]
b. Nonfood products	80.1	93.1	100.0	107.2	118.8	119.9	127.8	129.4	136.0	[2]
c. Services	83.0	92.1	100.0	108.5	117.7	128.9	141.0	153.8	174.3	[2]
5. Personal savings	93.0	152.6	100.0	127.2	59.6	50.9	83.3	100.9	142.1	261.4
6. Personal savings and consumption	82.0	93.2	100.0	106.7	115.3	119.7	129.3	136.9	146.5	[2]
7. Statistical discrepancy [3]										[2]
8. Retail trade inventories, total	80.7	83.2	100.0	117.8	122.8	136.8	145.5	157.5	173.4	[2]
a. Food products	71.4	75.5	100.0	115.3	109.7	118.4	135.2	128.4	149.0	[2]
b. Nonfood products	84.3	86.2	100.0	118.7	127.9	143.8	149.5	168.6	182.8	[2]

[1] Including the entire subscription to bonds.
[2] Not available.
[3] Including the changes in cash holdings if any. See appendix table 1.

TABLE 4.—*Per capita money incomes and outlays of households, U.S.S.R., 1956–65*

[1958=100]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Personal money income	89.4	95.2	100	102.2	106.6	115.1	121.8	126.8	131.4	143.0
2. Direct taxes [1]	137.3	122.6	100	100.7	101.1	102.5	104.3	111.8	117.9	124.4
3. Disposable money income	85.8	93.1	100	102.3	107.0	116.0	123.1	127.9	132.4	144.2
4. Sales to households	84.8	93.9	100	104.5	112.2	114.6	121.5	126.6	133.2	[2]
a. Food products	85.9	93.4	100	103.4	110.1	113.5	120.8	128.7	134.7	[2]
b. Nonfood products	82.9	94.8	100	105.4	114.8	113.9	119.5	119.2	123.5	[2]
c. Services	86.2	93.9	100	106.6	113.8	122.5	132.0	141.9	158.6	[2]
5. Personal savings	96.4	156.4	100	125.5	58.2	49.1	78.2	92.7	129.1	234.9
6. Personal savings and consumption	85.0	94.8	100	104.8	111.4	113.7	120.8	126.1	133.1	[2]
7. Statistical discrepancy [3]										[2]
8. Retail trade inventories, total	83.6	84.8	100	115.8	118.7	129.9	136.1	145.0	157.6	[2]
a. Food products	73.9	76.9	100	113.6	106.0	112.6	126.6	118.1	135.7	[2]
b. Nonfood products	87.4	87.8	100	116.7	121.7	136.6	139.7	155.4	166.1	[2]

[1] Including the entire subscription to bonds.
[2] Not available.
[3] Including changes in cash holdings if any. See appendix table 2.

As a result, disposable money incomes of Soviet households rose even more rapidly than personal money incomes under the 7-year plan: By 1965 they reached a level of 61 percent over 1958. Moreover, all indicators support the view that at the inception of the 7-year plan Soviet households had considerable money hoards. This fact increased the potential inflationary impact of rising disposable incomes.

Despite these trends, the Soviet government might have been able to avoid many unpleasant consequences of above-plan incomes and below-plan agricultural output, if the behavior of demand on the consumer market had corresponded more closely to what could be expected on the basis of certain theoretical considerations. Given the level of Soviet economic development in the late fifties, one might suppose that with rising incomes the increase in the demand for food would be less than proportionate to the increase in disposable incomes. Even such

countries as Brazil and India (both unquestionably less developed than the U.S.S.R.) conform to this pattern of consumer behavior.[11] Indeed, the behavior of Soviet income elasticity of demand for food, measured in a rather unsophisticated way,[12] suggests that something of this nature held true in the U.S.S.R., at least in 1958.

Unfortunately for the Soviet planners (who may have been misled by the elasticity coefficient of 1958) Soviet households drastically altered their spending patterns; and income elasticity coefficients changed drastically beginning with 1959. The shift is of paramount importance for understanding Soviet problems in planning agricultural production as well as trends in the Soviet retail market. Thus, we cannot avoid a more detailed examination of the underlying issues.

Trends in income elasticities of demand (as defined in note 12) for major categories of household outlays during the years beginning with 1957 show the following pattern:

Year	Foods	Nonfood products	Services
1957	1.012	1.663	1.035
1958	0.959	0.743	0.878
1959	1.478	2.348	2.783
1960	1.422	2.000	1.489
1961	0.381	−0.095	0.905
1962	1.032	0.790	1.242
1963	1.692	−0.076	1.949
1964	1.314	1.057	3.343

One striking fact that emerges from these figures is that the level of Soviet income elasticity of demand for food is very high; in India and Brazil the respective magnitudes come to 0.82 and 0.77. Another interesting phenomenon is that income elasticity of demand for food is high in relation to that for nonfood products as well as services.

These interesting phenomena are discussed in some detail in the appendix note, where we conclude that the high level and the behavior of Soviet income elasticities after 1958 are reasonably consistent with Soviet reality, shaped by special characteristics of Soviet command economy. These characteristics in turn are a function of Soviet industrialization policies. Foremost among them are disregard of consumer preferences, the high rate of investment, the preferential treatment of heavy industry, and the neglect of agriculture and consumer goods industries. Some of the fruits of industrial progress were rather bitter. In striving to impose its will on the society, the Soviet government gave a powerful assist to the emergence of a peculiar demand pattern directed largely at those goods which are produced in insufficient quantities by the neglected and inefficient sectors of the economy.

[11] Income elasticities of demand for food are compiled for 24 countries by R. Robert Russell of the University of California, Santa Barbara, in an as yet unpublished paper. The highest elasticities are: Brazil, 0.795 (1953); India, 0.821 (1951); Ceylon, 0.810 (1953). By contrast, income elasticity of demand for food in Sweden (1955) comes to 0.631; in Portugal (1950–51) to 0.623.

[12] For the time being, income elasticity of demand is defined as the percentage change in per capita money expenditures on a given group of products divided by the percentage increase in per capital disposable money income. Much more refined techniques of statistical analysis have been applied recently in an attempt to refine the concept, in order to eliminate the effects of variation in the level of income itself as well as in relative prices. It is not likely that deflation would alter our conclusions significantly (cf. app. table 1) except for food in 1962–64. I hope to apply more refined techniques to a larger set of data in the near future.

After 1958, the peculiar behavior of income elasticities of demand was also due to policies undertaken by Khrushchev and his colleagues. Of first importance here I would put the restrictions on the private sector and the decline in income in kind of collective farmers: both developments tended to increase purchases of food in the retail network. The shift in distribution of money incomes, a direct result of rises in wages and salaries in low-income brackets and the increase in pensions in 1956, also played a role, since it intensified the shift from low-priced starches to high-priced fats and protein foods. The problems posed by these change in demand patterns were compounded by weather difficulties in 1963 and again in 1965, causing further repercussions in the Soviet balance of payments.

The reaction of Soviet planners to rising demand for food and stagnating farm output after 1958 only intensified agricultural difficulties. Before we consider this subject, however, we must examine the trends in the "input market" of the agricultural sector under the 7-year plan.

Trends in inputs provide a direct and virtually mechanical explanation of trends in output. In a Soviet-type command economy, the supply of inputs to agriculture is ultimately a function of various policy measures, though not all inputs are rigidly controlled. Thus, the labor market in the economy is essentially free, though collective farmers must still obtain passports in order to leave the farm; while they are on farm, they are formally entitled to work. Capital formation proceeds through state, collective farm, and (to a small extent) private channels. Though some building materials can be obtained locally, the supply of machinery and fertilizers is strictly controlled by the state. The state also controls land use, in that collective farms may be converted to state farms and the size of the private plot may be changed through government action.

Trends in major farm inputs during the period 1956–65 are illustrated in table 5 and figure 1. Figure 1, which shows variations in shipments of major machinery items to agriculture, should be read in conjunction with table 6 where certain data on farm stocks, shipments, and retirements of some of these items are given for specific subperiods.

TABLE 5.—*Major inputs into agriculture, U.S.S.R., 1956–65*

[1958=100]

Item	Unit	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Sown area, total	Hectare	99.5	99.0	100.0	100.4	103.8	104.6	110.4	111.7	108.8	106.9
2. Grains	do	105.7	102.6	100.0	93.9	95.1	99.9	106.0	107.1	109.8	(1)
3. Fodder crops	do	83.1	90.4	100.0	114.7	125.9	116.7	124.1	125.9	106.6	(1)
4. Capital stock, total	1958=100	83.3	92.5	100.0	107.5	114.2	122.5	135.0	145.8	166.7	(1)
5. Excluding livestock.	1958=100	83.3	91.7	100.0	113.3	123.3	135.0	151.7	170.8	194.2	(1)
6. Investment, total [2]	Ruble	84.4	88.8	100.0	108.9	112.7	124.4	134.7	148.5	175.4	198.9
7. State	do	89.9	101.1	100.0	93.3	114.2	138.8	156.0	179.1	216.0	(1)
8. Collective farms	do	79.6	77.5	100.0	124.3	111.6	111.3	115.1	120.4	137.7	(1)
9. Fertilizer shipments	Ton [3]	88.7	98.2	100.0	104.5	107.2	113.5	128.3	150.2	206.6	254.1
10. Electricity in production.	Kilowatt-hour.	69.4	81.3	100.0	(1)	123.7	149.9	180.4	209.4	237.4	(1)
11. Labor, total	Man-day	101.5	99.6	100.0	99.6	102.6	106.9	106.5	104.0	103.6	(1)
12. Collective farms	do	113.4	103.3	100.0	99.8	90.9	84.2	82.0	79.5	77.1	(1)
13. Private sector	do	94.6	97.1	100.0	97.1	109.5	126.0	125.5	121.2	121.9	(1)

[1] Not available.
[2] In 1955 prices.
[3] Commercial weight.

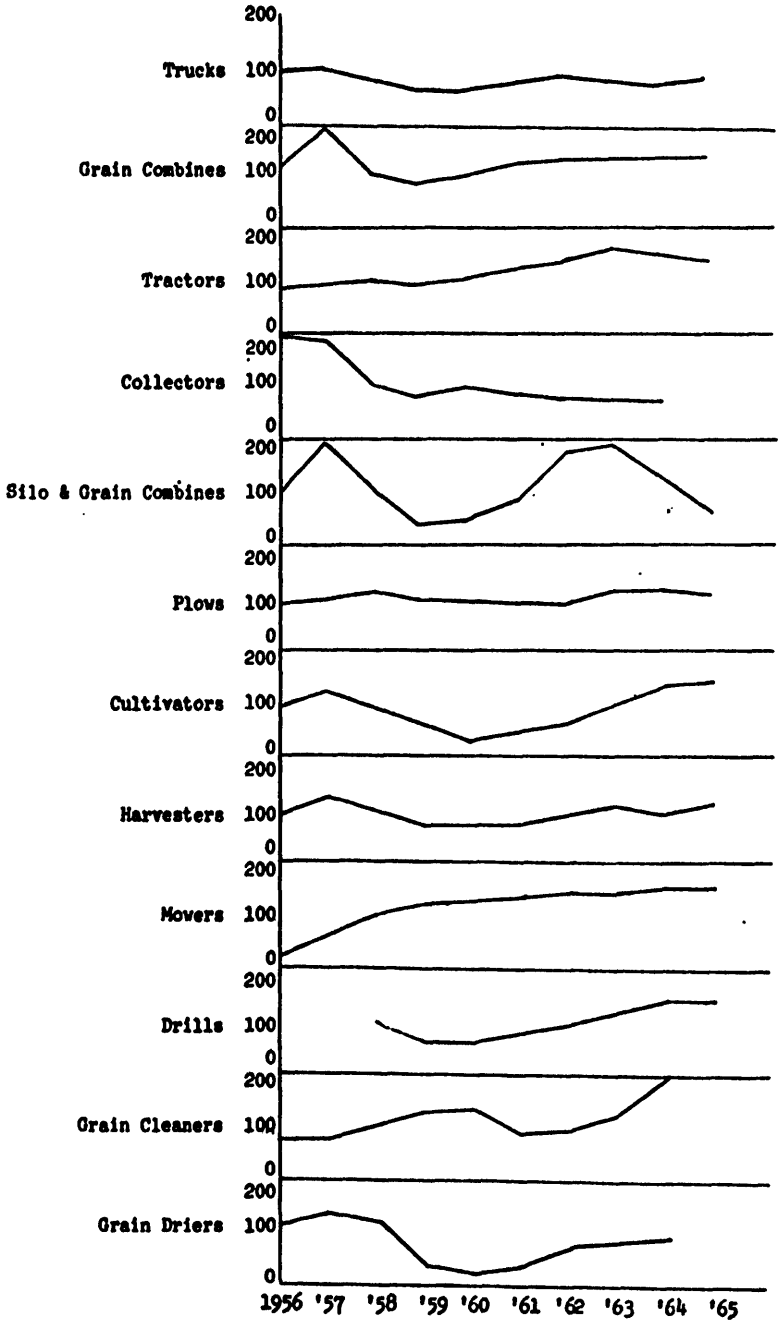

Figure 1: Shipments of Major Machinery to Agriculture, USSR, 1956-1965

TABLE 6.—*Stock on farms, shipments, and retirements of major machinery inputs, U.S.S.R., 1956–65*

[Thousand units unless otherwise indicated]

	Tractors [1]	Trucks	Grain combines	Silage-corn combines	Plows	Cultivators	Reapers	Seeders [2]
Stock on farms:								
Jan. 1, 1956	840	544	338	4	692	667	5	744
Jan. 1, 1958	924	660	483	133	711	839	188	1,042
Jan. 1, 1961	1,122	778	497	156	782	755	281	1,003
Jan. 1, 1964	1,539	954	513	264	907	864	352	1,154
Shipments per year:								
1956–57	144	120	107	65	125	177	949	235
1958–60	153	81	58	24	149	122	67	133
1961–64	213	71	77	62	153	140	75	181
1956–64	178	85	77	50	146	142	77	177
1959–65 plan [3]	171	128	57	9	143	107	.....	107
1959–65 actual	199	72	71	43	151	133	72	170
Retirements [4] per year:								
1956–57	102	49	47	.....	115	141	2	96
1958–60	87	42	54	16	126	150	36	146
1961–64	109	27	73	35	122	112	57	143
1956–64	100	47	61	21	122	131	38	134
Retirements/shipments (percent):								
1956–57	70.8	40.8	43.9	.....	92.0	79.7	2.1	40.9
1958–60	56.9	51.9	93.1	66.7	84.5	123.0	53.7	109.8
1961–64	51.2	38.0	94.8	56.4	79.7	80.0	76.0	79.00
1956–64	56.2	43.5	79.2	42.0	83.6	92.3	49.4	75.7

[1] Physical units.
[2] Excluding manure spreaders from 1958 onward.
[3] Revised in mid-1960 to 1,610,000 tractors, 540,000 grain combines, 99,000 corn and silo combines, 1,214,000 plows, 1,141,000 seeders.
[4] Include shipped but as yet unallocated or unsold machines.

Table 5 shows that trends in the supply of major farm inputs were by no means uniform under the 7-year plan. Sown area rose by 4.6 percent in 1959–61; it then increased rapidly in 1962 at the expense of clean fallow. This was a direct result of Khrushchev's antigrassland and antifallow campaign, begun late in 1961. The trend continued through 1963 but was reversed before Khrushchev's dismissal. The reduction in area under grains through 1960 reflects certain trends in planning practices to be discussed later. Area under fodder crops rose concomitantly under the double impact of high procurement quotas for livestock products and the increasing size of herds. The deemphasis of corn, initiated in 1964, led to a decline in total fodder crop area.[13] All in all, sowings under the 7-year plan rose by 7 percent; this compares with the increase of 24 percent, achieved in 1953–58 through the new lands campaign.[14]

By 1964, the size of the capital stock (excluding livestock) rose by 94 percent or slightly more than 1953–58.[15]

Trends in farm investment reveal the failure of collective farms to meet the goals of the 7-year plan; they also show the attempt of the state to compensate for the shortfall. But this trend developed only in 1961: in 1959 state investment in farming was below the level of both 1957 and 1958. As Nancy Nimitz has shown in her penetrating anal-

[13] Soviet official series on the size of the area under grains and fodder crops was refined from 1960 on, in order to exclude the area under corn harvested prior to the milk wax stage (shifted to fodder crops).
[14] Nancy Nimitz, "The Lean Years," Problems of Communism, XIV:3 (May–June 1965), 12.
[15] Loc. cit.

yses of Khrushchev's lean years,[16] investment under the 7-year plan emphasized construction of buildings, including barns. Only 46 percent of total farm investment in 1959–63 was accounted for by machinery, electrification, and water supply. In 1954–58, the corresponding figure was 55 percent. For machinery alone, the figures are 33 and 45 percent respectively.

Through 1961, shipments of fertilizers to agriculture rose very slowly. A greater effort to meet the goals of the 7-year plan began in 1962, but it was only from 1964 onward that fertilizers were available in sufficient quantities to allow more than token allocation to grains. Meanwhile, the U.S.S.R. had been exporting fertilizers: exports rose from 2.15 million tons in 1958 to 4.24 million in 1964 (as a percent of domestic shipments to agriculture they increased from 20.2 percent in 1958 to 29.4 percent in 1962, then declined to 19.0 percent in 1964).[17] The amount of electricity used in production more than doubled in 1958–1965.

Figure 1 illustrates a downward trend in the allocation of machinery to agriculture beginning with 1958. We must, of course remember that a very considerable part of on-farm machinery stocks is idle during the year as a result of lack of spare parts or improper maintenance.[18] Table 6 shows that in 1958–60 retirements for such simple implements as cultivators and seeders exceeded shipments to agriculture, with a resulting decline in on-farm stocks. For most other machines during the same period, anywhere from 52 to 93 percent of all shipments were used to replace machines that were scrapped or cannibalized for spare parts. This is also true of reapers and corn or silage combines which were not produced in large quantities before 1958.[19] Some improvement is shown in the period 1961–64 although this may reflect primarily the impact of more restrictive regulations on scrapping farm machinery.[20]

While farms suffered from lack of machinery and parts, the Soviet Union continued to export tractors, trucks, and farm machinery: in the case of trucks the quantities were by no means insignificant.[21]

Trends in machinery allocations appear all the more puzzling if we recall the large size of Soviet farms: In 1958 the average state farm had 8,700 hectares and the average collective 1,900 hectares of sown area; by 1964 the collective farm average had risen to 2,900.[22] Although the substitution of labor for machinery on farms of this size is technically possible, the difficulties rise more than proportionately with the increase in farm size as a result of internal transportation problems. What was technically possible did not in fact occur under the 7-year plan, since a number of complex and related phenomena reduced the opportunity for factor substitution.

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[16] Ibid., p. 20.

[17] Vneshtorg—1959–63, pp. 46–47, and Vneshtorg—1964, p. 31. In 1963 about half of all fertilizer exports went to the other socialist countries including Yugoslavia. In 1958, about 70 percent of fertilizer export was destined for the same countries.

[18] E.g. Plenum—March, 1965, pp. 49–51.

[19] Evidently, this reflects the judgment of farms on the condition of machinery acquired from the machine tractor stations.

[20] Cf. the decree of the Council of Ministers of the U.S.S.R. No. 1058, dated Nov. 30, 1961, which forbade scrapping of tractors, combines, trucks, and self-propelled chassis prior to the date foreseen by existing norms of amortization and prior to the attainment of established limits on wear and tear of major parts and subassemblies. Cf. "Sbornik reshenii po sel'skomu khoziaistvu" (Moscow: 1963), pp. 544–554, but especially pp. 553–54 which list the complicated regulations applying to the act of scrapping.

[21] Cf. Vneshtorg—1959–63, pp. 36–37 and Vneshtorg—1964, p. 25.

[22] Narkhoz—1964, pp. 391, 411.

New outward migration from the countryside proceeded after 1958 at a rate that exceeded all expectations in the Kremlin. By mid-1963, rural population amounted to only 107.9 million, or fully 7 million less than had been expected in 1958.[23] During the 7-year period 1957–64, the able-bodied population of the collective farms in the Pskov oblast' declined from 200 to 110 thousand persons. It was frankly acknowledged that if this trend continued during the forthcoming decade, the area would be populated exclusively with "ghost kolkhozes." [24] Admittedly, the problem was especially serious in the northwestern region of the RSFSR where collective farm production involved persistent financial losses for farms and farmers until 1965. But the existence of "the employment problem" (a Soviet euphemism for the "unemployment problem") in farming areas as well as in small towns is also acknowledged in Belorussia, Moldavia, Transcaucasia, Uzbek SSR, the Volga-Viatka, Central Blacksoil, North Caucasian and West Siberian regions of the RSFSR, and in the northwestern parts of the Ukraine.[25]

Emigration from rural areas is not confined to the U.S.S.R. It manifests itself in the United States, and Western Europe, as well as in other socialist countries of Eastern Europe. It need pose no serious problem in an environment characterized by rapid growth in other sectors of the economy and a rise in agricultural productivity. Neither of these features, however, has been conspicuously noticeable in recent years in the U.S.S.R. where the problem is further complicated by the absence of a vigorous private sector in services, and the virtual disappearance of handicrafts.[26] It is also aggravated by the very pronounced gap between urban and rural living standards in the U.S.S.R. The dismal size of this gap was revealed (for the first time from that forum) in the report of the March 1965 meeting of the Central Committee and by certain statistical information that has been released more recently. In 1959, the average collective farmer's income from the collective farm (including income in kind valued at state retail prices) came only to 57 percent of a state farmworker's wage per manday. At that time, the average state farm wage was close to 53 rubles per month.[27] By 1964, the average state farm wage came to 70.6 rubles

[23] Cf. note 4.

[24] Plenum—March 1965, p. 142. Apparently, at least in the Pskov area, it was not too difficult for collective farmers to obtain permission to leave the farms.

[25] Cf. Plenum—March 1965, pp 81–82, 103, 124–125, 160–162, 164–166, 208 as well as Kommunist, No. 18 (December 1965), pp. 66–67 and No. 2 (January 1966), p. 88. In the latter source, V. Tikhonov, director of the Scientific Research Institute on Labor Organization and Remuneration, of the RSFSR Ministry of Agriculture, notes that it is the younger generation which tends to leave. As a result, the average age of agricultural labor force "in a number of areas" approaches 50 years; in the Urals it approaches 48 to 49 years. In Planovoe khoziaistvo, No. 11 (November 1965), p. 5, V. Markov (from the Central Economic Scientific Research Institute of the RSFSR Gosplan) notes that even the labor deficit areas of agriculture—primarily Siberia, Far East, parts of northwest and center—have been affected by the outward labor migration from agriculture, especially through the exit of younger men.

[26] Cf. Kommunist, No. 18 (December 1966), pp. 69 ff. and No. 2 (January 1966), pp. 85–90. In the former source, M. Vasilenko and S. Kolesnev quote with approval the trend toward establishment of modernized industry in small towns or on the countryside which they detect in Japan, France, Switzerland, West Germany, and Italy. In this connection, see also the admirably revealing account of prolonged visits to small towns by K. Bukovskii in Novyi mir, No. 8 (August, 1965), pp. 188–206. Bukovskii's article not only deals with an area of Soviet life that too often escapes attention of the specialist (for lack of data) but also because it provides invaluable insights into the attitudes of Soviet intelligentsia toward this and many related problems.

[27] For the relation of earnings of collective farmers and state farm workers, see Vsesoiuznyi Nauchno-Issledovatel'skii Institut Ekonomiki Sel'skogo Khoziaistva, "Povyshenie urovnia razvitiia kolkhoznogo proizvodstva" (Moscow; 1961), p. 155. For data on wages in various branches of the economy, see Narkhoz—1964, p. 555.

per month: average monthly earnings for a collective farmer came to an estimated 31 rubles.[28] Thus the spread between state and collective farm incomes has increased under the 7-year plan. It was only in exceptional regions that the differential has narrowed (in Estonia, for example, from 17 to about 14 percent).[29] But in most areas, the attractiveness of city life became correspondingly stronger.

The level of services and other amenities available in rural areas is considerably lower than in the urban sector (and probably much more so than in other parts of the world). In the Kirgiz SSR, only 19 percent of state farmworkers are supplied with state-built housing. There are only one-tenth as many physicians per 1,000 inhabitants in the Novosibirsk oblast' than in the West Siberian towns.[30] The less said about the state of the roads, the better—especially in the fall and in the spring. Only 172 out of 1,580 rural settlements in the Kirgiz republic have running water. Half of the collective farms in the Tambov oblast' receive no electricity from the state system. In the Bashkir ASSR, 60 percent of settlements, with a population of over 1 million inhabitants, do not use electricity at all. One-third of the population of the RSFSR has no opportunity to visit rural clubs. Until just recently, prices for many goods in rural retail stores were higher than those in urban areas.[31]

Although statistics on rural migration have not been published, some light on this aspect is shed by data on collective farm sowings per households, shown in appendix table 4. Though there was little change in the variable for the U.S.S.R. as a whole between 1958 and 1964, there is evidence of substantial outward migration from most regions of the RSFSR, the Baltic republics and Belorussian (as well as perhaps in Kazakhstan). Given machinery shortages and the seasonal nature of work, resort must frequently be made to more expensive and less productive workers mobilized from the cities for the harvest.[32] Thus, the social cost of second class citizenship and of the neglect of social overhead capital in rural areas may yet turn out to be very high.

Further complications resulted from the continued attractiveness of the private plot as a source of additional income. Financial pressures on collective farms, resulting from the strains and stresses of MTS reorganization (cf. sec. IV below) found their reflection in the level of man-day earnings. On collective farms, these earning declined from a peak of 1.41 rubles reached in 1958 to a level of 1.22 to 1.27 rubles in 1959. In 1960, a collective farm man-day was still worth only 1.32 rubles. Although the monetary component of this income rose in

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[28] The average collective farm income on a monthly basis is calculated from an unpublished estimate by Nancy Nimitz (1.89 rubles per day, including income in kind valued at retail prices) and from the statement in Kommunist, No. 18 (December 1965) to the effect that each able bodied worker in collective farms worked 197 to 199 man-days per year. This comes to 16.5 man-days per month. The average state farm wage for 1964 is from Narkhoz—1964, p. 555.

[29] Vsesoiuznyi Nauchno-Issledovatel'skii Institut Ekonomiki Sel'skogo Khoziaistva, op. cit. (in n. 27), p. 155 and Plenum—March 1965, p. 202.

[30] Plenum—March 1965, pp. 82, 159.

[31] Ibid., pp. 56, 96, 159, 164–166. See also B. I. Gogol', "Ekonomika Sovetskoi torgovli" (Moscow: 1960), p. 379.

[32] Cf. G. I. Shmelev, "Raspredelenie i ispol'zovanie truda v kolkhozakh" (Moscow: 1964), pp. 93–103. An engineer complained recently (Izvestiia, Mar. 4, 1965) that his project making office must detach a number of employees to assist in seasonal agricultural work. Some of these people are, no doubt, highly trained for other work.

later years, payments in kind declined at least through 1963.[33] Simultaneously, rising pressures from the demand side on the state market for foods (cf. tables 3 and 4) made it difficult, if not impossible, for the government to make food available to peasants at reasonable prices. Some of the resulting gaps were filled by increasing sales of foodstuffs and fodder by collective farms, in spite of institutional impediments (farms were taxed through 1965 on gross money income, and were hence reluctant to sell for cash).[34] Thus the collective farmer, supplied with smaller quantities of feed and other income in kind by his farm, appears to have turned increasingly to work on his household plot (cf. table 5 and appendix table 3). "As a rule," it is acknowledged at least for one area, "income from a day's work on the plot exceeds that from a comparable effort in the socialized sector."[35]

Thus, all the additional labor input (and more) went into the private plot, leaving no opportunity for substitution of labor for machinery in the socialized sector. The preceding analysis reveals a great deal about the nature of the aggregate production function in Soviet agriculture under the 7-year plan (and quite likely for the near future). If we forget for the moment the existence of the "employment problem" and concentrate on the agricultural sector in isolation from the economy at large, machinery appears to have been the limiting factor or an input for which no adequate substitutes could be found over the relevant range of inputs and outputs. From 1959 on, labor inputs in the socialized sector declined (slowly but steadily) and this decline is attributable to the persistence of special conditions on the Soviet countryside. In the long run, limiting factors usually tend to disappear, but the inflexibility of Soviet institutions and policies turned a short-run phenomenon into a more permanent one.

This conclusion accords fully with other considerations. Climatic limitations in Soviet agriculture are well known. Their importance in the present context consists of the need to perform certain basic agricultural tasks (seeding, plowing, harvesting) within a short, sometimes very short, period of time. If the time sequence of operations is unduly extended (say, sowing in the Volga region takes 22 days rather than 4 or 5), there is a pronounced adverse effect on yields. The ability of the farm to work efficiently depends on the availability of an adequate stock of machinery which is in perfect working order. This is why in Soviet conditions substitution of machinery for labor has a double effect on productivity: it does release some labor for the performance of other tasks and it also increases output through the positive effect on yields. Quite obviously, the latter effect will disappear once farming operations are performed within the period of time that is called for by the natural conditions of the given region. But

[33] Nancy Nimitz, "Farm Employment in the Soviet Union, 1928–63," RM-4623-PR (Santa Monica, Calif.: The RAND Corp., November 1965), p. 97. Miss Nimitz notes properly that one must look at trends in income in kind separately from those in income in kind and cash taken together. A ruble's worth of income in kind is not necessarily equal to a ruble in cash, since there may be no opportunity to buy feed.

[34] Cf. Voprosy ekonomiki, No. 7 (1965), p. 35. Income tax can be avoided in the U.S.S.R. as well as elsewhere. Many farms, therefore, adopted the expedient of "selling products" under the guise of labor remuneration. This was not taxable income, but it complicated farm accounting to a considerable degree.

[35] Plenum—March 1965, p. 176.

Soviet farming is not at all close to this special "point of no return." An illustration may be in order. The efficiency of Canadian farming in Saskatchewan is subject to the acid test of world market conditions. As it turns out, the Canadians of that province (where natural conditions are about the same as in the virgin land territory of Kazakhstan) invest about three times as much in machinery per hectare of area as do the Soviets for their country as a whole on a dollar per ruble basis.[36] The foregoing holds in terms of the respective book values. As far as effective machinery stocks are concerned, the situation is much less favorable in the U.S.S.R. where large numbers of machines are either not installed or not used at all or used inefficiently.[37] This must be borne in mind when we compare the existing on-farm stocks with the amounts required for the timely performance of agricultural tasks:[38]

	On-farm stock Jan. 1, 1959	On-farm stock Jan. 1, 1965	"Required"
Tractors	1,001	1,539	2,606
Grain combines	502	513	845
Corn-silage combines	111	264	257
Trucks	700	954	1,650
Seeders	1,076	1,154	1,628
Plows	768	907	1,180

Thus, the greater availability of land, electricity, fertilizers, and buildings—helpful as they all were—failed to compensate for adequate supplies of machinery, including such items as plows and cultivators. Investment in "second priority" items raised capital output ratios to heights fully comparable to those prevailing in the U.S.S.R. during the last 5 years of Stalin's life (when output varied between 97 and 99 percent of prewar, while 1.7 billion (new) rubles were annually invested in agriculture). Some gross incremental capital output ratios for the various subperiods of the 9-year span considered here are shown in table 7. They reveal an alarming upward trend, which exceeds a similar trend registered by industry as well as by the economy at large.[39]

Thus, trends in major farm inputs go far to explain the disappointing trends in agricultural output during 1959–65. The situation was further complicated by a series of organizational measures, by errors of management and planning at the highest as well as the lowest levels of the administrative pyramid, and also by vagaries of the weather. In order to retain the necessary perspective, we begin with a brief review of policy in 1953–57.

[36] Carl Zoerb in Roy D. Laird and Edward Crowley, eds., "Soviet Agriculture: The Permanent Crisis" (New York: Praeger, 1965), p. 40. The figure for Saskatchewan refers to an unknown date, but at the latest to 1963. The Soviet figure used in the calculation refers to 1965 (Cf. "Ekonomika sel'skogo khozialstva," No. 6 (1965), p. 29 for total value of the 1965 machinery stock).

[37] See, for example, "Plenum—March 1965," p. 217 (where it is also acknowledged that the efficiency of machinery use has recently declined).

[38] "Plenum—March 1962," p. 83 and Narkhoz—1964, pp. 380, 384.

[39] U.S. Congress, Joint Economic Committee, "Current Economic Indicators for the U.S.S.R" (Washington, D.C.: Government Printing Office), p. 16.

TABLE 7.—*Incremental gross capital output, ratios in agriculture, U.S.S.R., 1955–64*

[Billion 1955 rubles unless otherwise indicated]

Period	Increment in gross output [1]	Gross investment [2]	Incremental gross capital per output ratio
1955–58	8.82	14.53	1.65
1956–58	3.06	10.01	3.27
1957–62	6.08	31.84	5.24
1958–61	1.54	18.45	11.98
1961–64	3.96	22.04	5.56
1955–59 average—1960–64 average	5.06	[3] 30.84	6.09

[1] 12 products (grain, cotton, sugarbeet, tobacco, sunflower, potatoes, vegetables, flax fiber, meat, milk, eggs, and wool).
[2] Lagged by 6 months.
[3] Investment between midpoints of the ranges, lagged by 6 months.

II. AGRICULTURAL POLICY, 1953–57

At the time Stalin's death, Soviet agricultural output had stagnated for a period of some 5 years at about the level first reached in 1940. In per capita terms, the 1952 output was 4 percent higher, but conditions in agriculture were grim indeed. In 1952, the average cash and kind income received by a collective farmer from the socialized sector, came to a startling 13 rubles a month; while the average wage for the rest of the economy was 66.6 rubles per month.[40] Except for hogs, livestock herds were below levels of 1925. It was not surprising, therefore, that the new leadership undertook a revision of Soviet agricultural policy almost immediately after the dictator's funeral.[41] By the fall of 1953, its surviving members decided to lift partially the curtain of secrecy from the agricultural scene. In the winter of 1953–54, final touches were put to a "grand design for change" in Soviet agricultural.

The new design included the famout new lands program and ultimately also Khrushchev's attempt to adopt corn as a specialized feed-producing crop. The new land venture can be a viewed as a stopgap solution, designed to increase grain supply rapidly and thus to gain time for the introduction of badly needed institutional reforms in the agricultural sector. The risks inherent in such a large expansion of

[40] Nancy Nimitz, op cit. (in n. 33), p. 12 shows the total number of man-days worked by collective farmers as 6,365 million. Total value of collective farm cash and kind distribution for 1952 is known as 4.75 billion rubles, given a total value per man-day of 0.75 rubles (cf. Pravda, Dec. 16, 1958). Average number of workdays worked in 1952 is taken as 210 (it was 216 in 1950 and 203 in 1952), or about 17 days per month. The average monthly wage is calculated from the known figure for 1955 ("Narkhoz-1964," p. 555) and the index of annual wage increases given by S. P. Figurnov, "Real'naia zarabotnaia plata i pod'em material'nogo blagosostoianiia trudiashchikhsia v S.S.S.R." (Moscow: 1960), p. 162.

[41] On June 19, 1953, grain purchase (as opposed to delivery) prices were raised by the decree of the Council of Ministers of the U.S.S.R. No. 1552. This was a very peculiar way of increasing peasant incentives (since the measure benefited primarily the more efficient farms). It may have been motivated chiefly by the desire to increase grain stocks still further. The early date of this decree indicates that concern with farm affairs began early in the spring of 1953. The information listed here is based on unpublished Soviet materials.

For a more complete analysis of policy since 1953 see the following: J. F. Karcz and V. P. Timoshenko, "Soviet Agricultural Policy, 1953–62," Food Research Institute Studies, IV:2 (May 1964), pp. 123–163; Nancy Nimitz, "The Lean Years" Problems of Communism, XIV:3 (May–June 1963), pp. 10–21; J. F. Karcz, "The New Soviet Agricultural Programme," Soviet Studies, XVII:2 (October 1965), pp. 129–161 and F. A. Durgin, Jr., "Monetisation and Policy in Soviet Agriculture Since 1952," Soviet Studies, XV:4 (April 1964), pp. 375–407.

acreage in a basically hostile natural environment,[42] were cushioned considerably by the rather surprising bequest left by Stalin. In 1952, Soviet grain reserves came to about 32 to 35 million tons, or to a level approximately equal to either the annual grain procurements, or to total Government grain disposals for all purposes.[43] The existence of this reserve gave the new leaders a sense of security that may have strengthened their propensity to engage in risky ventures.

While preparations for the new lands campaign were going on, other new measures were being introduced. Farm prices were raised, first for grain in June of 1953 and in the fall for other products as well. By 1954, the total burden of direct taxes on the agricultural population declined by about 53 percent (while that on the nonagricultural population dropped only by 24 percent). Compulsory deliveries from households were reduced in 1953; 4 years later they were eliminated altogether.

Substantial efforts also took place in the collective farm sector as such. The kolkhoz was designed primarily as an instrument of collection of farm products for the state. In some respects, the artel bears a striking resemblance to the prerevolutionary repartitional village (the mir). Both institutions were set up to assist the state in the performance of some of its functions.[44] In both cases equity was a major underlying consideration, though concern was shown primarily for an equitable distribution of poverty.[45] Neither institution in its original form had been particularly well suited for the task of securing rapid improvements in productivity and the concomitant rise in the level of output.[46]

In March 1955, planning procedures for collective farms had been simplified and a measure of genuine autonomy was granted to the farms, as direct planning of output by agencies of the state was replaced by a (physical) constraint of a sales quota assigned to each farm. Calculations of production costs on collective farms were introduced for the first time. Efforts were also made from 1956 on to introduce guaranteed labor remuneration on many farms. In 1958, stated-owned machine tractor stations were abolished and their equipment sold to collective farms. Simultaneously, the double-price system, which tended to perpetuate the backwardness of lagging farms, was also repealed. Under Stalin, barter-type transactions dominated exchange within the agricultural sectors as well as many transactions between agriculture and the rest of the economy.[47] The greater mone-

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[42] Grain acreage rose by 1963 by 44.8 million hectares in the new lands. This came to 28.5 percent of the total sown area of 1953. Cf. "Narkhoz–1964," p. 332.

[43] Nancy Nimitz, "Soviet Government Grain Procurements, Dispositions and Stocks, 1940, 1945–1963," RM–4127–PR (Santa Monica, Calif.: The RAND Corp., November 1964), p. 58.

[44] Both institutions assisted in the collection of taxes. The mir, of course, supported the military effort of the Russian state, while the kolkhoz that of industrialization.

[45] In the case of the mir, land distributions were based largely on the number of souls in the household. In the collective farm of the artel type, labor was remunerated on the labor day basis. There are, of course, many differences also between these 2 types of institutions.

[46] Paradoxically, in both institutions the household had a direct interest in retaining as much as possible of the relatively abundant factor of production-labor. In the mir, this ultimately led to the acquisition of a greater acreage for use. In the collective farm, it enabled the household to devote more effort to the private plot or to outside employment.

[47] To wit: payments in kind, the milling tax, compulsory deliveries and on the other hand the grants of machinery to MTS without any capital charges. Within the collective farm sector, of course, the relative value of cash in total cash and kind value of the man-day was 36.5 percent in 1940 and 27.9 percent in 1952. Cf. Nimitz, op. cit., (in n. 33), pp. 93, 97, 112 as well as "Voprosy ekonomiki," No. 3 (March 1958), p. 11 and Pravda, Jan. 26, 1958. The value of a man-day in 1958 comes to 0.7 new rubles.

tization of agriculture, in conjunction with some of the other measures just discussed, increased the scope for greater (though still severely limited) autonomy in decisionmaking both at the household level as well as on the farm. Hence, the collective farm sector of Soviet agriculture during this period could be regarded as shifting slowly toward the market sector of the economy: as Gregory Grossman has recently shown, a movement of the sort offers substantial advantages to the ruling elite.[48] While all this was taking place, trends in output—that final measure of success—were very auspicious: in 1956 to 1958 (partly as a result of good weather), gross output exceeded the level of 1950–52 by 48.7 percent.

Yet, a closer consideration of these events reveals several discordant notes. It might not be improper to restate the obvious: all of the reforms just mentioned were introduced *ex cathedra* by the Communist Party. Adequate machinery for a truly meaningful consultation of the working masses or for the sampling of the opinion of experts did not exist in the U.S.S.R. at that time. Given the fundamental nature of some of the reforms just mentioned, even extensive consultations with experts—from the groves of the Academe or other levels of the government—could not guarantee enough honest and unbiased views. The Soviet intellectual had only recently been granted the right to express himself more freely in professional matters. With some outstanding exceptions, his advice would tend to be colored by what the adviser considered acceptable to the advisee. It is difficult to see how things could have taken a different course in the peculiar Soviet environment of the period. But the impact of all these features affected profoundly the very nature of the reforms: it made the resulting structure a good deal less appropriate for the hard tasks on hand and less resilient to external shocks than might otherwise have been the case. This statement applies with particular strength to the reorganization of the MTS, pushed through with record speed.

Another flaw in the apparent picture of uninterrupted progress and liberalization may be detected in the attitudes toward the private sector. These revealed themselves in an increase in labor input norms for the socialized sector (1954) and in serious restrictions on urban livestock holdings (1956).[49]

More will be said on this issue presently. For the time being, though, we should note that much more is involved here than the simple Marxist antagonism toward private ownership of means of production (however limited) and toward the only remaining group of incipient capitalists in a socialist society. To be sure, political factors are relevant, but their importance tends to be exaggerated. Thus, for an Soviet organization man (Marxist or not) the private sector of the economy is an anomaly, if only because it is different from the others (just as much as the Volkswagen Corp. was an anomaly in the

[48] Gregory Grossman, "Notes for a Theory of the Command Economy," Soviet Studies, XV:2 (October 1963), pp. 101–123. Among the advantages to the regime are: (i) faster response from the market sector; (ii) reduction in the burden of coordinative planning; (iii) possibility of correlating incentives with results in the sector switching to the market; (iv) higher morale and initiative in the sector located in the market area of the economy and (v) a possibility of shifting some costs and risks to this sector (this, of course, was taken care of in our case by the cooperative feature of the collective farm, regardless of the location of the sector in the market or the command area of the economy).

[49] Kommunist, No. 15 (1954), p. 66 and Pravda, Aug. 28, 1956.

German Federal Republic prior to its desocialization). Moreover, even though the urban consumer welcomes a chance to buy farm products on the collective farm market (and especially so when they are not available in the state store), he also resents high prices that peasants charge in these transactions. The resentment leads to the belief that particular peasants (though not necessarily the peasantry as a whole) grow too rich too fast. But again there is nothing exclusively Soviet in this attitude. The French *petit bourgeois* felt the same way during World War II about his neighbor on the farm, and so did an American college professor who looked with envy on a farmer driving a Cadillac in the immediate postwar period. Finally, there is the ambivalent attitude of the Soviet intelligentsia toward the peasantry as a whole (as well as toward the inhabitants of Soviet small towns—now regarded as "burghers" who are primarily interested in the ordinary business of living). The subject is much too complex to be analyzed here in detail. But the ambivalent attitude includes some resentment and is connected with the rationalization on the part of the intellectual of the relative achievements and failures of the Soviet regime. The upshot is that peasants as well as the "burghers" are viewed as failing to participate in the great task of constructing a "new society" based on a fuller, "more meaningful" life with the ultimate goal of a greater common welfare.[50] From this standpoint, it is not material whether or not the attitude exists because of, in connection with, or in spite of the goals of the Communist Party. The important consequence is that the private sector of Soviet agriculture really has no friends outside of those who work the tiny plots of land in cities as well as in the villages. These best that can be said about those who do not object to its strenuously is that they tolerate it while the socialized sector fails to provide enough food at the present stage of the construction of communism.

It should also be borne in mind that in 1958, on 3.8 percent of total sown area (but with very considerable assistance from the socialized sector in the form of feed), the private sector produced the following quantities of the important farm products: potatoes—66 percent; vegetables—45 percent; meat—52 percent; milk—53 percent; eggs—85 percent; wool—22 percent.[51] At the same time, the importance of the collective farm market (including commission sales) in total sales of foodstuffs to population was as follows: grain products (in grain equivalent)—8.4 percent; potatoes—65 percent; vegetables—36 percent; milk—10 percent; meat—22 percent; eggs—42 percent (cf. table 12). Thus, any measures directed against the private plot would affect the consumption of nonagricultural population as well as that of households operating the private plot.

III. The MTS Reform and Goals of the 7-Year Plan

The decision to lower machinery inputs in the agricultural sector under the 7-year plan was to have momentous consequences for Soviet agriculture. A somewhat cryptic but revealing explanation of this decision has recently been supplied by A. A. Ezhevskii, presently

[50] K. Bukovskii in Novyi mir, No. 8 (August 1965), pp. 203–205. The entire article as well as the literature referred to on the cited pages should be consulted in this context.
[51] Narkhoz–1964, p. 252.

chairman of the Association for the Supply of Agricultural Technology (*Soiuzsel 'khoztekhnika*), who in 1958 was a director of the Gosplan department dealing with agricultural machinery. Ezhevskii states: [52]

> When the plan for 1959–1965 was being constructed, these machines [in short supply] were "mortgaged." There were categorical objections from various departments of Gosplan against the proposed decline in the production of these types of agricultural machinery, since the existing supply did not allow for a timely conduct of work from the agrotechnical standpoint. The former chairman of Gosplan, comrade Kuz'min, categorically refused to agree [to proposals] for increasing the rate of growth of output of agricultural machinery. Certainly, he is not the only guilty one. As far as my own position on this issue is concerned, I should report to the Plenum directly and responsibly. At that time I personally urged an increase in production. Many here know the history of that problem, how matters stood, what unpleasantness there was when we tried to insist on the increase in output of agricultural machinery.

At the basis of this decision, states Ezhevskii, lay the belief that "after the sale of equipment to farms it would be used so much more efficiently that one could reduce sharply the output of these machines." [53]

The connection between the decision to reduce machinery allocations to agriculture and the MTS reform of 1958 is supported by other evidence. The sixth 5-year plan (1956–60) called for allocations of 1,650,000 tractors (in terms of 15-horsepower units) and 560,000 combines to agriculture. In December 1957, Kuz'min presented to the Supreme Soviet the annual plan for 1958. This gave goals for production of 155,000 tractors (or about 254,000 15-horsepower tractors) and 135,000 grain combines. Through the first quarter of 1958, output proceeded roughly at these annual rates.[54] But the figure on the output of grain combines for the first 6 months of 1958 was not released in the semiannual plan fulfillment report; 6-month allocations to agriculture came only to 37,000 combines.[55] The MTS reorganization was decided upon in the spring of 1958. There is, therefore, no reason to suspect the validity of Ezhevskii's explanation (limited though it is) in other respects.

It will not be necessary to review in detail the rationale for MTS reorganization.[56] However, I would like to stress one point that is sometimes underestimated in this connection. The fact is that the MTS were simply not working very efficiently in the period 1955–57, and their crucial position as operators of mobile equipment endangered the very balance of the agricultural sector in the performance of its tasks.[57] Not only were there many complaints about inefficiency from the collective farms, but much capital was wasted on the stations (which turned out to be quite as willing as anybody else to accept a

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[52] Plenum–March, 1965, p. 150.
[53] Ibid., pp. 148–149.
[54] Pravda, Apr. 13, 1958. Industry produced 26,900 grain combines and 53,400 tractors (in physical units) by the end of March 1958.
[55] Ibid., July 24, 1958.
[56] See Lazar Volin's exhaustive treatment of this question in U.S. Congress, Joint Economic Committee, Subcommittee on Economic Statistics, "Comparisons of the United States and Soviet Economics, part I" (Washington, D.C.: Government Printing Office, 1959), pp. 297–299. The reorganization eliminated dual management, strengthened party apparatus in the countryside, made it unnecessary to maintain duplicate agencies of control. Finally, the ability to purchase machines would offer an easy outlet for the collective farm spending on investment.
[57] Cf. "Sotsialisticheskoe sel'skoe khoziaistvo, No. 3 (1955)," pp. 38–41 for a critique by Matskevich. See also Ekonomika sel'skogo khoziaistva, No. 1 (1957), p. 20 for more criticisms by Matskevich and the discussion by L. Sitnikov in ibid., pp. 78–79.

free factor of production until its marginal productivity was zero).[58] By November 1955, even Khrushchev seems to have given up hope of improving their operations within the existing framework:[59]

> No matter how we attempt to influence the MTS director, no matter what we tell him—it does not always get through to him. Apparently, reprimands alone do not suffice.

Early in 1957, the director of the All Union Scientific Research Institute of Agricultural Economics, A. I. Tulupnikov, noted at the close of a conference that there was much that was obsolete in the relationship between the MTS and the collective farm. But, it was "now difficult to make well-founded proposals on new forms of this relationship though research should persistently seek these new forms."[60]

The issue was not only delicate from the theoretical standpoint (it involved a transfer of state-owned property to collective farms) but also very complex. When Khrushchev first proposed publicly in January of 1958 that MTS equipment be sold to farms a widespread debate ensued, in which many voiced their apprehension about the ability of all collective farms to acquire machinery and to use it properly. Among those was K. T. Mazurov, now first deputy premier of the U.S.S.R.[61] Khrushchev's impatience notwithstanding, it is clear that the issue could not and should not have been handled in a vacuum. A package deal was in order, covering also the existing system of procurement of farm products, the question of the level and structure of farm prices, and prices of the off-farm inputs that would in the future be purchased by collective farms. Khrushchev and his supporters sought to create the impression that economists objected to the reform primarily on obscure, theoretical grounds arising from Marxist-Leninist ideology. Actually, however, there was a good deal of opposition on relevant and more fundamental economic grounds. On the very eve of reform, the scientific council of Tulupnikov's institute came to the conclusion that the necessary conditions for sale of farm machinery to the collective farms simply did not exist.[62] Under the circumstances, some unnamed but eminently sensible individuals proposed that weak collectives should receive machinery from MTS in the form of outright grants.[63]

But all objections were brushed aside as Khrushchev argued successfully that the issue should be decided upon even before agreement on the level of prices at which the transfer should take place.[64]

Ultimately, the total bill for the transfer of machinery and buildings to collective farms came to 2.4 billion (new) rubles, of which 1.8 billion was for machinery alone.[65] Installment payments were allowed, and it was expected that rich farms would pay for the machinery within a year or two; average farms might take 2 to 3 years, while

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[58] The complaints thus can be viewed in terms of the efficiency of MTS operation: this in turn is a separate problem from that of the existence of dual management.
[59] Stroitel'stvo, II, 163.
[60] "Ekonomika sel'skogo khozialstva, No. 2 (1957)," p. 128.
[61] Cf. "Vsenarodnoe obsuzhdenie voprosa o dal'neishem razvitii kolkhoznogo stroia i reorganizatsii Mashinno-traktornykh stantsii" (Moscow: 1958), p. 60.
[62] Sovetskaia Rossiia, Dec. 20, 1959. The council's views were correct, even in 1965, it was said authoritatively that there must be more than 1,000 collectives in the U.S.S.R. who were then too poor to purchase machinery (there were 300 such farms in Armenia alone). Cf. Plenum-March 1965, pp. 217–218.
[63] Stroitel'stvo, III, 131.
[64] Ibid., III, 73, 138.
[65] Ibid., III, 73; Den'gi i kredit, No. 7 (1964), p. 16; Narkhoz–1964, p. 517.

weak farms would liquidate their indebtedness within about 5 years.[66] Khrushchev's time table in this respect turned out to have been remarkable principally for its boldness. Final results would obviously depend on the solution of the price and terms of trade issues, relegated thoughtlessly to the near future.

In return, farms received machinery which was described in April of 1958 by a member of the Lenin Academy of Agricultural Sciences as consisting to the extent of "about three-fourths of machines and equipment which do not correspond to the contemporary level of technology and organization of production."[67] The physical condition of the transferred machinery must have been far from impeccable. These two features account satisfactorily for the very high rate of retirement of agricultural machinery in 1958–60, attested to by table 6.

The issue of farm prices and farm terms of trade was handled in the summer of 1958. In June the Government revamped the system of agricultural procurements and that of farm prices. Sales in the form of compulsory deliveries and the so-called state purchases were replaced by a system of (similarly compulsory) state purchases, quotas for which were to be established separately for each farm. This placed the relevant quota allocating authorities in the position of influencing to a very considerable extent the structure of output on an individual farm. Simultaneously, farms were no longer allowed to substitute one type of product for another in the fulfillment of state purchase quotas. Both features placed severe restrictions on farms, trying to exercise their recently acquired freedom to plan the structure of the output and the size of livestock herds.[68]

As single price system was also introduced, endowed with the provision of "flexible" prices for grains, sunflower, potatoes, and sugarbeet. In anticipation of the record harvest, prices for these crops were immediately cut by 13, 15, and 10 percent respectively.[69]

The new price system turned out to be rather painful to collective farms, since the new level of aggregate farm prices was determined in a very peculiar way: the total procurement bill (on a comparable volume) was held down to the sum of the previous procurement bill and the expenditures on the maintenance of the machine tractor stations.

No significant effort was made to relate prices to costs in a meaningful way. On the whole, the new price structure favored producers of crops. In the livestock sector, the 1958 prices were much below the level of average costs. The new price structure was defective in other respects as well. While most prices varied regionally, within a given price zone (some of which were very large) the new prices allowed for a complete retention of rent and quasi-rents. Thus a much deplored feature of the pre-1958 double price system continued to operate: most

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[66] Stroitel'stvo, III. 132.

[67] Vsesoiuzna Ordena Lenina Akademiia Sel'skokhoziaistvennykh. Nauk imeni V. I. Lenina, "Materialy sessii Akademii posviashchennoi dal'neishemu razvitiiu kolkhoznogo stroia reorganizatsii MTS" (Moscow: 1958), p. 213.

[68] Some indication of the attitudes is provided by the statement of V. P. Mylarshchikov, directing the agricultural department of the Central Committee of the Communist Party of the U.S.S.R. for RSFSR at the April 1958 session of the Academy of Agricultural Sciences. In one breath, Mylarshchikov declared that "we now have the new method of planning: no one plans sown areas or output (for collective farms), all problems are decided locally." A few moments later, he declared: "Comrades, this year there will be a major 'row' on the part of the party organization with respect to corn, and I will tell you honestly that it will be a violent row." Op. cit., pp. 192, 194. See also Karcz, op. cit. (in n. 41), pp. 146–147.

[69] S. G. Stoliarov, "O tsenakh i tsenoobrazovanii v SSSR," 2d ed. (Moscow: 1963), p. 59.

of the benefits would accrue to the prosperous farms, and the crucial task of eliminating the wide gap between performance of rich and lagging collectives would become more difficult.[70]

Nothing was done in 1958 to change the base upon which the tax on collective farm incomes was imposed. This continued to be computed on the basis of gross income. After the reform, the tax base was automatically expanded, since amounts previously delivered in the form of MTS payments in kind were now paid for by the state at prices that were high in relation to the earlier compulsory delivery prices.[71]

Financial pressures on farms were also greater as a result of transfer of (relatively) higher paid MTS personnel, sale of many milk procurement points to collectives and because of the planned rise in investment to 34.5 billion rubles in 1959–65, or to about 5 billion rubles annually. In 1952–58, collective farm investments came to a total of 13 billion rubles; even in 1956–58 collective farm investment proceeded at the annual rate of only 2.4 billion.[72] As is shown in table 8, little was done to fill the rising needs by the allocation of additional government credits to agriculture. From 1957 to 1958 the allocation of gross credits to collective farms declined from 522 to 432 million rubles. Net long-term credits extended in 1958 were almost 50 percent below the level of 1956 (their share in collective farm allocations to indivisible funds dropped from 18 percent in 1956 to 7.8 percent in 1957 and to 5.5 percent in 1958). Short-term credit allocation in 1958 came to 375 million rubles: it had been 440 million in 1957 (as a percent of productive expenditures, short-term credit of the state bank advanced to collective farms came to 22.9 percent in 1957 but only to 11.9 percent in 1958). Moreover, the types of credit extended by the MTS were also eliminated with the stations themselves. Not the least advantage of these credits was the fact that a weak farm was able often to avoid repayment altogether, and received MTS services in the form of a de facto grant.[73]

TABLE 8.—*Financial data on collective farm debt and credits received, U.S.S.R., 1955–64*

[In millions of rubles]

Item	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964
1. Long-term debt, end of year	1,576	1,876	2,007	2,173	2,356	2,378	2,646	3,102	3,606	4,404
2. Long-term credits from State bank	443	(1)	522	432	531	621	782	849	940	1,251
3. Net long-term credits from State bank	(1)	300	131	166	183	22	268	456	504	798
4. Short-term credits received	(1)	(1)	440	375	704	666	644	708	804	871
5. Collective farm allocations to indivisible funds	1,320	1,670	1,680	3,040	3,330	3,200	3,200	3,430	3,390	3,600
6. Collective farm allocations to working capital	(1)	330	210	400	333	290	240	400	(1)	(1)
7. Collective farm production expenditures	1,660	1,930	1,920	3,160	3,370	3,220	2,790	3,260	(1)	(1)

[1] Not available.

[70] Oddly enough, the party was then well aware of the problem posed by the fact that significant achievements were reached only in a small number of farms. Mylarshchikov was quite explicit on this aspect. Cf. "Materialy sessii . . ." op. cit. (in n. 67), p. 192.

[71] The total amount of the tax came to 750 million rubles in 1956, 830 million in 1957 and to 1.03 billion in 1958. Cf. SNIP, 1956–58, p. 98 and SNIP, 1958–62, p. 148.

[72] Sel'khoz–1960, p. 390.

[73] In 1950–53, over 16 million tons of grain were not paid by the collective farms for MTS work. This came to 19.6 percent of the total amount due to the MTS in this period. Cf. Stroitel'stvo, I, 98.

Prices of off-farm inputs were also changed in 1958. In August, the Ministry of Agriculture of the U.S.S.R. and its republican counterparts—in consultation with the U.S.S.R. Ministry of Finance—established or reviewed new prices for seeds, concentrated feed, fertilizers, machinery, and spare parts. Retail prices were now charged to collective farms for gasoline and concentrates. Machinery prices to collective farms increased from 5.6 to 69.5 percent. Prices of spare parts were raised by 100 to 120 percent.[74]

Thus far we had been dealing with the impact of the 1958 reforms on collective farms as such. As far as the private sector was concerned, we note again the elimination of compulsory deliveries from the household plot which took effect at the beginning of the year. This was seemingly a beneficial measure, but it was accompanied by another regulation, which exerted a detrimental impact on operations of the private sector. From 1958 onward, the state discontinued sales of feed grains and concentrated feed to households: in 1953–56 these sales came to 700,000 to 750,000 tons annually.[75]

Thus ended the most publicized and certainly the most important institutional reform of the Khrushchev era in Soviet agriculture, sometimes interpreted as the peak of his liberalizing efforts. With the benefit of hindsight, we must now give full credit to those Soviet economists who opposed the reform, both for their courage and the correctness of their analysis. There is no doubt that after the enactment of all measures discussed above, the two most important sectors of Soviet agriculture—collective farms and private household plots—would operate in a very difficult environment. As a matter of fact, the 1958 reforms amounted to a reversal of the slow shift of agriculture toward the market sector of the economy. As the near future was to show, the most important consequence of these reforms consisted in the reintroduction of command elements into the agricultural sector. Given the tasks now imposed on farms, things could not have taken a different course. But here, as elsewhere, substitution of command for market-type controls was hardly conducive to greater efficiency.

Every schoolboy in the U.S.S.R. knows that the collective farm is a cooperative organization, and that its members are paid from product remaining on the farm after all other obligations are met. It should have been crystal clear therefore that the price of the mistakes associated with MTS reform would be paid primarily by collective farmers.

Was this the intention of Khrushchev and those of his supporters who framed the final objectives of the 7-year plan? How can their actions be reconciled with the avowed aim of the plan to raise real incomes of collective farmers by "no less than 40 percent"? For obvious reasons, no clear-cut answer to this question can be made at this stage. But the economist can assist in the search for answers by formulating certain hypotheses that are at least not inconsistent with presently available evidence. Although all Soviet goals for increases in real incomes of peasant households should be viewed with skepti-

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[74] Glavnoe Planovo, "Ekonomicheskoe Upravlenie Ministerstva Sel'skogo Khoziaistva RSFSR"; Vsesoiuznyi Nauchno, "Issledovatel'skii Institut Ekonomiki Sel'skogo Khoziaistva," "Sbornik Spravochnykh Materialov Dlia Kolkhozov" (Moscow: 1959), pp. 562 ff., and Plenum March 1965, p. 149.

[75] Kommunist, No. 16 (1965), p. 72.

cism, it seems to me that Khrushchev and his supporters deliberately altered the terms of trade of the farming sector and restricted the allocation of its inputs with the expectation that greater efficiency in the use of machinery (as well as greater enthusiasm of the masses for the task of construction of communism) would ultimately lead to rising productivity in agriculture, so that by 1965 output and peasant incomes would indeed climb to levels approaching those planned for 1965. As it turned out, this was a rather monumental miscalculation. But our hypothesis is quite consistent with several relevant considerations.

First, Khrushchev and those around him, did on many occasions insist upon an almost immediate return (in the form of higher procurements, or output, or both) to greater allocations of machinery or Government investment funds. The notion that a long gestation period may be necessary was evidently viewed with disfavor; indeed, Khrushchev made it clear that what ultimately convinced him of the necessity to increase output through expansion of sown area was the fact that the alternative required "a little too much time and too many resources".[76]

Second, it also appears that by 1958–59, Khrushchev concluded that the relative standing of peasant and urban living standards had reached some kind of a satisfactory relationship (satisfactory, that is, to him.)[77]

Third, we know that in April 1958, in a speech to the Lenin Academy of Agricultural Sciences, the head of the Agricultural Department for the R.S.F.S.R. of the Central Committee of the Communist Party of the U.S.S.R., V. P. Mylarshchikov expressed no doubts about the ability of collective farms to function in the new environment. He did show some concern about the wisdom of producing defective or inappropriate machinery in large series, and he deplored the extraordinary long periods of time required for the performance of major agricultural tasks (such as sowing).[78] But his speech is remarkably free of qualms about the quality of the on-farm machinery stocks and their size in relation to the task ahead. Earlier at the same session, Tulupnikov had enough courage to point out collective farm needs in the general area of credit and machinery supplies.[79]

Fourth, it is difficult to reconcile measures affecting collective farms terms of trade with any alternative hypothesis, except the one given above, or one even less favorable to the Soviet leadership: peasants were meant to pay for the success of the Seven Year Plan and the target for the rise in their income amounted only to window dressing.

Fifth, we must also consider the question of the abortive 1958 drive to revive the collective farm center or to set up a Central Council of Collective Farms. At least on one interpretation, associated with the weighty name of G. S. Strumilin, the agenda for the Council would include redistribution of income within the collective farm sector for the purpose of increasing the efficiency of weak and rundown farms.[80] It is not known with certainty where Khrushchev stood on this issue in

[76] Stroitel'stvo, II, 135, 401.
[77] Ibid., III, 530–534, IV, 14, 97.
[78] "Materialy Sessii.," op. cit. (in n. 64), pp. 186–195.
[79] Ibid., pp. 48–49, 51.
[80] Voprosy ekonomiki, No. 5 (1958).

1958, but at least one generally sympathetic observer believes that he probably endorsed the proposal.[81] The essence of this plan is strangely reminiscent of the "equitable distribution of poverty" which we find to have been characteristic of the mir and the Stalinist artel. If implemented, the proposal would have penalized efficient farms, might well have played havoc with the structure of farm incentives, and consequently exerted an adverse impact on trends in output. We should not wonder that those who opposed it had little trouble in making their views prevail in 1958 (as well as in 1959).

Sixth, there is no doubt that attitudes within the narrow circle of the top leadership were influenced heavily by the very real success in raising output during the years 1953–58 (cf. p. 24 above). It is also clear that the causes of this success were imperfectly understood.

Finally, the hypothesis formulated here is fully consistent with long standing hostile attitude of the party toward the peasant sector. From this standpoint, Preobrazhenskii and Stalin are members of the same group.[82] So ultimately is Khrushchev, even though he did recognize quite clearly that Stalin had gone too far by 1952, and even though he was instrumental in raising the level of peasant incomes. He did so, I believe, not because his fundamental outlook was sympathetic to Narodnik ideology, but primarily because he considered this a necessary condition for further increases in output. Although the results of his policies (through 1957) were almost the same as could be expected of a genuine "liberalizer" the fundamental difference in outlook is of some consequence for the understanding of his policies in the subsequent period. Such weighty considerations apart, the heavy weight of tradition also suggested that if forced savings had to be extracted from anyone, it would better be someone in the peasant sector.

Two more questions remain to be considered before we proceed with the analysis of the 1959–65 period within the framework constructed thus far. The first deals with the consistency of the goals for agricultural policy with those of personal or disposable money incomes and household expenditures on food. As is shown in table 2, agricultural output under the 7-year plan was expected to rise by 70 percent and per capita output by some 56 percent. Abraham Becker's ingenious calculations of planned national income for 1965, taken in conjunction with our data in appendix table 2, suggest that personal incomes were supposed to rise by 46 and disposable incomes by 53 percent.[83] If attention was paid to income elasticities of demand in 1958 the expectation probably was that expenditures on food would rise by some 48 to 50 percent. Hence, the plan contained a fairly comfortable margin to allow for the unpredictable impact of the weather, as well as for some increase in stocks and for exports.[84]

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[81] Sidney I. Ploss, "Conflict and Decision Making in Soviet Russia" (Princeton: Princeton University Press, 1965), pp. 134–135. This book, which contains many valuable insights, suffers much from a fundamental defect of neglecting the merits of each issue. Its major conclusions are often distorted.

[82] Evgenii Preobrazhenskii, the outstanding economist of the "Left opposition" of the twenties, argued that Soviet industrialization should proceed through the extraction of forced savings from peasants. This was to be done by raising prices of industrial goods (produced by state-owned industry) bought by the peasants. Preobrazhenskii did not envisage massive collectivization of agriculture.

[83] Calculated from data in "SNIP—Seven Year Plan," tables 1 and 2.

[84] Exports did rise under the 7-year plan. In the case of grain, the increase was from a level of some 2.1 to 3.8 million tons in 1953–55 and 1957 to a level of 6.1 to 6.9 million tons in 1956 and 1958–60. Compare Nimitz, op. cit. (in footnote 43), p. 58.

But the decision to plan for such a large increase in output given planned trends in the supply of off-farm inputs and the apparent disregard of peasant incentives in the short run, reveals a monumental unconcern for the true nature of the aggregate production function in agriculture, and a propensity to dismiss the results of dispassionate economic calculation in favor of the time-honored slogan: "Cadres Decide Everything!" [85] In the end, all could be well if, and only if, the peasant obliged by working more with fewer machines while waiting patiently to reap the fruits of his additional effort in the more or less distant future.

We shall attempt to review the cost of an alternative policy in terms of the overall objectives of the 7-year plan in the concluding section. At this stage, we turn to the examination of trends and measures of agricultural policy from 1959 onward.

IV. Agricultural Policy, 1959–64

"No plan," runs a military maxim, "ever survives contact with the enemy." The dictum is applicable to economic as well as military plans, especially when the commander's staff does not fully agree with his decision on the conduct of the operation.

As was mentioned earlier the largest Soviet academic institute of agricultural economics was opposed to the MTS reform in the form which it eventually assumed. There is a good deal of evidence that its concern was shared by other institutions and the U.S.S.R. Ministry of Agriculture (this, in turn explains various sardonic remarks of Khrushchev's about agricultural scientists, as well as the veritable phobia which he was to show toward the Ministry later). As we shall see presently, the scientific circles turned all their attention toward elaboration of practical measures that might be of assistance to farmers in their new environment. This may well have been the only thing to do at the time, but such activity may have been motivated by a desire to assist (and perhaps even shield) farms from the consequences of enacted policy measures.

The role played by the U.S.S.R. Ministry of Agriculture in the setting of production targets for farms in 1958–60 is not quite clear. The U.S.S.R. Ministry of Procurements continued to function as State Committee on Grain Products after 1957,[86] and we must assume that it concerned itself with more weighty matters than just the care and maintenance of grain elevators. But the voice of the Ministry of Agriculture was nevertheless influential.

At the time of MTS reorganization (as well as later in 1958),[87] Khrushchev indicated the intention of the government to purchase grain primarily, if not exclusively, in low-cost areas. A firm decision to adopt this course immediately could have been the result of premature optimism, or perhaps Khrushchev expressed his views without

[85] See his derisive remarks about the economists who did not agree with his goal of catching up with U.S. per capita meat production by 1961, as given in Pravda, May 24, 1957. Another example of this same attitude may be found in Stroitel'stvo, VIII, pp. 175–176.

[86] The Ministry of Procurement was first reorganized into a union-republican Ministry of Grain Products in 1956. In 1957 it became a State Committee on Grain Products. In 1961 this Committee in turn became the State Committee on Procurements. Except for a brief interlude, L. Korniets has headed all three institutions.

[87] Stroitel'stvo, III, pp. 78–79 (March 1958) and pp. 226–227 (June 1958).

the intent of seeing them implemented immediately. In any case, such a policy was quite consistent with, and, in fact, was a necessary prerequisite for, introduction of greater specialization in Soviet farm production. Farms that are forced, through the imposition of numerous procurement quotas for individual products, cannot take advantage of economies of scale and may often be forced into disadvantageous lines of production at too small a scale of output to allow for a reduction of costs and (perhaps) the realization of profits.[88] Trends in the share of grain procurements in total grain output are shown in table 9. They show a very clear tendency to lower procurement quotas for the more marginal grain production areas (such as the northwest, central, and the Volga Viatka regions of the R.S.F.S.R.; the Baltic Republics; Transcaucasia; and central Asia).

TABLE 9.—*Share of grain procurements in total grain output,*[1] *U.S.S.R., 1954–58, 1958–64*

[In percent]

Area	1954–58	1958	1959	1960	1961	1962	1963	1964
U.S.S.R.	39.5	42.0	39.0	37.2	39.8	40.4	41.7	44.9
R.S.F.S.R.	41.2	41.3	39.4	38.1	40.0	41.9	42.6	44.8
Northwest	9.4	3.8	2.6	.9	10.0	6.7	16.0	11.7
Center	22.3	18.1	14.0	8.5	19.5	18.7	24.6	20.4
Volga Viatka	25.2	20.2	22.7	16.2	15.2	22.3	26.1	20.8
Central Black Soil	37.4	37.0	37.9	29.6	39.3	36.4	37.0	38.6
Volga	42.7	48.5	42.9	43.5	50.0	51.3	48.8	53.1
North Caucasus	43.6	42.6	40.8	40.6	47.0	48.3	57.0	47.5
Urals	38.4	32.9	44.1	42.4	41.8	46.5	42.1	45.9
West Siberia	52.5	55.0	47.8	48.8	43.8	32.4	13.9	52.3
East Siberia	41.0	37.2	39.8	36.2	36.2	39.2	42.6	38.1
Far East	26.7	16.2	21.0	28.2	24.6	32.8	34.3	31.3
Ukrainian S.S.R.	31.0	32.9	31.6	27.0	37.9	37.1	44.1	37.8
Belorussian S.S.R.	13.5	9.3	10.2	8.5	11.6	14.3	16.1	15.2
Uzbek S.S.R.	31.8	29.3	20.0	17.1	19.8	24.8	34.2	47.8
Kazakh S.S.R.	60.4	67.4	60.5	56.2	51.5	51.7	45.2	64.7
Georgian S.S.R.	10.9	5.1	3.3	.3	10.4	5.8	28.8	15.2
Azerbaidzhani S.S.R.	24.1	21.3	16.2	14.9	12.2	20.1	31.2	25.9
Lithuanian S.S.R.	5.7	1.3	2.9	.2	8.3	2.5	14.3	10.0
Moldavian S.S.R.	18.2	14.6	16.2	17.4	20.9	24.4	40.3	25.7
Latvian S.S.R.	8.8	3.6	4.3	2.8	12.2	5.2	25.6	15.7
Kirgiz S.S.R.	22.1	18.6	12.0	19.3	7.0	22.6	26.6	23.5
Tadzhik S.S.R.	13.1	10.7	6.5	2.3	11.6	12.6	22.0	21.4
Armenian S.S.R.	14.7	11.0	1.2	.6	2.3	14.0	23.2	18.8
Turkmen S.S.R.	7.0	5.5	.2	2.5	20.0	12.1	29.0	27.7
Estonian S.S.R.	5.5	.2	4.5	.3	8.2	3.6	16.8	11.3

[1] Output in physical weight; procurements in accounting weight.

Whether or not the trend just mentioned began in 1958 is not entirely clear (in this instance table 9 may simply reflect the impact of the bumper harvest of that year). It seems to have been in full swing by 1959 and reached its peak by 1960. These trends may have resulted from a conscious decision by the top leadership, but they could also reflect an attempt on the part of lower administrative echelons to ease the pressure on farms under the guise of conformity with the announced views of N.S. Khrushchev. In any case, the results were beneficial from the standpoint of rationality of overall resource allocation in the agricultural sector; they also relieved farms from the necessity of producing high-cost products, allowed them to sell more at higher prices on the collective farm market, and/or made it possible

[88] Compare Karcz, op. cit. (in footnote 41), pp. 146–147. For a belated top-level recognition of these problems see Plenum, March 1965, pp. 74, 207.

to obtain greater quantities of feed. In some instances, particularly in 1959–60, some of these marginal grain areas shifted much of their grain acreage to the production of feed and fodder crops.[89]

While these trends were taking place, we should note some further difficulties resulting from the inadequate elaboration of the MTS reform. Much of the research concerned with farm operations in the new environment was only in an embryonic state: in the spring of 1958 work did begin on such important matters as the optimum composition of tractor and machinery stocks, the elaboration of a rational institutional structure for the allocation of machinery and spare parts to individual farms, the knotty problem of prices, and the most important problem of all—the elaboration of a system of "rational farming practices."[90] Though many of these problems were "solved" by the top Soviet leadership in an arbitrary way during the summer of 1958, the work on the elaboration of various regional schemes of "rational farming practices" continued through 1959 and no less than 39 regional commissions were involved in the project.[91] Paradoxically, this feature may have exerted an adverse impact on relations between farms and low-level administrators. Since no one knew as yet, what the "rational farming practices" would consist of—the final blueprint was not completed until mid-1960—administrators found here an additional justification for continued interference in farm affairs.[92] Such a justification was not actually needed, as very high pressures for a considerable increase in procurements of animal products came from above. This was a direct result of the goal of surpassing the United States in the per capita production of milk and meat within the very near future (1960–61), announced by Khrushchev in May 1957.[93] Since the fulfillment or overfulfillment of the procurement goals constituted a major success indicator for regional administrators, the latter were likely to seize upon any excuse for continued interference in farm affairs, regardless of the intent of existing legislation. The results were often paradoxical, but also detrimental to farms.

It should be noted that during 1958–59, the top leadership gave some very indirect signs of concern about the wisdom of their decision to impose additional hardships on the peasant in the short run. There are also signs of reaction against the Ministry of Agriculture and the academic specialists who continued to sound the alarm: in May 1959, Khrushchev brought up the subject of agricultural administration in terms that foreshadow his later views on the subject.[94] By June 1959, he sought further short-term insurance in another proposed extension of acreage, this time in the Far East and east Siberia. A similar proposal was also advanced by a professional economist, N. Anisimov, who wrote several short treatises on agriculture in the days

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[89] Cf. "Narkhoz, 1960," pp. 394–395, 407.
[90] Cf. "Materialy sessii . . ." op. cit. (in footnote 67), pp. 48–60.
[91] Izvestiya, June 15, 1960. The materials of the conference have been reprinted in Vsesoiuznyi Nauchno-Issledovatel'skii Institut Ekonomiki Sel'skogo Kozialstva, "Voprosy perspektivnogo planirovanila i sistemy vedenlia khozialstva v kolkhozakh i sovkhozakh" (Moscow, 1960).
[92] Novyi mir, No. 11 (1965), p. 181.
[93] Pravda, May 24, 1957.
[94] "• • • our agricultural organs • • • should become organizers of production." This statement, made in Kiev on May 11, 1959, sounds almost like those repeated by him frequently in March 1962. Cf. "Stroitel'stvo," III, 524.

of Stalin.[95] By the time of the December 1959 plenum of the Central Committee, several high-ranking individuals—identified by Sidney Ploss as supporters of Khrushchev—came out in favor of the collective farm center. While only Polianskii explicitly favored the interfarm income redistribution in connection with this proposal, implicit assumptions in this context must have been made by others. As we have already implied, the scheme amounted to an effort to raise the collective farm sector by its own bootstraps, and its adoption in this form would have represented a retrogression from the standpoint of incentives and efficiency.

It came to naught, however, as a result of substantial opposition on the part of the Ministry of Agriculture, such academicians as could have made their voice heard, and some regional administrators. Some secretaries of republican parties stressed the need for greater allocations of machinery and credit to agriculture at the 1959 plenum. On the last day, Matskevich, then U.S.S.R. Minister of Agriculture, stated point blank that "we must increase shipments of machinery, trucks, and also prime mowers and other machines, as well as other equipment, fertilizers, and chemical materials for the protection of animals and crops."[96] We also know, that more was going on behind the scenes: according to Khrushchev, "agricultural organs of the Central Committees of the Republics and of the R.S.F.S.R. and Ministries of Agriculture prepared rather extensive proposals for the development of all branches of agriculture."[97]

While the opposition was able to block the move toward a collective farm center that would prove to be another instrument of collection, the alternative program was not accepted. "We rejected these proposals," stated Khrushchev in January 1960. A few weeks earlier he went on record as approving heartily the statement by a foremost authority that it would be 2 or 3 years before the agricultural machine building industry would be able to supply agriculture with the required quantities of appropriately constructed machines.[98]

Meanwhile, a vigorous campaign against the private sector of agriculture moved into full swing. Khrushchev appears to have been convinced that the relative living standards of workers and peasants had, by then, reached a desirable level. For some time he had been extolling the virtues of the collective farm in his own native village of Kalinovka, where farmers voluntarily transferred their private cows to the socialized sector. By June 1959, the offensive mounted: "Should we not think about passing a law forbidding urban population to hold cows, goats, pigs, and other livestock? These goats are really the enemies of urban parks. * * * The ownership of livestock among a part of urban population develops unhealthy, speculative tendencies."[99]

The utterances of the First Secretary are of course reported in the press: as he himself stated on an earlier occasion, the Soviet citizen

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[95] Ibid, IV, 24. There was, of course, a shortage of labor in these areas. See Kommunist, No. 18 (1959), pp. 10–19.
[96] Plenum, December 1959, pp. 325–326. Among those who stressed the need for machinery were K. T. Mazurov (Belorussia) and Sh. R. Rashidov (Uzbek S.S.R.). Cf. ibid., pp. 108, 125–126.
[97] Stroitel'stvo, IV, 109.
[98] Plenum, December 1959, p. 249.
[99] Stroitel'stvo, IV, 25.

understands very well that what is printed in newspapers has approval from above.[100] It was during 1959 that the campaign got into fuller swing and others joined the bandwagon. A number of articles deploring some of the features of the private plot—notably its disruptive effect on the supply of labor to the socialized sector—appeared in the technical journals.[101] On February 20, 1959, in order to improve urban food supplies (but also to limit the collective farm market), the Government allowed rural trade cooperatives to purchase farm products locally for the purpose of resale to urban population at prices not to exceed the Government retail prices.[102] Other restrictive legislation followed: in the R.S.F.S.R. urban livestock holdings in krai or oblast' centers (and their suburban area, was to end on October 10, 1959: the legislation could be extended to smaller towns at the request of local authorities.[103] Ever since 1956, collective farms had been empowered to reduce the size of household plots; the official pronouncements from the Kremlin must have added further fuel to the fire. Whether all these instructions were obeyed in toto or only in part is at present a moot question. In any event, the size of the private sector was very drastically reduced in 1959. As is shown in table 10, between January 1, 1959, and January 1, 1960—holdings of cattle declined by 13 percent, those of cows by 7 percent, hogs by 9 percent, and goats by 18 percent. Sown area in private plots in 1960 was almost 7 percent lower than it had been in 1959. A Soviet source notes that "in the majority of collectives (the land taken away from private holders) usually highly productive, turned into desert, became infested with weeds."[104]

TABLE 10.—*Selected indicators for the private sector, U.S.S.R., 1956–64*

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964
1. Sown area, total (million hectares)	7.31	7.29	7.35	7.24	6.74	6.74	6.73	6.72	6.27
2. Grains (million hectares)	1.66	1.50	1.52	1.39	1.21	1.18	1.16	1.16	1.02
3. Potatoes (million hectares)	5.03	5.28	5.27	5.27	5.01	5.04	5.07	5.06	4.80
4. Feed crops (million hectares)	0.38	0.39	0.43	0.45	0.40	0.40	0.39	0.39	0.38
5. Livestock holdings (million head [1]):									
(a) Cattle	27.30	28.43	29.23	29.21	24.96	23.03	23.88	24.52	24.08
(b) Including cows	15.92	16.26	17.78	18.53	17.18	16.32	16.35	16.15	16.02
(c) Hogs	16.39	17.35	14.68	15.14	13.82	15.40	17.31	16.09	13.17
(d) Sheep	20.88	22.94	25.74	28.64	28.85	28.10	29.56	29.93	26.55
(e) Goats	10.70	9.81	8.33	7.78	6.38	5.96	5.82	5.56	4.59

[1] As of Jan. 1.

Beginning with January 1, 1960, the practice of selling grain at privileged prices to farms producing cotton, flax, hemp, tea, tobacco, cocoons, and some other technical crops was discontinued—ostensibly

[100] Ibid., II, 107.
[101] Vestnik Moskovskogo Universiteta, serlia VIII, No. 4 (1959), pp. 59–71; Ekonomicheskie nauki, No. 4 (1959), pp. 78–84; Akademiia Obshchestvennykh Nauk, Kafedr istorii, "KPSS—organizator bor'by za krutoi pod'em sel'skogo khoziaistva" (Moscow: 1960), pp. 256–303; V. A. Shpilluk, "Tseny kolkhoznoi torgovli i deistve zakona stoimosti." Avtoreferat na soiskanie uchenoi stepeni kandidata ekonomicheskikh nauk (Moscow, 1961). The latter source argued that too high prices (such as those realized on the market) lowered the farm drive for a decline in production costs (p. 14). In the earlier period, even Pravda inveighed against those who criticized collective farms for selling on the market (Pravda, Mar. 15, 1957).
[102] "Sobranie postanovlenii pravitel'stva Soiuza Sovetskikh Sotsialisticheskikh Respublik." 1959, No. 4, item 26, p. 79.
[103] Information kindly supplied by Miss Nancy Nimits.
[104] Shmelev, op. cit. (in note 32), p. 136.

at the request of Republican Party and government authorities.[105] Since such farms produce little grain, amounts purchased from state stocks were more often than not distributed to farmers and subsequently used as feed in the private sector. From 1960 on, farms would be able to purchase grain at state retail prices, but only if the appropriate authorities were able to make such grain available.

The grain situation—that persistent problem which may be found at the heart of so many Soviet policy decisions from 1918 onward—did not actually improve. That the 1959 harvest did not come up to the record level of 1958 was understandable because of weather. One could also disregard for the time being the alarming trend in the income elasticity of demand for food (cf. p. 10 above) which manifested itself during that year, since no one could be sure whether earlier trends were altered in a fundamental fashion, or whether this was only a random kink in the series. But the drain on grain stocks continued unabated (in spite of the opportunity to replenish in 1958)[106] and by January 1960 Khrushchev was forced to inform a group of agricultural experts from the satellite countries that:[107]

"We still do not have the necessary grain reserves in order to fully satisfy the growing demand on the part of friendly socialist countries. We now have grain reserves, but they are not as large as we would like to see them * * *. Therefore, we would like to turn to you with a request that you take into account our abilities, that you do not show insistence, or stubbornness with which we sometimes meet from your side, that you do not make such demands on us which are onerous to fulfill."

These pressures may have contributed to the decision to raise machinery allocations to agriculture, taken in the summer of 1960. The goals for tractors were raised by 30 percent, those for grain combines by 35 percent, the targets for cottonpickers and corn-silo combines by about 50 percent, while those for smaller machinery by 25 to 52 percent.[108] But there is no evidence of major concern on Khrushchev's part until the fall of 1960. By this time it was crystal clear that trends in output were very disappointing, and that the shift in income elasticity of demand for food, and trends in disposable incomes were more permanent than they seemed earlier in the year.[109]

Meanwhile, the economic position of the farms deteriorated still further as a result of the onerous financial and other obligations, and incomes of farmers dropped substantially: in the period 1957–60, the known decline in total income per man-day from the socialized sector ranged from 11 percent (Belorussia to 29 percent in Moldavia, and there are all indications that this was a general phenomenon.[110] Under the circumstances, local administrators attempted to solve the

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[105] "Sobranie postanovlenii pravitel'stva Soiuza Sovetskikh Sotsialisticheskikh Respublik," 1959, No. 19, item 1172, pp. 468–469.

[106] Stroitel'stvo, IV, 115. See also Nimitz, op. cit. (in n. 42), p. 58.

[107] Stroitel'stvo, IV, 115.

[108] D. Gale Johnson and Arcadius Kahan, "The Soviet Agricultural Program: An Evaluation of the 1965 Goals," RM-2848-PR (Santa Monica, Calif.: The Rand Corp.), May 1962, p. 14.

[109] To some extent, of course, the persistence of high income elasticities of outlays in 1960 was due to the announcement of the monetary reform in May. This introduced enough uncertainty to result in a flight from cash and the government was caught on the horns of its own dilemma.

[110] Voprosy ekonomiki, No. 7 (1962), p. 50 and Ekonomicheskaia gazeta, Apr. 9, 1962, p. 8.

problem of weak and lagging collective by converting many of them to state farms. There is no doubt that this rather than any ideological preference, was the main reason for the rapid conversions of 1959 and especially 1960: in these 2 years converted collective farms accounted for 15.6 million of sown area and 1.7 million of households (or almost 5 percent of total collective farm sowing and 9.2 percent of households in 1958).[111] In 1959, the average collective farmer income per man-day (cash and kind valued at state retail prices) came to 57 percent of the state farm wage for a day's work (or to about 31 versus 53 rubles on a monthly basis).[112] It is clear that conversions did not represent an "enserfment" of the rural population,[113] but placed a rather heavy burden on the state budget.

In October, 1960, a remarkable memorandum, under the title "Against Placidity, Complacence and Conceit over the First Successes in the Development of Agriculture" had been submitted to the Presidium of the Central Committee by Khrushchev. As the evidence of major difficulties accumulated rapidly, there were signs of a shift in the author's attitude. He noted the rising demand for food products, condemned certain administrative practices, insisted on strengthening cadres of farms, approved conversion of weak and lagging collective farms into state farms in Kazakhstan (and by implication everywhere else where a similar situation existed). He also suggested a shift of resources from industry to agriculture through transfer of funds resulting from overfulfillment of targets in the industrial sector and implicitly admitted the errors in the field of the state's contribution to capital formation in agriculture.[114]

There must have been a good deal of argument among the top leadership as to the nature of the required remedial measures: the session of the Central Committee scheduled for December 13, 1960, was postponed until January 13, 1961. Before it met, Matskevich, whose earlier stands suggest that by 1959 he sided with hardheaded realists on all farm matters, was dismissed and relegated to the constructive task of improving agriculture in Kazakhstan.[115] On January 5, Khrushchev advanced his theses for the development of agriculture to be discussed at the forthcoming meeting. The session itself was enlivened by the remarkable spectacle of the First Secretary interrupting speakers with acid and derogatory comments; for all practical purposes it amounted to window dressing that afforded to many an excellent opportunity to engage in self-criticism. The relevant decisions were taken 3 days before the Central Committee met.[116]

The amazing feature of these decisions is that they were primarily concerned with the financial position of the farms, as if the U.S.S.R. was a market economy and if farms could have obtained the necessary implements and fertilizers by simply spending more money. (Financial relief did, of course, make it possible to arrest the decline in cash distributions to collective farmers.) Although Khrushchev now ex-

[111] "SNIP–1958–62," pp. 190–192.
[112] See sources cited in footnote 31.
[113] Sidney I. Ploss, op. cit. (in n. 77), p. 195, refers to the trends in those terms. Unfortunately, here as often elsewhere he completely misreads the evidence since he fails to investigate the intrinsic merits of various policy stands.
[114] Stroitel'stvo, IV, 162–186.
[115] Pravda, Dec. 30, 1960.
[116] "Sobranie postanovlenii pravitel'stva Soiuza Sovetskikh Sotsialisticheskikh Respublik," 1961, No. 1, p. 3.

plicitly condemned the earlier decision (his own?) to reduce machinery inputs and to proceed slowly with the expansion of fertilizer and weed-killer production, there is little evidence of a substantial shift in the allocation of materials and fertilizers to agriculture (we now know that the technical reconstruction of agricultural machine building, begun in the late fifties, was not even completed by 1965).[117] Thus, instead of treating the disease, the leadership delt mainly with some of its symptoms. Four-fifths of collective farm income from animal husbandry was made tax exempt for the next 5 years. Prices of spare parts (which had been raised again in 1959) were cut by 40 percent, as were those of gasoline. Smaller reductions were announced in prices of tractors (9 percent), trucks (17 percent) and other machinery (4.3 percent). This was at the time when labor productivity in agricultural machine building rose—from 1955 to 1961—to about 60 percent, and when profitability norms for some machines came to 50 to 90 percent.[118] The state bank was instructed to increase its lines of credit to collective farms at lower interest rate, while the instalment payments for the loans associated with machinery purchases of 1958–59 were extended to a period of up to 10 years.[119]

This, however, was not all. For the pressures from the demand side, reflected in the high income elasticity of demand for food at home, and in the "insistent and stubborn demand" of the satellite countries on the foreign account, were increasingly felt: by June 30, 1961, grain stocks went down to some 11–16 million tons (from the high of 23–27 million registered during our period on June 30, 1957).[120] If we can say that by this time Khrushchev's analysis of the situation improved, his policies showed few signs of progress. The response to the challenge was threefold. First the local procurement apparatus of the former U.S.S.R. Ministry of Procurements, abolished in 1956 following the advice of Khrushchev himself, was now recreated in the guise of "inspectorates for agricultural procurements." If my judgment of the situation is at all correct, one of the most hated and despised institutions on the Soviety countryside was thus resurrected. Its task was to organize and control the fulfillment of the state procurement plan, supervise all state marketing operations involving farm products, and participate actively in the organization of collective and state farm production.[121]

Second, the policy of allowing grain procurements in the more marginal areas to decline was sharply reversed. Khrushchev made known his displeasure with conditions in the central region of the RSFSR and Belorussia, where a number of areas shifted to the position of net buyers of grain from the government.[122] From here until 1964 on, uncontrolled escalation occurred in this vital area. Trends in procurement goals and achievements are illustrated in table 11.

Third, rural consumer cooperatives were allowed to purchase farm products at any price agreed to by the seller. This aimed in part at

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[117] Stroitel'stvo, IV, 251–252. Cf. also Voprosy ekonomiki, No. 5 (1965), p. 7.
[118] "Sobranie postanovlenii . . .." op. cit. (in n. 116), 1961, No. 1, pp. 3–4. See also Voprosy ekonomiki, No. 5 (1964), p. 81.
[119] "Sobranie postanovlenii . . ." op. cit. (in n. 116), p. 4.
[120] Nimitz, op. cit. (in n. 43), p. 58.
[121] Jerzy F. Karcz, "Soviet Inspectorates for Agricultural Procurement in 1961," California Slavic Studies, III (1964), 149–172.
[122] Stroitel'stvo, IV, 333–336; V, 57–59.

the increase in retail supplies of food which were to some extent controllable by the state and could be shipped to other areas. But the underlying hostility to the collective farm market and the private plot were obvious.[128]

TABLE 11.—*Procurement plans and achievements, U.S.S.R., 1960–80 (goals)*

[Million tons or billion eggs]

Year	Nature of plan and date of announcement	Grain	Livestock [1]	Milk	Eggs	Wool
1965	7-year plan goal (1959)	[2] 56.6	11.05	40.6	10.0	0.540
1960	Actual procurements	46.7	7.9	26.3	6.5	.358
	Required to fully satisfy the needs of the state in the very near future (January 1961)	68.8	13.0	50.0	[3]	[3]
1961	Annual plan (January 1961)	59.7–63.0	[3]	[3]	[3]	[3]
	Actual procurements	52.1	7.3	27.5	7.4	.369
1962	Annual plan (December 1961	63.1–64.0	8.7	32.5	[3]	[3]
	Actual procurements	56.6	8.6	29.2	8.5	.374
1963	Annual plan (December 1962)	68.8–73.7	9.5	34.0	9.5	[3]
	Actual procurements	44.8	9.3	28.5	8.7	.380
1964	Annual plan (February 1964	67.2	9.4	32.0	[3]	[3]
	Actual procurements	65.5	8.3	31.4	8.3	.352
1965	Annual plan (original, post-Khrushchev)	65.5	9.0	[3]	[3]	[3]
1965	Annual plan (March 1965)	55.7	8.5	33.7	9.4	.348
1970	Party program goal (October 1961) and tentative goals of 5-year plan, 1966–70 (June 1964).	90.0	18.0	60.0	[3]	[3]
1970	Goals of the eighth 5-year plan (March 1965).	55.7	11.4	43.4	15.0	.430
1980	Goal of the Party program (October 1961)	114.7	[3]	[3]	[3]	[3]

[1] Live weight.
[2] Goal not announced but "at about the level of planned 1958 procurements." These are not known, but the 1958 procurement plan was overfulfilled.
[3] Not available.

The consequences of these measures were simple enough. Since the price system, defective on many accounts, could not provide enough incentives for farms to sell their products (especially those of animal origin) to the government, resort was made to command. The failure of the 7-year plan to provide enough inputs and enough scope for the private sector reversed the trend toward the market sector which agriculture appeared to have been taking in 1953–57. But the application of command elements in this setting could only lead to a variety of vicious circles. The sharp increase in the size of urban population and the increases in wages of low-income groups led to the need to increase the share of the state in total retail sales of food to households. That this happened indeed can be seen from table 12. In turn, given the slowly growing or even stagnating output, this could only mean a reduction in farm incomes in kind. This reduction, accompanied by all the measures taken against the private sector further reduced total incomes of collective farmers from the socialized sector. (It is of no consequence here that the monetary component of this income was growing: as long as the farmer was increasingly compelled to purchase a part of his food supply in the state and cooperative trade network, the pressures for more food to sell by the state would lead to pressure for a greater share of procurements in output. We would then come back to our main vicious circle.)

In turn the reduction of incomes from the socialized sector could only mean further pressure either to leave the farm (cf. p. 395 above)

[128] This is clear from Khrushchev's general attitude, as evidenced in Plenum-December 1958, pp. 41–42 and Plenum-January 1961, p. 584.

or to devote a greater number of man-days to the reduced but even more vital private plot (cf. table 5). Since machinery inputs were not forthcoming in required quantities (or for that matter in proper assortment, type, or size), output could only stagnate further.

TABLE 12.—*Retail "sales to population," [1] major food products, U.S.S.R., selected years*

[Million tons]

Product	Retail channel	1953	1958	1960	1961	1962	1963	1964
Grains [2]	State and cooperatives [3]	22.87	27.62	29.40	30.28	32.21	32.06	32.04
	Collective farm market [5]	3.85	2.52	2.19	1.84	1.73	1.17	1.28
	Total	26.72	30.14	21.59	32.12	33.94	33.23	33.32
Potatoes	State and cooperatives	2.15	3.52	(4)	(4)	4.00	5.03	(4)
	Collective farm market	6.26	6.46	5.69	5.63	5.30	4.75	5.10
	Total	8.41	9.98	(4)	(4)	9.30	9.78	(4)
Vegetables	State and cooperatives	1.94	3.58	(4)	(4)	4.59	5.16	(4)
	Collective farm market	1.97	1.98	1.58	1.31	1.42	1.37	1.42
	Total	3.91	5.56	(4)	(4)	6.01	6.53	(4)
Milk [6]	State and cooperatives	9.98	19.74	23.19	24.75	25.04	25.60	27.96
	Collective farm marker	2.47	2.07	1.82	1.86	1.88	1.59	1.57
	Total	12.45	21.81	25.01	26.61	26.92	27.19	29.53
Meat [7]	State and cooperatives	1.76	3.02	3.98	3.82	4.27	4.81	4.69
	Collective farm market	.73	.82	.69	.80	.98	.86	.78
	Total	2.49	3.84	4.67	4.62	5.25	5.67	5.47
Eggs	State and cooperatives	2.04	4.30	4.90	5.71	7.01	7.16	7.26
	Collective farm market	2.80	3.06	3.22	3.17	3.18	2.51	2.42
	Total	4.84	7.36	8.12	8.88	10.19	9.67	9.68

[1] Sales to population through State and cooperative channels are apparently either identical with or about the same as the so-called market fund.
[2] Including grain products in grain equivalent.
[3] Here and elsewhere these sales exclude the so-called commission trade or trade at uncontrolled prices by cooperatives.
[4] Not available.
[5] Including commission trade or trade by cooperatives at uncontrolled prices.
[6] Including milk products in milk equivalent.
[7] Including meat products.

There were further repercussions elsewhere. Stagnating output made it more difficult to supply food through the state retail network. This, in turn, probably accentuated the existing pressures for further increases in money wages and might have contributed to what the Soviets would call "loosening of financial discipline" in enterprises, with all the inflationary consequences that this entails. We should recall that the increase in savings (and cash hoards) that begins around 1961–62 may well reflect shortages of desirable goods rather than a rise in the true propensity to save.

Other vicious circles can be mentioned briefly. The imposition of peculiar crop structures from above, accompanied by high procurement quotas was reflected in the neglect of production of high quality seeds. In turn, the average quality of output declined.[124] The policy

[124] Novyi mir, No. 11 (1965), p. 181. The author quotes a collective farm chairman (endowed with a sense of humor) who suggested a new crop mixture consisting of sunflower, barley, and wheat, sown mixed together on the same field. Then, "it is impossible to discover what is sown, but they will not take it during the procurement campaign—and the farm is left with feed." Ibid., p. 186.

of requiring individual farms to deliver a large variety of products on any given farm precluded specialization and often involved unnecessary financial losses for farms. The financial condition of farms was aggravated by outdated rules on depreciation allowances: since transferred stock of MTS machinery was carried on the books of collectives at depreciated values, and since prices for new machinery had been raised, depreciation allowances could not possibly approach the required replacement values for scraped items.[125] It must have seemed to many uninitiated administrators that high goals for output of livestock products should be reflected in large herds: consequently, large herds in socialized sectors became a goal in their own right, in spite of difficulties of securing enough feed (which now had to be diverted from the much more productive livestock sector of the private plots).[126]

In the process, the last shreds of the "freedom to plan" acquired with great fanfare in 1955 were torn to pieces.[127] "Freedom to plan," of course should be understood in a peculiar sense, as the term implies no limitations on the action of the highest party and government officials. Viewed in the larger context, the concept always allowed for the "right kind" of intervention by lower party and government officials. Numerous examples of this sort of advice had, of course, been furnished by Khrushchev throughout his career—he did not choose to alter his behavior in March of 1955. His disclaimers to the effect that he was only "offering advice" or that "I would be incorrect if I said that I excel in everything as far as agriculutre in concerned, that I know everything there is to know," were disregarded as they were mostly meant to be.[128] The consequences were often disastrous, as was the case with the extension of corn sowings into the Northwest of the R.S.F.S.R. and Belorussia.

The harvest of 1961 was not much better than in 1960. Though domestic demand eased up a little as a result of the peculiar behavior induced by the effects of the 1960 monetary reform, the drain on grain stocks continued.[129] So did the pressures on the collective farm market and the private sector of the economy: in many instances farms were forbidden to plan to sell on this market. Those that did were often castigated in the press. In some (read: many) instances the markets were closed or converted to cooperative markets.[130] This, too, accentuated pressures on the inadequate food supplies in the government and cooperative network. Another vicious circle was thus in progress when the Central Committee met again in the plenary session on March 6, 1962.

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[125] R. V. Alekseeva, A. P. Borodin, "Nakoplenie i razvitie kolkhoznoi sobstvennosti" (Moscow: 1963), p. 70. This was not all. Since prices for repair work done in state-owned shops were set at a high level (perhaps because the shops themselves were not very efficient), it paid to conduct repair in small collective farm workshops at costs by one-third lower than the prices to be paid to larger (and potentially more efficient) state repair establishments. Cf. ibid., p. 70.

[126] On the refusal of administrative authorities to allow slaughter in instances when there was no feed, see Plenum-March 1965, p. 50. Oddly enough, when discussing Stalin's 3-year plan for development of livestock (1949–51) Khrushchev remarked: "The plan reduced itself to the goal of having always more livestock of all kinds. But is the problem one of quantity of horns and tails? No dear comrades * * *." Cf. Stroitel'stvo, II, 113.

[127] The relevant decree was ultimately reissued in the spring of 1964. But even in 1963 two (otherwise sensible) economists wrote: "Consequently, there arose the necessity of active interference in collective and state farm organization of production in order to eliminate the lack of direction (samotek) in agriculture." Cf. Alekseeva and Borodin, op. cit. (in n. 125), p. 217.

[128] Stroitel'stvo, II, 425; IV, 461.

[129] Nimitz, op. cit. in n. 43), p. 58. By the end of June 1962 stocks would be down to 5 to 10 million tons.

[130] Voprosy ekonomiki, No. 2 (1962), p. 62. See also V. P. Rozhin, "Nekotorye voprosy podëma ekonomiki slabykh kolkhozov" (Moscow: 1961), pp. 144–145.

Ever since the fall, Khrushchev had been touring the country, inveighing against the travopol'e system of crop rotation introduced in the 1930's. Too much land had been left under unproductive grasses and clean fallow, he asserted: this must go. The attack was continued during the March 1962 plenum when the procurement goals for the grain and livestock products were escalated still further. The blessing was given to the demise of travopol'e and clean fallow: if official statistics are correct on this point, the area under grasses declined from 36 to 27 million hectares in 1962 and to 14 million hectares in 1963. The corresponding figures for clean fallow are: 1960, 17.4 million hectares; 1962, 7.4 million; 1963, 6.3 million. It was obvious that here, too, there was the beginning of another vicious circle, especially in the new lands. On comparable land in Saskatchewan, the Canadians fallow some 40 percent of their acreage.[131]

More came in the domain of administration: Khrushchev was unsatisfied with the inspectorates for agricultural procurements and in April 1692 they were absorbed by a new agency, the territorial production administration (TPA), uniting for the first time state and collective farms of a given area under a common leadership. The TPA represent a curious blend of an earlier idea of "agricultural unions," voiced by Matskevich in June 1960, with the typically Khrushchevian drive of getting the specialist (and indeed the scientist as well) to dirty his feet in manure. But Matskevich (and those who elaborated this idea) envisaged the task of these unions quite differently. They were to organize repair work and supply other needed facilities on an interfarm, cooperative basis. The Khrushchevian TPA, on the other hand, placed the main stress on the "correct kind of" interference in production matters of individual farms.[132]

The March 1962 plenum decisions—which stressed the need to raise livestock production—were completely silent on livestock prices. The decision to raise these prices was discussed further within the more intimate circles of the leadership. The delay was understandable. Any further increase in farm prices without a matching rise in retail prices of meat would have increased the subsidy that the Soviet consumer was receiving since the early fifties while purchasing meat in a state store. When the moment of truth finally came on June 1, 1962, retail meat prices were also raised by 35 percent while those of butter rose by 10 percent. The decision was greeted—in some known cases—by riots, and by general dissatisfaction of urban consumers.[133]

In his March 1962 speech, Khrushchev made it clear that machinery stocks in agriculture did not allow for the performance of agricultural tasks within the time period required by agronomic considerations. He also deplored trends in fertilizer allocations. One of his requests—to construct three new farm machinery plants—was not acted upon. In retrospect, it is easy to see why Khrushchev's

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[131] Cf. Zoerb in Laird, Crowley, op. cit. (in n. 36), p. 40. For an outstanding analysis and assessment of Khrushchevian agronomy, including the corn program, the reader should consult Naum Jasny, "Khrushchev's Crop Policy" (Glasgow: Institute of Soviet and East European Studies, University of Glasgow), 1965.

[132] Karcz, op. cit. (in n. 121), pp. 170–172.

[133] Albert Bolter, "When the Kettle Boils Over * * *" Problems of Communism, XIII: 1 (January–February 1964), 33–43.

colleagues were not eager to plunge into more costly and ill-conceived schemes: the refitting of the existing farm machinery plants, begun in the late fifties, was still not completed.[134]

Khrushchev turned to other administrative reforms. In an unprecedented measure, the party organizations at local levels were split in November 1962. Henceforth, there would be a separate party unit for agriculture and another for industrial matters in each of the provinces, or republics.[135]

Output trends in 1962 were somewhat better than in 1961, but this was chiefly due to the weather. A year later, harvest conditions were nearly catastrophic. Grain output declined by 23 percent and imports were required on a large scale to maintain unbroken food supplies for the population.[136] For a while, it seemed as if the brush with catastrophe was a blessing in disguise: by October 1963 Khrushchev was arguing for a crash program of fertilizer production, which according to his initial estimates was to amount to 100,000 tons in 1970 (1963 production was 19.9 million).[137] Ultimately, the December 1963 plenum agreed to the expansion but at a reduced pace, with 1970 output planned at 70 to 80 million tons.[138]

Overt signs of dissatisfaction with Khrushchevian policies in agriculture appeared at about that time. Early in 1964, a Gosplan economist wrote openly on the disadvantages of growing corn and sugarbeets for feed in certain areas.[139] Many more must have objected to the even more restrictive tax measures imposed on the private plots in May 1963.[140] Khrushchev himself toned down the strength of the advice offered to farms and to their managers.[141] In 1963, prices for cotton, sugarbeets, and potatoes had been raised, apparently against some opposition from Khrushchev. At the February 1964 plenum meeting on agriculture, some tentative measures were taken to handle the long overdue question of irrigation, and many measures were introduced in the spring of 1964 to handle the even more pressing problems of the financial condition of weak farms.[142]

But heavy pressures from the demand side continued on the food market, the government was understandably reluctant to raise its retail prices, and the impact of the more sensible measures just outlined would not occur immediately. Khrushchev, however, appeared firmly convinced that it is always better to do anything than to wait patiently. Once more he seemed to have searched for the answer in administrative measures: during the summer of 1964 he discussed openly the idea of forming branch-type productive administrations, patterned on the existing organization of the poultry industry. As is well known, he was unable to put this proposal before the Central Committee. When he next faced that body, it was to fight the lost battle for his political life.

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[134] Cf. footnote 117.
[135] Pravda, Nov. 24, 1962.
[136] Nimitz, op. cit. (in n. 43), p. 58, and Lazar Volin, Harry Walters, "Soviet Grain Imports," Economic Research Service, ERS—Foreign—135 (Washington, D.C.: U.S. Department of Agriculture, 1965), passim.
[137] Stroitel'stvo, VIII, 175–176.
[138] Ibid., VIII, 273.
[139] Planovoe khoziaistvo, No. 1 (1964).
[140] Vedomosti Verkhovnogo Soveta RSFSR, No. 18 (1963), pp. 444–447. Thus, a cow kept over the new norm (1 cow or 1 goat) would cost the owner 150 rubles a year in extra taxes.
[141] Nimitz, op. cit. (in n. 14), pp. 18–19.
[142] A fuller summary is given in ibid.

V. The New Program and the Eighth 5-Year Plan

Khrushchev's successors lost little time in dealing with some aspects of his heritage. The extremely unpopular restrictions on the private plots were lifted in November 1964, while the party organizations at local levels were unified once again. Beginning with January 1, 1965, milk prices were raised to levels that compared favorably with 1964 collective farm production costs. Early in 1965, the U.S.S.R. Ministry of Agriculture was reorganized; under the direction of Matskevich, recalled from the Kazakh steppes, it resumed operational leadership and control over state and collective farms.[143]

Having accused Khrushchev of haste and impatience, the new leaders devoted more time to the elaboration of the "New agricultural program," announced in March 1965. I have analyzed this program in greater detail elsewhere, and as far as this symposium is concerned the matter rests in the able hands of Mr. Keith Bush.[144] I shall therefore confine myself to summary remarks alone.

Perhaps the most significant aspect of the new program is that several of its features make it possible for Soviet agriculture to begin once again, a slow movement toward the market sector of the economy. It will be recalled that under Stalin, agriculture was placed squarely in the command section (with the notable exception of the collective farm market which depended on the private plots). From 1953 to 1957, farming seemed to be moving toward the adoption of market-type incentives, but the trend was arrested (intentionally, it appears) by various policy measures introduced in 1958. The market cannot, of course, provide the right kind of signals when the farm is forced to produce and to sell its output at a net loss, as was the case generally with livestock products and in some areas with crop production until 1965. In 1965, prices for livestock delivered by state and collective farms were raised by 30 to 36 percent.[145] Also raised were prices of bread grains all over the country and of feed grains in the northwestern region. An interesting feature of the new prices is that they reflect a step toward pricing at the level of costs of marginal producers.

Simultaneously, procurement goals for 1966–70 were reduced rather drastically (cf. table 11); in the case of grain procurements a fixed overall quota has been established for the new 5 years. The latter feature is fully consistent with the introduction of greater autonomy in local decisonmaking at the farm level. It will also reduce the pressures on farms and enable many of them to adopt patterns of greater specialization in production. In March 1965, Brezhnev saw fit to declare that [once the plans have been set], "no one has the right to change them." [146]

The nature of the income tax on collective farms was altered drastically. Henceforth, it will be computed on the base of net, rather than gross income. Net income will exclude collective farmer earnings up to the level of 60 rubles per month (or about 10 percent less than the lowest 1964 average wage in the lowest paid sectors of the economy—trade, health, communal service). Up to 40 percent of the ex-

[143] Pravda, Nov. 6 and 7, 1964; TASS release, Apr. 1, 1964.
[144] Jerzy F. Karcz, "The New Soviet Agricultural Programme," Soviet Studies, XVII: 2 (October 1965), 129–161.
[145] "Martovskii Plenum TsK KPSS o pod'eme sel'skogo khoziaistva" (Moscow: 1965),
[146] Pravda, Mar. 27, 1965.

isting short- and long-term indebtedness of collective farms has been written off, including the remaining portion of debt resulting from purchase of MTS equipment in 1958–59. Rural retail prices for certain categories of consumer goods, which had been higher than prices paid for identical commodities in urban areas, have been reduced to the urban level.

Moreover, machinery allocations have been raised substantially and the fertilizer supply targets have been cut back to a more realistic level of 55 million tons for 1970 (this is still almost twice as high as 1965 allocations).[147] The state is assuming the burden of all major irrigation projects which are to proceed on an unparalleled scale. Total investment in agriculture (productive and unproductive) may exceed 71 billion rubles within the next 5 years.[148]

Thus, on the input side the eighth 5-year plan is much more consistent with the announced production goals than was the case with the 7-year plan. Unfortunately, it is not possible to render the same verdict in connection with planned increases in money incomes and consumption of food.

The eighth 5-year plan calls for an average annual increase of 25 percent in gross farm output over the level of 1961–65. The target is now put in a more sensible way that will avoid embarrassment in the future. But we do not know exactly the relation of planned figure for 1970 to the actual output of 1965; it might be as low as 118 percent or even higher than 125 percent. In any case, it is the lowest increase sought in any Soviet medium-term plan. A very rough calculation, undertaken "on horseback" and at the 11th hour on the basis of new data available through April 15, indicates that disposable money incomes are likely to rise by 42 to 48 percent over the level reached in 1965. In 1970 disposable money incomes may be between 176 and 183 billion rubles (cf. app. table 8). It also appears that planned household expenditures for food in 1970 may come to 75 to 83 billion (the lower limit of this range is based on the assumption of a 10 percent decline in food prices). This is an increase of 17 or 30 percent respectively over the likely level of such expenditures in 1965.

Apparently, the Government hopes that the present high income elasticities of demand for foods (cf. p. 10 above) will decline in the near future. If this is not to remain a pious hope, Soviet industry must supply adequate quantities of attractive and reasonable quality nonfood consumer goods. The Government must also make good on its goal to raise the level of services by not less than 150 percent. Any dispassionate observer of the Soviet scene may be skeptical on this score. He is also compelled to note that plans based on the hope that all the optimistic assumptions of the planner will, in fact, be realized, are likely to go astray more often than not.

We also note that on the assumption of a 10 percent decline in prices of foods and nonfood products, total household expenditures in 1970 are likely to come to 171 billion. Given the existence of considerable cash hoards, this is likely to result in some inflationary pressures. These will be aggravated if major supply difficulties develop, especially if plans to raise wages or incomes would be implemented regardless of the conditions on the retail market.

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[147] The decline in the target was not noted in my article referred to in note 144.
[148] Pravda, Mar. 27, 1965, and Apr. 10, 1966.

We also note that planned average increases in State retail sales of foods during 1966–70 come to about 30 percent, while the planned increase in the total consumption of foods is somewhat higher (30 to 35 percent; cf. app. table 8). Farm output is to rise by, let us even say, 25 percent. While there may be some increase in efficiency of marketing, this aspect of the plan is at best extremely tight. Some inconsistency in this context is much more likely. The increase in grain output is planned for only 30 percent over the level or 1961–65 (it is 44 percent over 1965).[149] Yet the satellite demand for Soviet exports is likely to persist, and state grain stocks must also be replenished. Moreover, the planned increase in meat production (23 to 29 percent) will also cause an additional drain on grain supplies. The extent to which consumption plans will be met depends largely on the way these conflicting demands will be resolved.

The new plan also calls for specific increases in per capita consumption of major food categories. This type of planning calls for corresponding changes in the structure of state retail prices. Flexibility and willingness to experiment in this area have never been very pronounced in the U.S.S.R., and it will be interesting to watch future developments.

We should also note that although the "liberalizers" appear to be firmly in the saddle, the tug of war among the top leadership is by no means over. Thus, at the February 1966 plenum of the Central Committee, the matter of a guaranteed income for collective farmers, at the level of corresponding state farm wages, was apparently discussed. The summary of plan directives, issued in English by Tass, included the pledge to raise collective farmer incomes in this way. This was subsequently excluded from the Russian text printed in the Soviet press. In his speech to the XXIII Congress in March 1965 Brezhnev has once more reiterated it.[150] Kosygin's wording a few days later was somewhat more ambiguous.[151] The final published version of plan directives states that "guaranteed monthly labor remuneration for the collective farmers, in conformity with the level of wages of state farm workers, will be introduced gradually." [152] The promise seems intended for the identical skills in identical regions; the meaning of "gradually" seems purposefully vague.

Moreover, although the 1966 procurement plans were not altered after the final results of 1965 became known, the state planning commission is proceeding on the assumption that the state will receive over plan procurements of many products in 1966.[153] The directives enjoin all farms "not only to fulfill fixed procurement plans but to sell to the state in everincreasing amounts, over plan quantities of grain at higher prices. They should also foresee over plan procurements of sunflower, cotton, flax, milk, wool, eggs, and other products." [154] The line between such statements or assumptions and an actual increase in the procurement plan is rather thin in the present Soviet environment (there would have been none 2 years ago), and developments in this sphere too will have to be watched carefully.

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[149] Pravda, Apr. 2 and 10, 1966.
[150] Ibid., Mar. 30, 1966. See also San Francisco Chronicle, Mar. 2, 1966, p. 4–F.
[151] Pravda, Apr. 6, 1966.
[152] Ibid., Apr. 10, 1966.
[153] Ibid., Dec. 8, 1965.
[154] Ibid., Apr. 10, 1966.

We should also note that the higher farm prices introduced in 1965 do not always apply to the private sector (this is most likely the case for livestock, where the "premiums" rather than higher prices were introduced).[155] Once more, it seems difficult to make a clean break with the heritage of the past.

VI. Conclusion

When recent trends in Soviet agricultural policy are examined within the broader framework employed in this study several general conclusions immediately suggest themselves.

It is clear that the highly disappointing recent trends in Soviet farm output can be traced directly to the inadequate performance of top Soviet decisionmakers during the years 1957–58. (We may note in passing that failure at the top occurs after Khrushchev consolidated his personal power within the party apparatus.) The two sets of decisions that were so patently harmful in retrospect involved the setting of goals for agricultural outputs and inputs under the 7-year plan, and the reorganization of the machine tractor stations.

All these decisions suffered from the apparent inability or unwillingness (or a combination of both) to accept the limitations imposed by available resources. The sense of haste and urgency which permeated these decisions can of course be traced further to certain psychological propensities of Communist leadership. After all, the party has often violated similar constraints in the past and it has survived; the very seizure of power in November 1917 and the attempt to build socialism in one country must be viewed as willful (and successful) violation of the Marxian timetable for the transition from capitalism to socialism.

The causes of agricultural failures under the 7-year plan are basically the same as those that had been acknowledged as leading to the abandonment of the sixth 5-year plan. Anybody doing research in Soviet capital formation, rationality of decisionmaking, efficiency of the construction industry, the lack of appropriate priority setting for development of various sectors and failures to reap the benefits of the division of labor will be well advised to consult agricultural materials. The more fundamental reason for this state of affairs is that Khrushchev, who was able to de-Stalinize many aspects of Soviet life to a considerable extent, never succeeded in de-Stalinizing his own work habits or his own attitudes and outlook. The same may be said of many of his colleagues.

The consequences of these careless and overconfident attitudes would not have been so important, were it not for a basic difference between the Soviet industrialization and that of the so-called Western economies. The latter was preceded (or occurred concurrently with) a veritable revolution in cropping patterns and agronomical techniques.[156] As a result, Western agriculture was able to perform its

[155] "Sel'skoe khoziaistvo Rossii," No. 11 (1965), p. 37.

[156] One of the first references in the context of developmental economics to this phenomenon was made when Ragnar Nurkse referred to the role played by "the lowly turnip" in British agriculture in his "Problems of Capital Formation in Underdeveloped Areas" (New York: Oxford University Press), p. 52. See also the paper by William H. Nicholls, "The Place of Agriculture in Economic Development," in Carl Eicher and Lawrence Witt, eds., "Agriculture in Economic Development" (New York: McGraw-Hill Book Co.), pp. 18–19. Japanese experience is also relevant here—cf. Bruce F. Johnston, "Agricultural Development and Economic Transformation: A Comparative Study of the Japanese Experience," "Food Research Institute Studies," III: 3 (November 1962), pp. 223–252.

main developmental task—that of supplying labor, food, raw material, and export surpluses to the industrial sector—in an entirely different environment, characterized by rising yields and sharply improving productivity. Nothing of the sort materialized in Russia—or Eastern Europe for that matter—prior to the inception of the industrialization drive. If the Soviets imported technology, the effort was largely restricted to the industrial sector; certainly, no comparable drive was made to import and implement modern Western farming techniques in a comparable manner. No Western country ever faced the crisis of "marketable grain surpluses;" yet, it was this very crisis that may well have tipped the scales in favor of the massive collectivization drive with all its consequences.

When the attitudes of the present Soviet leadership are examined in this context, they appear at first glance to be much more rational. The sense of urgency and haste have apparently yielded to the need for greater deliberation and reflection upon the merits of the underlying issues. The last debate on farming, conducted in March 1965, on the forum of the Central Committee, was no longer confined to largely congratulatory slaps on the back, followed by stop-gap proposals and a series of camouflaged self-criticisms, beginning with that extremely useful word: "but * * *". Moreover, shortcomings have been admitted publicly with consequences to be elaborated presently.

It remains to be seen, of course, whether this change in attitudes is as fundamental as it must be in order to achieve the stated objectives. The task of modernizing Soviet agriculture cannot be separated from that of modernizing the Soviet economy as a whole. The latter requires a significant reduction in the number of existing "command" elements or sectors and their replacement by market-type incentives and controls. In this connection, the Soviet leaders face an arduous and protracted task. If the Yugoslav experience is at all relevant, the road ahead leads through many detours that will often take the traveler in the opposite direction. At any rate, the so-called reforms of the Soviet industrial sector, introduced in September 1965, do not go far enough. In fact, they fall far short of their Czechoslovak, East German, and Hungarian counterparts.

One other development must be mentioned in passing. The irrational Khrushchevian policies apparently led to the emergence of a type of "underground opposition," which involved not only farm managers but apparently also the republican government organs and the republican parties. Thus, peas were sown on paper only; Kazakh agriculture apparently succeeded in largely avoiding the order to sow legumes. Estonia evaded the restrictions on the private plot and Lithuania managed to minimize the impact of the antigrassland campaign.[157] Anyone who has served in the armed forces or another large organization knows that orders must sometimes be neglected if the organization is to function at all. But what is interesting in the Soviet context is that, when the chips were really down, first loyalty went to the farm or to the Republic—and not to the party. Violation of orders may have resulted from a conviction that the leadership ceased to represent the true will of the party. But attempts to

[157] Plenum—March 1965, pp. 104–105, 203, 207, 220.

determine for oneself the correct course of action in matters of major importance are also highly significant.

In thinking about the future it is well to bear in mind that the Soviet Government is at present committed to a program of massive agricultural improvement, that the reasons for the sad state of agriculture have been aired in public, and that the program is fully in accord with the deeply ingrained sense of fairness that is characteristic of the ordinary Soviet citizen. In a sense, agricultural progress in the future will be looked upon as a test of the ability of the government to handle a persistent major difficulty. Thus, barring major upheavals of a random or foreign policy nature, there is no reason to expect a reversal of present policies toward those that have been properly labeled Stalinist in the past.

This does not necessarily mean that the new agricultural program is in any sense optimal. Preceding analysis suggests that the size and condition of machinery stocks on farms plays a crucial role in the aggregate production function of Soviet agriculture. Present trends do suggest that this factor is still underestimated at the Kremlin. The 1965 performance of agricultural machine building still leaves much to be desired, and machinery accounts for only 24 percent of total agricultural investment under the eighth 5-year plan (1966–70).[158]

Given the existing climatic conditions, rapid mechanization and electrification of Soviet agriculture is probably the most important necessary condition for a rapid improvement of its performance and the resulting amelioration of Soviet diets. But machinery is also a substitute for labor. In thinking about the planned rate of mechanization, it is necessary to bear in mind the existence of the employment problem which appears to have assumed considerable proportions in the U.S.S.R.[159]

The shortrun interests of the economy as a whole and of the agricultural sector, viewed narrowly as just another industry, are not altogether identical. Thus, the relatively modest goal for the allocation of machinery to agriculture may not be due only to the priority of heavy industry. It may reflect the growing awareness of other limitations, including the difficulty of creating the required number of costly urban jobs in the very near future. Indeed, Kosygin and the final directives of the eighth 5-year plan now speak of the need to locate industry in rural areas and of opening up seasonal branches of processing plants in the villages. In the meantime, the 1965 and 1966 measures aimed at increases in farmer incomes should help to slow down the exodus of the young and the able bodied to the cities.[160]

Our analysis would not be complete if we failed to mention a fundamental and by now frequently forgotten assumption of Soviet agricultural policy. I refer to the desire to maintain self-sufficiency

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[158] The value of investment in farm machinery is 10.7 billion rubles (cf. "Ekonomika sel'skogo khoziaistva," No. 6 (1965), p. 29. But this is net of investment in tractors and trucks (which are not usually considered as farm machinery, narrowly defined). The value of 1,790,000 tractors and 1,100 trucks may be estimated roughly at 6 billion rubles.

[159] Cf. the speech by A. G. Aganbegian, as reprinted in the ASTE Bulletin, VII: 2 (summer, 1965), 2. Other evidence confirms the existence of this problem, which appears in all other Socialist countries of Eastern Europe.

[160] "Pravda," Apr. 6 and 10, 1966.

in the production of foods and raw materials, reinformed by the need to support the economies of other Socialist countries of Eastern Europe with exports of grains. As Naum Jasny made it clear in an as yet unpublished paper,[161] Soviet agriculture is without doubt the most expensive food producer in the world. The reasons for this are many and some of them have been discussed in this paper. But it is also true that Soviet economic development has been taking place largely in isolation from world markets and without the benefit of correctives supplied by the foreign sector. The large size of the U.S.S.R., its rich resource endowment in industrial materials, the disregard of living standards and of efficiency in favor of rapid rates of growth, enabled the Soviet government to maintain (so far) the balance which Grossman calls a necessary condition for the very functioning of any economy.[162] But in the process of Soviet industrialization a great waste of resources has resulted and the Soviet economy is heavily populated with branches of industries and plants that could not be maintained in a more open economy. It seems ironic that at the very time when a great debate on the need for greater efficiency in resource use is taking place in the U.S.S.R. so little thought appears to have been devoted to the rationality of stressing the developing of the agricultural sector.

It is impossible to state the issue in those terms without recalling that most other economies, including our own, are not without fault in this regard. The existence of many irrational programs in agriculture in virtually all Western economies testifies vividly to the fact that there is more to life than simple economic efficiency. But still, there are no indications as yet that the underlying assumption of autarky is being questioned in the Kremlin. Even a partial recognition of this problem, perhaps within the Comecon setting, would be most helpful at a time when new 5-year plans are being drawn up and when very large investible resources are about to be sunk in a sector where Soviet production costs are bound to remain high by the standard of world prices for many years to come.[163]

One major issue remains to be considered. Soviet agriculture is often said to suffer especially from its internal organizational structure. In particular, it is sometimes argued that it is the very nature of socialized agriculture in the U.S.S.R. that constitutes the greatest stumbling block on the road to greater agricultural productivity and toward a more affluent society.

This very complex issue lies on the far side of the imaginary line beyond which angels (let alone economists) fear to tread. While I do not wish to beg the question while pleading the excuse of lack of space, I must be very concise in stating my views on this matter. I shall also employ the favorite academic device of defining myself the views of the protagonists.

There is no doubt, of course, that the present size of Soviet farms, both state and collective, is far above any conceivable optimum.

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[161] "Production Costs and Prices in Soviet Agriculture," to be published (with other papers delivered at the Conference on Soviet and East European Agriculture, held in Santa Barbara in 1965) this fall by the University of California Press in a volume called "The Tractor and the Sickle."

[162] Grossman, op. cit. (in n. 48), pp. 101–102.

[163] We would have to take another look at this matter in the case of a major technological breakthrough, such as the introduction of hybrid wheat or other hybrid grains.

Some recognition of this fact has by now taken place in the U.S.S.R. as well, and steps are now being taken to dismantle some unmanagable giants through an interesting process of deamalgamation. But it remains to be seen whether giantism as a disease of Soviet farming will ever be eliminated completely. It is a fact, however, that the optimum size of the farm cannot be determined offhand without a reference to the existing relative prices of inputs and outputs alike. Thus, this issue must necessarily be viewed in the much larger context of rationalizing the Soviet command economy. This fascinating subject does not fall within the frame of reference of this paper. But those who choose to ignore this factor can only proceed at their own peril.

What is also at stake here is the important issue of the relative efficiency of the privately owned versus the socialized enterprise. We cannot enter into any detailed discussion of this question either. Any such comparisons, of course, must be made either between the existing actual systems or the underlying theoretical structures. Moreover, it is necessary to make a vital distinction between ownership as such and the related but still separate questions of autonomy in decisionmaking and the problem of incentives. When these distinctions are made, the entire issue appears in a very different light.

As far as agriculture is concerned, however, it is often claimed that some special conditions prevail that might even make the family farm an ideal (if not optimal) economic unit. Upon closer examination, however, it turns out that the specific characteristics of agriculture that are relevant in this context are confined largely (if not exclusively) to the relatively long production cycle, the dependence on the unpredictable weather, and the fact that most farms are multiproduct enterprises by definition. All that seems to be called for on this account is greater decentralization in decisionmaking. Ownership of land is not necessarily connected with the ability to make the right decisions at the right time. While Soviet experience with decentralization of decisionmaking is still in its infancy, this is a problem that appears in the economy at large and not only in agriculture. On a priori grounds, therefore, there are no reasons here to separate agriculture as a special case that stands in need of a different treatment. There are, of course, many other reasons that suggest that the solution of this particular problem is going to be more difficult for Soviet agriculture than for Soviet industry, but these reasons are environmental rather than theoretical in nature.[164]

On the other hand, Soviet experience with socialized farming cannot be separated from the role performed by agriculture in the special framework of Soviet economic development. To repeat, agriculture as a whole—and the collective farm sector in particular—served as an instrument of collection of forced savings to the detriment of its own internal efficiency. In the process, the level and the structure of incentives—a much more important matter than the question of ownership from the standpoint of economics—

[164] Grossman, op. cit. (in n. 48), passim. As Nancy Nimitz correctly points out, the Soviet farm is much more affected by administrative interference than a Soviet industrial firm. But this is still an environmental factor. Cf. Nimitz, op. cit. (in n. 14), p. 21.

was grievously affected. The effects of the neglect of incentives on productivity are sufficiently well known so that further comment seems unnecessary.

But even in this difficult environment some Soviet farms—both state and collective—have done rather well. Given the nature of Soviet farm prices until 1965, once a farm passed a vaguely defined point of no return, the road toward relative affluence seemed wide open. It is not material here whether the farm was able to achieve this breakthrough because of superior management or because of favoritism. Khrushchev's own native Kalinovka is indeed a case in point: it did well, as it turned out, because of extraordinarily high allotments of government investment funds and credits.[165] Indeed, this experience supports the view that output is largely determined by inputs even in the peculiar Soviet environment. If, in turn, inputs are available in the required quantities, the matter of incentives will probably be taken care of in an appropriate manner.[166]

The preceding paragraphs should not be misunderstood. Private property performs a variety of useful functions in the economy, not the least of which is the better care afforded to the capital stock, a greater sense of personal responsibility, and the fact that political and economic power tend to offset each other more readily when that revered and venerable institution is present. But it is one thing to argue in favor of private property on these general grounds, and it is another to argue—erroneously, I believe—that a specific form of private property is a necessary condition for the efficient performance of a given economic activity.[167]

Ultimately, therefore, the case against socialized farming is telescoped into the argument that farming of this type, especially when liberally seasoned with collective extraction of forced savings, has not been very efficient in the Soviet Union (one is indeed tempted to borrow Hayek's expression from the great debate on the efficiency of socialism and to say that Socialist farming is not "particularly practicable").[168] This, of course, is a very different argument than the one against which I have been taking the stand. Many cogent arguments can be advanced in its support and I would be the first to advance them were it not for the justified fear of exhausting the patience of the editor. Once more, however, we should be careful. Although there are some special costs of discrimination aganist the peasants, there is always a social cost of discrimination against any social group.

Having said this much, we must also say more. Recent research on the economic behavior of cooperatives, undertaken by Benjamin Ward and EvseyDomar, has shown that a cooperative (and thus the ideal

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[165] The share of the state in the formation of capital in Kalinovka was 80 percent. For all other farms in this (Kursk) oblast' it was only 45 percent. Cf. "Voprosy ekonomiki," No. 4 (1965), p. 9.

[166] Indeed, there are some indications that—in the environment of the Soviet countryside characterized by absence of many amenities—the supply curve of effort on the part of the farmers may begin to curve backward at a rather low level of earnings. In the Belorussian farm "Rassvet," this occurred when collective farmers received 2.5 to 3 rubles per labor day. Cf. Akademiia Obshchestvennykh Nauk, Kafedr istorii," KPSS—organizator bor'by za krutoi pod'em sel'skogo khoziaistva" (Moscow: 1960), p. 265.

[167] Thus, some American executives live in houses owned and staffed by the corporation and drive, or are driven in, company cars to work. They do not work less efficiently for all that, but they have full opportunity to own other property.

[168] F. A. Hayek, "Socialist Calculation: The Competitive Solution," Economica, New Series, VII (May 1940), 149.

collective farm) is simply not a very efficient form of economic organization when compared with the ordinary, labor-hiring and wage-paying firm, capitalist or otherwise.[169] Since the argument has just been clarified in the west, and since Ward's pathbreaking article has been largely ignored here, it seems premature to blame the Soviet leadership for failure to draw the necessary conclusions. In any case, the Soviet collective farm is still far removed from the conditions when limitations of this sort become important in practice.

In any event, desocialization of Soviet farming—in name as well as in fact—does not appear likely. At the moment, we have three examples of desocialization of agriculture in the Socialist camp. These are (chronologically): Yugoslavia in 1952–53 and Poland and Hungary in 1956. The Hungarian experiment has been reversed since, so that we are left with the Polish and the Yugoslav case. The Yugoslavs are trying hard to convince their individual farmers that the road to greater productivity leads through cooperation with the Socialist sector that involves leasing of land to state farms for purposes of cultivation and/or harvesting. The Poles, on the other hand, are still unable to make up their mind as to the best and the least explosive way of raising the issue except on a rather theoretical plane.[170] In both instances, however, socialization of agriculture remains the ultimate goal. It is difficult to see, therefore, how desocialization in name could be affected in the U.S.S.R. Moreover, such desocialization is not really necessary, since the Soviet socialized enterprises can well benefit from a variety of measures that would stop short of this exercise in brinkmanship á la communiste. In the process, a substantial amount of de facto desocialization can also occur.

The agenda for the improvement of the organizational structure of Soviet farms (collective as well as state) is fairly long. We list the most important points, since they might help to interpret the future developments in Soviet agricultural policy:

1. Perhaps the most important single improvement that can occur in the near future is the introduction of rental payments. The issue is rather thorny from the theoretical Marxist standpoint, and Prof. Evsey Domar has recently pointed out to me that land had been granted to collectives in perpetual use on a "free of charge" basis. The latter difficulty might be overcome, however, by reinterpreting the terms of the grant to read that it was only marginal land that was granted to farms on this basis; considerations of equity might in fact require that rent be charged for better than marginal land (a lump-sum payment might be made to those farms that have undertaken substantial improvements of land on their own account).

The introduction of rental payments would go a long way in improving the pattern of resource allocation in agriculture, and indeed in the economy at large. It would then be possible to dismantle the existing structure of regional farm prices (the purpose of which is

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[169] Cf. Benjamin Ward, "The Firm in Illyria," American Economic Review, XLVIII: 4 (September 1958), 566–589, and the forthcoming paper by Evsey Domar, "On Collective Farms and Producer Cooperatives."

[170] The so-called agricultural circles are the vehicle employed for this purpose in present day Poland. Cf. Andrzej Korbonski, "The Polish Peasant Agriculture Since 1956," to be published in the Tractor and the Sickle, forthcoming.

to extract at least a part of rent); prices would henceforth vary only to the extent of transportation costs.

Similar proposals, camouflaged in a variety of ways, have been advanced in the U.S.S.R., most persistently by Prof. M. Bronshtain.[171] One difficulty results from the absence of a land cadaster (except in the Baltic republics) and Soviet specialists are still engaged in a weighty theoretical argument as to the appropriate nature of the cadaster. While the argument continues, precious time is being lost; as Kenneth Boulding once remarked, perfectionism and indolence have one thing in common—there is no output.

2. Farms must be free of undue administrative interference. While recent pronouncements by the top leaders are quite encouraging in this respect, it would be premature to expect that old attitudes will yield gracefully to those required on theoretical grounds. As long as the shift of farming as a whole from the command to the market sector of the economy continues, there will be less need, however, to engage in "administering." But there is many a slip between the cup and the lip in the entire matter of autonomy in decisionmaking in the Soviet Union. As Professor Grossman points out, positive steps are the result of top-level decisions, while retrogression occurs as a result of numerous actions by minor subordinates.

3. Procurement plans should be moderate, the nonsensical practices of procuring grain that must be borrowed again from the state in order to allow seeding must also be discontinued. Only in this environment will Soviet farming be able to reap the benefits of specialization. Given the present difficulties with grain supplies, this may not appear to be a very practicable solution at first glance. Yet, it turns out that only 9 out of 24 major economic regions supply 90 percent of total grain procured by the state.[172] Hence, the short-run cost of eliminating (or at least reducing further) grain procurements in marginal production areas would turn out to be much smaller than it appears at first glance. It might even be appropriate to make special allowances of foreign exchange to account for the necessary grain imports in the short run. Eventually, advances in productivity would more than offset these (admittedly heavy) costs.

Two items must be borne in mind in this connection. It may well be that the U.S.S.R. finds itself on the threshold of a major breakthrough in yields. It was only in 1964 that fertilizers were available in sufficient quantities to allow for more than a token application in the production of grains. From here on, however, every ton of fertilizer supplied and used on the farm should have some effect in this respect. Presently contemplated irrigation projects have a similar impact, especially in conjunction with fertilizer application in dry areas. On the other hand, Yugoslav and (as Professor Montias remarks) Rumanian experience as well testify to the benefits that can be derived from proper seed selection and introduction of new varieties

[171] Cf. "Uchenye zapiski Tartuskogo Gosudarstvennogo Instituta." Trudy po ekonomicheskim naukam, vyp. 72 (Tartu: 1959), pp. 45–57.
[172] V. G. Venzher et al., "Proizvodstvo, nakoplenie, potreblenie" (Moscow: 1965), p. 290.

of crops. The new Soviet leadership does stress the need to follow the dictates of scientific achievements in farming. If deeds will correspond to intentions, much progress will be made on this account as well.

4. The existing network of repair facilities for machinery, rural construction enterprises, fertilizer warehouses, and indeed rural roads must be rapidly expanded. All these items (with the exception of roadbuilding which should be reserved to the state) belong properly on the agenda for the Union of Collective Farms or the Kolkhoz Center. One should, however, keep in mind the fact that there is no real reason why state farms should not be allowed to avail themselves of these services, or (alternatively) why collectives should not be allowed to use state facilities on a reciprocal basis in areas where state farming predominates.

5. We have already noted that the present size of Soviet farms is by far too large. Steps should, therefore, be taken to break up these farms even before Soviet economists have had the time to work out in detail the optimal size of farms for many areas. "To fear mistakes," says Venzher correctly, "is to condemn oneself to inactivity."[178] Total inactivity is probably a far greater mistake than those that might result from the creation of too small farming units. Within farms, of course, a movement is now afoot to restore the practice of forming the so-called links (*zven'a*) which might yield great improvements in productivity as a result of assignment of portions of farmland to individual links on what might even amount to a lease basis. From the standpoint of its effect on incentives, autonomy in decisionmaking, and the promotion of a sense of responsibility, the *zveno* is indeed a close enough substitute for private property in land. One difficulty is that once it is introduced, labor requirements per unit of land tend to decline sharply. It may thus not be practicable to introduce it on heavily populated farms, unless steps are also taken to provide other employment for the released labor.

6. Before attempting to overtake the United States of America in per capita production it would be well to bear in mind that the U.S.S.R. must first narrow the gap in the supply of information to farms. This could be done by the adaptation of our agricultural extension service to Russian conditions. While Khrushchev has mentioned the subject on more than one occasion, he seemed unable to disassociate the agents from his own "inspector-organizers of farm production." A very substantial amount of experience has by now been accumulated in many countries to indicate that it is example—and not command, no matter how camouflaged as advice—that is of essence here.

7. The state must also take steps leading to the creation of part-time or full-time employment opportunities in rural areas, through the creation of handicrafts (which it destroyed ruthlessly not too long ago), and construction of small-scale industry and service networks in

[178] Ibid., p. 277.

the countryside. There are some straws in the wind to the effect that a major program for these purposes may not be long in coming.[174]

It would be premature to say that the Soviets are belatedly adopting the Japanese pattern of industrialization, but they do talk of taking some steps in this direction.

To the extent that future policies will proceed in these directions one can expect substantial improvement in future trends in output. This in turn will be reflected in Soviet living standards and is very likely to have some international consequences, at least within the Soviet bloc. But all these policies will be inconsequential if there is not enough operational machinery on farms. After all, even the irrigated and the fertilized land must still be farmed; in Soviet climatic conditions it must also be farmed quickly. This can be done with human—rather than machine—labor only on small peasant farms which are not likely to return on the Soviet scene.

It seems, therefore, fitting to close the paper with an illustrative but highly illuminating calculation. With the aid of certain—by no means very heroic—assumptions it is possible to calculate the ruble value of investment in farm machinery that would have been required, beginning in 1959, in order to bring the 1965 on-farm machinery stocks to the level required to perform the necessary operations in a "timely manner." The calculation is necessarily rough but it is highly illuminating.

Allowing for depreciation under the 7-year plan, but assuming that stocks in existence on January 1, 1959, would be scrapped as soon as conditions allowed, the relevant figure comes to 34 billion rubles.[175] Since total agricultural investment in 1959-65 was planned at 50 billion rubles, the figure of 34 billion for machinery investment alone seems prohibitively high.

First glances can be misleading. Total planned investment in agriculture included about 13.8 billion rubles for machinery purchases.[176] We are also justified in deducting another 9 billion for what may be called excess profits in the farm machinery industry.[177] Finally, about 1 billion rubles' worth of machinery and tractors were exported under the 7-year plan.[178] Thus the figure of 34 billion rubles can be

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[174] Pravda, Apr. 6 and 10, 1966.

[175] By 1970, Soviet machinery stocks will approach the amounts required for this purpose. This will take an investment of 10.7 billion over 5 years. We assume that the cost of acquiring the required amount of machinery (with depreciation) over 1959–65 would have been 20 billion rubles. Cf. *Ekonomika sel'skogo khoziaistva*, No. 6 (1965), p. 20. We add another 14 billion for the cost of 4 million tractors and 2.5 million trucks. These are priced at 2,310 and 1,000 rubles per unit respectively. Cf. "Sbornik spravochnykh materialov dlia kolkhozov" (Moscow: 1959), pp. 573, 579.

[176] Cf. Johnson and Kahan, op. cit. (in n. 108), p. 15 for planned collective farm investment in machinery. State farm investment is estimated on the assumption that the same proportionality would have applied in the state sector.

[177] Profits in farm machinery industry run to 50 to 90 percent "for some machines." "Some" is a Soviet euphemism for "most" more often than not, especially when a delicate topic is discussed. Taking the average profit rate at 50 percent, I obtain the cost of production of 34 billion rubles of machinery as 22.7 million rubles. I then add a normal profit of 10 percent, getting a more appropriate figure of 25 billion rubles as the cost-plus-profit value of the needed machines of all kinds. Hence, a deduction of 9 billion rubles is in order.

[178] Vneshtorg—1959–63, pp. 36–37, extrapolated through 1965.

reduced by 24 billion rubles, to 10 billion rubles. Only 10 billion rubles of additional investment funds would have been required under the 7-year plan to leave Soviet agriculture in 1965 with a stock of on-farm machinery sufficient to perform farm operations on time.

Total investment for the economy as a whole was planned at 220 to 232 billion under the 7-year plan. Thus, a policy of the sort discussed here would have required a shift of only 4.3 percent of all investment funds. Considering the likely return, there is no question that this shift in the direction of capital formation would have been very wise indeed. It no longer looks forbidding either, when we recall that there was enough capacity in the agricultural machinery industry to produce this amount of machinery (even though there may have been some problems in the capacity of producing tractors and trucks).[179]

The real opportunity cost would have been smaller still. First, investment figures are given in terms of 1955 rubles and our calculations are in terms of higher prices of 1959 (it is not possible at present to deflate our values to 1955 rubles.) Even if we disregard this problem, it might still have been possible to produce the amount of goods and services actually produced under the 7-year plan with a more effective use of resources. From 1959 to 1964 alone, the national income (Soviet concept, official data) rose from 136.2 to 181.5 billion rubles—in terms of current prices. Inventory investment rose from 12.8 billion in 1959 to 20.6 billion rubles in 1964. Such high rates of inventory investment are unheard of in other economies except for brief periods. Moreover, the value of unfinished construction climbed from 19 billion in 1959 to 27.1 billion rubles in 1964.[180]

The proverbial man from Mars, looking over the Soviet agricultural scene between 1958 and 1965 might well have asked himself this question: "Were all these hardships really necessary?" Any dispassionate observer would have to answer in the negative. Once again, the Kremlin has paid a heavy price for disregard of modern but not really complicated economic calculation. It remains to be seen whether the lesson has finally been learned.

Appendix

Note on Soviet Income Elasticities of Demand

As we note in the text, the Soviet income elasticities of demand for food are much higher than comparable elasticities compiled for other, much less developed, countries (such as Brazil, Ceylon and India). They are also higher than the calculated income elasticities of demand for non-food products. Under the circumstances, a more detailed explanation of the pattern of Soviet consumer demand is in order.

As defined here, income elasticity of demand is obtained as a percentage change in per capita expenditures on a given category of goods or services divided

[179] If production of machinery other than tractors and trucks proceeded at rates of 1957, there would have been no problem in producing the amounts required for 1965 stocks, though there may have been some problem with capacity for replacements in 1959–65. But it is not likely that this branch of machine building worked at full capacity in 1957.

[180] Narkhoz—1964, pp. 522–523, 575, 578 and Narkhoz—1959, pp. 542–543.

by the percentage change in per capita money income. For want of an appropriate retail price index covering the period 1956–1965, neither the changes in expenditures nor those in money incomes have been deflated. In view of the behavior of the relevant indices of food prices (*cf.* Appendix Table 1) it seems that deflation would not alter our results significantly during the period 1956–1961; in later years, average food prices were rising although not in a very pronounced manner (were we to calculate income elasticities of demand for less aggregated product groups, deflation would be much more important. I hope to undertake this task shortly in connection with another study). Strictly speaking, therefore, it might have been more appropriate to refer to "income elasticities of expenditures" rather than of demand, but the meaning of the latter term is much more readily understood, and the differences are not likely to be significant for the purpose at hand.

A more detailed examination of some specific features of a Soviet type command economy suggest indeed that a high income elasticity of demand for food may well be considered as a "normal" phenomenon. In market type economies at any given time, income elasticities of demand for food are typically lower than those for clothing, consumer durable, rent and services (including education and medical care). Moreover, they may be expected to decline in the course of economic development, though this decline need not be monotonic.

The Soviet case is radically different. The fundamental reason lies in the existence of supply constraints and poor quality of non-food goods and services purchased by the Soviet consumer. Furthermore, some items are supplied free of charge or at extremely low prices. As a result, effective demand tends to spill over into the food category.

Rents in the USSR are rigidly controlled by the state at a very low level that bears no relation to construction or maintenance costs. While there is some opportunity for individuals to construct their own houses, the aggregate supply of building materials for this purpose is also rigidly controlled. Certainly, it does not correspond to demand at the prevailing prices. Hence, while the income elasticity of demand for housing would, in the absence of supply constraints, be very high, income elasticity of *expenditures* for rent or housing (which is all that we can measure without recourse to questionnaires) is very low by the standards of any market type economy.

The Soviet demand for consumer durables, which have only recently been produced in more than token quantities, may be expected to be very high indeed. This demand is submerged in our estimates referring to the category of non-food products in general (suggesting *inter alia* that income elasticity of demand for non-food, non-durable products is rather low). There are some indications of a temporary saturation of the market for some consumer durables such as watches, bicycles and sewing machines (the latter having been produced in Himalayan quantities until very recently).[181] On the other hand, the demand for other consumer durables such as refrigerators, television sets and washing machines continues at a very high level. In the absence of price adjustments it manifests itself in queuing. Hence, for many items where income elasticity of demand may be expected to be very high, the value of our coefficients is affected by limitations of supply.

Any reader of *Krokodil* (or for that matter of Khrushchev)[182] knows that the quality of Soviet clothing leaves much to be desired. Former residents of the USSR will attest that Soviet-made clothing frequently remains on racks for months and months, while that imported from Eastern Europe will be sold out rapidly in circumstances that can only be compared to "runs on banks" in the earlier period of American history. Such Soviet studies of income elasticity of demand as do exist also suggest that the income elasticity of demand for

[181] Pravda, Dec. 22, 1964, as quoted by Marshall I. Goldman, "The Reluctant Consumer and Economic Fluctuations in the Soviet Union," Journal of Political Economy (August 1964), p. 373. Goldman's article includes an interesting analysis of trends in sales of durable consumer goods on the retail market of the U.S.S.R. in recent years.

[182] Pravda, Nov. 20, 1962.

clothing is not very high.[188] Since most of the available clothing is Soviet-made, the emerging pattern of consumer behavior seems perfectly rational. Indeed, even a woman might hesitate before buying a fourth pair of unattractive shoes of rather poor quality: a man might stop at the second pair.

We now turn to services. Education is virtually free, as is medical care, though in both instances there is room for the provision of personal service against remuneration, whether clandestine or not. Hence, two of the service items that might ordinarily absorb a larger share of an increase in income for a household residing in a market type economy do not exert a similar impact in the USSR.

The picture for other services is more complicated. Poor quality of clothing and consumer durables might be expected to result in high income elasticities of demand for repair work. Similarly, there should be a high income elasticity of demand for services of tailors and shoemakers who—at least in small towns and villages—provide the only alternative to ready-made, unattractive, industry-produced clothing. It also seems reasonable to expect a high income elasticity for travel and tourism, particularly for short distances where no overnight stay is involved (say ski-trips from Moscow to Pushkino) or where the traveller stays with friends or relatives. But hotel space is still in very short supply, and this exerts a limiting influence on the income elasticity of demand for travel. Comparable limitations operate with respect to the same elasticity of demand for concerts, shows, movies and even restaurant meals. The common experience of western travellers is that physical facilities for entertainment are more often than not strained to capacity.

The market for liquid assets is also severely limited. There are no shares of stock and the recent experience with purchases of government bonds (repayment on the bulk of which was recently postponed for a period of 20 years) must have made the Soviet consumer relatively wary of the good faith of his government. Something of this sort also applies to savings deposits: large depositors in particular did not fare too well in the monetary reform of 1947. Finally, we note that our income elasticity estimates classify the value of restaurant or canteen purchased meals as food. The importance of these sales is not very high, but some of them (particularly meals consumed outside of the place of employment) embody an element of leisure, recreation or conspicuous consumption. For this reason, therefore, income elasticity of demand for restaurant meals might be very high indeed in the USSR, and this is reflected in the value of our coefficients for income elasticity of demand for food.

Having said this much, we should explain the relatively low level of income elasticity of demand for food in the years 1957–1958. I believe that the explanation lies partly in the fact we are now dealing with the tail end of a very special period in Soviet economic history. When Stalin died, the Soviet consumer had a limited stock of clothing and the supply of many attractive durables was virtually non-existent. Moreover, the years 1953–58 represented a period of rapid monetization of Soviet countryside, while peasant incomes in kind were also rising. On the collective farms, labor earnings per man-day (in terms of cash only) rose from 0.30 to 0.81 rubles; this was accompanied by an increase in payments in kind from the collective farm sector to the extent of 33 per cent, and income in kind from the household plot was also rising. By contrast, the increase in cash payments on a comparable basis in the years 1958–1962 was

[188] Even for a family where each working member earns over 100 rubles per month, I. Korshenevskii estimates income elasticity of demand (derived from questionnaires) for men's ready-to-wear clothing at 1.1; women's at 1.8. But shoes have on income elasticity of demand of 3.0 and so does furniture. Compare "Sovetskaia torgovlia," No. 11 (1962), p. 39.

only on the order of 50 per cent while income in kind from the socialized sector dropped by 25 per cent.[184]

The importance of the private plot for the non-agricultural population tends to be underestimated. In 1956, such plots accounted for the following share of total per capita consumption of the non-agricultural sector (per cent): meat—14.1; milk—20.3; eggs—37.7; potatoes—31.1; vegetables—18.1.[185] Restrictions on urban private plots did not begin until 1956 and their full impact may not have been felt for some years. Their implementation tended to increase the reliance of the urban dweller on purchased, as opposed to home grown food, and income elasticity of demand for food rose accordingly.

We must also explain the kink in the series which occurs in 1961. Two well-informed Soviet sources indicate that the monetary reform announced in May, 1960 (effective January 1, 1961 one new ruble replaced ten old rubles), resulted in substantial increase in household outlays, perhaps because of the experience of 1947 when cash holdings were exchanged at a much less advantageous ratio than savings deposits.[186] In 1961 consumers then reduced expenditures in an effort to replenish their savings (in the form of deposits or cash hoards). As Table 4 shows, all income elasticities of outlays decline in 1961 when it soon became clear to everybody that the monetary reform was completely harmless.

The explanation just offered is consistent with the behavior of the statistical discrepancy line in Appendix Table 1. This indicates dishoarding in 1960 followed by a substantial shift to hoarding of cash. In 1962, consumers appear to have returned to a more "normal" demand pattern; it is also possible that the increase in state retail prices of meat and butter (June 1, 1962) may have had something to do with the high level of our measured income elasticity, especially since households did not suffer from a shortage of cash. For 1963, Appendix Table 1 also suggests continuation of hoarding. This is explained in part by the poor harvest (and the concomittant rise in collective farm market prices) as well as by the continuing consumer revolt with respect to purchases of non-food products. The latter phenomenon is confirmed by the behavior of inventories in state retail network (cf. Appendix Table 1). Inventories of food products declined while those of non-foods show a pronounced increase.

On balance, then, we find the behavior of our (far from perfect) estimates of income elasticities of demand for major outlay categories of Soviet households to be reasonably consistent with Soviet reality. It only remains to be said that changes in this reality may be expected to produce shifts in the relevant income elasticities of demand. For example, improvements in the quality of clothing and greater availability of durables should result in a rise in income elasticities of demand, as they are measured here. Thus, the pattern of income elasticities of demand may be expected to vary significantly with the institutional setting of a particular command economy at various periods of time.

We should also note that changes in the distribution of income may in some instances help to produce a pattern of the kind we encounter here. As incomes of low income recipients rise, the consumer may be expected to shift his food expenditures away from low priced starches and carbohydrates and towards the more expensive fats and protein foods. Since 1956 the dispersion of the Soviet income distribution declined, chiefly as a result of increases in income of the lowest paid categories of wage or salary earners and an increase in pensions.

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[184] Nimits, op. cit. (in footnote 33), pp. 7, 97.

[185] Nauchno-Issledovatel'skii Institut Torgovli i Obshchestvennogo Pitania, "Sbornik nauchnykh rabot" (Moscow, 1959), p. 33.

[186] Tiukov and Lokshin, op. cit. (in footnote 4), p. 174. See also Sovetskaia torgovlia, No. 2 (1966), p. 2.

APPENDIX TABLE 1.—*Money incomes and outlays of households and some related data, U.S.S.R., 1956–65*

[Billion current rubles]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Personal money income	71.27	77.34	82.72	86.67	91.26	100.23	107.82	113.92	119.64	131.81
2. Direct taxes [1]	7.66	6.95	5.77	5.92	6.03	6.24	6.44	7.00	7.50	8.00
3. Disposable money income	63.71	70.39	76.95	80.15	85.23	93.99	101.39	106.92	112.14	123.81
4. Sales to households	61.66	68.84	74.62	79.36	84.66	93.10	97.61	102.60	109.37	
(a) Food products	32.41	35.86	39.10	41.18	44.56	48.77	50.55	54.66	57.97	
(b) Nonfood products	21.95	25.52	27.42	29.39	32.57	32.89	35.04	35.48	37.28	
(c) Services	6.72	7.46	8.10	8.79	9.53	10.44	11.42	12.46	14.12	
5. Personal savings	1.06	1.74	1.14	1.45	.68	.58	.95	1.15	1.63	.98
6. Personal consumption and savings	62.14	70.58	75.76	80.81	87.34	93.68	97.96	103.75	110.99	
7. Statistical discrepancy [2]	+1.57	−.19	+1.19	−.66	−2.11	+3.31	+3.43	+3.17	+1.15	
8. Retail trade inventories, total	11.94	12.22	14.80	17.43	18.18	20.24	21.54	22.31	25.66	
(a) Food products	2.94	3.11	4.12	4.75	4.52	4.88	5.57	5.29	6.14	
(b) Nonfood products and services	9.00	9.21	10.68	12.68	13.66	15.36	15.97	18.01	19.52	
9. Collective farm market prices (1958=100)	101	101	100	98	99	106	113	117	123	
10. State retail prices of foods (1958=100)	98	98	100	99	99	98	100	101	101	

[1] Including the entire subscription to bonds.
[2] Including changes in cash holdings, if any.
[3] Not available.

APPENDIX TABLE 2.—*Per capita money incomes and outlays of households and some related data, U.S.S.R., 1956–65*

[Current rubles]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Personal money income	357.4	380.6	399.8	408.7	426.1	460.0	487.0	507.0	525.4	571.6
2. Direct taxes [1]	38.3	34.2	27.9	28.1	28.2	28.6	29.1	31.2	32.6	34.7
3. Disposable money income	319.0	346.4	371.9	380.6	397.6	431.3	457.9	475.8	492.5	536.9
4. Sales to households	305.9	338.8	360.7	376.8	404.6	413.5	438.2	456.6	480.3	
(a) Food products	162.3	176.5	189.0	195.5	208.0	214.6	228.3	243.3	254.6	
(b) Nonfood products	109.9	125.6	132.5	139.6	152.1	150.9	158.3	157.9	163.7	
(c) Services	33.7	36.7	39.1	41.7	44.5	47.9	51.6	55.5	62.0	
5. Personal savings	5.3	8.6	5.5	6.9	3.2	2.7	4.3	5.1	7.1	12.9
6. Personal savings and consumption	311.2	347.3	366.2	383.7	407.8	426.2	442.5	461.7	487.4	
7. Statistical discrepancy [2]	+7.9	−0.9	+5.8	−3.1	−9.9	+15.2	+15.5	+14.1	+5.1	
8. Retail trade inventories, total	59.8	60.6	71.5	82.8	84.9	92.9	97.3	103.7	112.7	
(a) Food products	14.7	15.3	19.9	22.6	21.1	22.4	25.2	23.5	27.0	
(b) Nonfood products	45.1	45.3	51.6	60.2	62.8	70.5	72.1	80.2	85.7	

[1] Including the entire subscription to bonds.
[2] Including changes in cash holdings, if any.
[3] Not available.

APPENDIX TABLE 3.—*Major inputs into agriculture, U.S.S.R., 1956–65*

Item	Unit	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 actual	1965 plan [1]
1. Sown area	Million hectares	194.7	193.7	195.6	196.3	203.0	204.6	216.0	218.5	212.8	209.1	[2]
2. Grains	do	128.3	124.6	121.4	114.0	115.5	121.3	128.7	130.0	123.3	[2]	[2] 127.9
3. Fodder crops	do	41.7	45.4	59.2	57.6	63.2	58.6	62.3	63.2	53.5	[2]	[2]
4. Capital stock, [4] total	1955=100	100	111	120	129	137	147	162	175	200	[2]	[2]
5. Excluding livestock	1955=100	100	110	120	126	148	162	182	205	223	[2]	[2]
6. Total investment	Billion rubles [5]	4.67	4.91	5.53	6.62	6.23	6.88	7.45	8.21	9.70	11.0	[6] 50.0
7. State	do. [5]	2.41	2.71	2.98	2.50	2.95	3.73	4.18	4.80	5.79	[2]	[6] 15.5
8. Collective farms	do. [5]	2.26	2.20	2.84	3.53	3.17	3.16	3.27	3.42	3.91	[2]	[6] 34.5
9. Chemical fertiliser shipped	Million tons [7]	9.43	10.44	10.63	11.11	11.40	12.07	13.64	15.97	21.96	27.01	31.0
10. Electricity used in production	Billion kilowatt-hours	2.34	2.74	3.57	[3]	4.17	5.05	6.06	7.06	8.00	[2]	[2]
11. Labor input	Billion man-days	11.59	11.38	11.42	11.38	11.72	12.21	12.16	11.88	11.83	[2]	[2]
12. Collective farms	do	6.62	6.68	5.84	5.83	5.31	4.82	4.79	4.64	4.59	[2]	[2]
13. Private sector	do	3.89	3.99	4.11	3.99	4.59	5.18	5.16	4.98	5.01	[2]	[2]

[1] As originally planned.
[2] Not available.
[3] 6 to 7 million hectares over 1958, cf. Plenum December 1959, p. 424.
[4] Total, including livestock.
[5] In 1955 prices.
[6] 1959–65. Actual investments in 1959–65 was 55.49 billion, including (for 1959–64) 24.03 billion by the state and 20.46 billion by collectives.
[7] In conventional units.

APPENDIX TABLE 4.—*Collective farm sown area per household, U.S.S.R., selected years*

Area	1953 (hectares)	1958 (hectares)	1964 (hectares)	1958/53 (percent)	1964/58 (percent)	1964/53 (percent)
U.S.S.R.	6.69	6.96	6.96	104.1	100.5	104.7
R.S.F.S.R.[1]	8.86	9.44	10.70	106.6	113.3	120.8
Northwest	4.72	3.87	5.68	82.0	146.6	120.0
Center	4.24	5.40	7.41	127.4	137.2	174.9
Volga-Viatka	6.49	5.95	7.36	91.6	123.7	113.4
Central Blacksoil	8.23	6.42	8.22	78.0	127.9	99.8
Volga	10.07	14.08	14.57	139.8	103.4	144.7
North Caucasus	10.61	9.54	9.55	89.0	102.2	90.0
Urals	11.01	12.59	16.20	114.3	127.3	147.1
West Siberia	16.54	19.03	22.97	115.3	120.4	138.8
East Siberia	11.62	13.06	17.04	112.3	130.5	146.6
Far East	9.31	19.71	11.81	211.8	59.9	126.8
Ukrainian S.S.R.	4.09	4.66	4.89	99.4	104.6	104.0
Belorussian S.S.R.	3.84	3.62	4.07	104.0	112.4	116.9
Kazakh S.S.R.	14.07	10.96	19.05	77.9	173.8	135.4
Moldavian S.S.R.	3.52	3.08	2.83	87.3	91.9	80.3
Uzbek S.S.R.	3.70	3.02	2.78	81.6	91.9	75.7
Tadshik S.S.R.	4.39	3.50	2.80	79.8	79.8	63.7
Turkmen S.S.R.	3.18	3.26	3.27	103.0	99.7	102.6
Kirgis S.S.R.	5.10	5.37	4.51	105.2	84.1	88.4
Georgian S.S.R.	1.92	1.46	1.12	75.9	77.3	58.6
Azerbaidshani S.S.R.	3.56	3.56	2.84	100.0	80.0	79.7
Armenian S.S.R.	3.30	2.32	2.13	70.5	66.2	64.7
Lithuanian S.S.R.	5.16	5.06	6.09	98.0	118.0	117.6
Latvian S.S.R.	6.37	5.59	6.83	87.8	122.0	108.0
Estonian S.S.R.	6.40	5.11	5.79	79.8	113.2	90.4

[1] The definition of zone within the R.S.F.S.R. has changed somewhat. But alternative calculations indicate that the results are not significantly affected by this change.

APPENDIX TABLE 5.—*Shipments of major machinery items to agriculture, U.S.S.R., 1956–65*

[Thousand units]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Tractors	140.4	148.3	167.7	144.3	167.0	185.3	206.0	229.3	222.5	240
2. Trucks	114.2	125.2	102.1	76.3	66.1	69.7	82.6	68.8	63.0	>77
3. Grain combines	70.9	133.7	64.9	53.1	57.0	70.0	79.2	79.6	78.6	77
4. Silo and corn combines	42.4	80.5	42.4	13.1	16.6	33.0	72.4	84.2	55.2	>22
5. Grain collectors	193.9	184.2	91.1	69.0	83.7	69.5	53.5	60.6	56.8	(1)
6. Mowers	25.5	46.6	71.2	81.9	87.1	92.1	97.9	99.9	103.7	118
7. Reapers	76.7	111.2	89.2	57.2	55.1	55.1	71.6	83.9	83.8	95
8. Seeders[2]	194.1	275.5	182.5	112.7	104.5	134.9	167.6	194.9	226.3	253
9. Plows, tractor	121.3	128.5	160.3	145.1	142.4	133.1	133.7	172.1	174.6	167
10. Cultivators, tractor	146.5	207.5	164.2	128.2	79.2	99.4	118.7	153.7	186.4	206
11. Grain cleaning machines	10.0	10.0	12.0	15.6	16.9	10.3	11.0	14.1	24.2	(1)
12. Grain drying machines	10.8	12.5	9.4	2.5	.9	1.2	3.6	4.7	5.4	(1)

[1] Not available.
[2] In 1956 and 1957 including, and from 1958 on excluding, manure spreaders.

APPENDIX TABLE 6.—*Data used in calculation of incremental capital-output ratios, U.S.S.R., 1955–64*

[Billion 1955 rubles]

	Gross output [1] (12 products	Increment in output	Investment
1955	34.24	.....	4.39
1956	40.00	5.76	4.67
1957	38.89	−1.11	4.91
1958	43.06	4.17	5.53
1959	43.14	.08	6.02
1960	43.86	.72	6.23
1961	44.60	.74	6.88
1962	44.97	.37	7.45
1963	42.88	−2.29	8.21
1964	48.56	5.68	9.70

[1] Grains, sugarbeet, raw cotton, flax fiber, tobacco, sunflower, potatoes, vegetables, milk, livestock, eggs, wool. For the purpose at hand, concern is primarily with increments in output. The products used in the calculation should cover over 90 percent of the total value of output and are, therefore, sufficiently representative.

APPENDIX TABLE 7.—*Personal and disposable money incomes of households, U.S.S.R., 1956–65*

[Billion rubles]

Item	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Wage bill as reported	44.54	48.43	50.97	53.56	59.59	65.95	70.65	74.11	79.25	87.94
2. Collective farm payments	4.34	4.47	5.15	4.88	4.86	5.91	6.39	7.56	8.36	9.66
3. Income from sales of farm products	5.46	5.42	6.63	6.87	6.57	6.57	7.96	8.82	8.05	8.50
4. Other wages	2.50	2.50	2.50	2.56	2.63	2.69	2.75	2.86	3.06	3.42
5. Income of cooperative artisans	.89	.74	.85	.99	0.00	0.00	0.00	0.00	0.00	0.00
6. Military pay	2.94	2.58	2.62	2.48	2.28	2.28	2.28	2.28	1.66	1.79
7. Other incomes currently earned	3.50	3.70	4.07	4.23	4.49	4.93	5.33	5.74	6.02	6.66
8. Transfer payments	7.20	9.50	9.93	10.56	10.84	11.90	12.47	12.53	13.22	13.82
9. Personal money income	71.37	77.34	82.72	86.07	91.26	100.23	107.83	113.92	119.64	131.81
10. Direct taxes	5.22	5.37	5.77	5.92	6.03	6.24	6.44	7.00	7.50	8.00
11. Subscription bonds	2.44	1.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12. Total taxes and subscription bonds [1]	7.66	6.95	5.77	5.92	6.03	6.24	6.44	7.00	7.50	8.00
13. Disposable money income	63.71	70.39	76.95	80.15	85.23	93.99	101.39	106.92	112.14	123.81
14. Personal savings [2]	1.06	1.74	1.14	1.45	.68	.58	.95	1.15	1.62	2.89
15. Outlays on personal consumption [2]	62.65	68.65	75.81	78.70	84.55	93.41	100.44	105.77	110.52	120.92

[1] All subscription bonds purchased by households are treated as equivalent to direct taxes since it appears that this is how Soviet households themselves looked upon the purchases of these bonds.
[2] From disposable money income alone.

APPENDIX TABLE 8.—*Estimated disposable money income, retail sales, and consumption, U.S.S.R., 1970*

Item	Unit of measurement	Magnitude
1. Workers and employees	Million persons	91-92
2. Average annual wage	Rubles	1,880
3. Total wage bill	Billion rubles	126.3
4. Wage bill and collective farm cash distributions	Percent of 1965	140
5. Wage bill and collective farm cash distributions	Billion rubles	187
6. Collective farm cash distributions	do	10.7
7. Disposable money income	do	176-183
8. Disposable money income	Percent of 1965	142-148
9. Probable planned household outlays on goods and services.	Billion rubles	173-187
10. Probable planned household outlays on food	do	75-83
11. Increase in volume of state retail trade or total consumption:	Percent of 1965	
	Sales	Consumption
(a) Meat and products	21	28-34
(b) Milk and products	37	23-26
(c) Fish and products	71	60-71
(d) Vegetable oil	65	50-56
(e) Sugar	22	34
(f) Vegetables and melons	44	44-50
(g) Fruits and grapes	30	55-60

SOURCES TO APPENDIX TABLES

APPENDIX TABLE 1

Row (1): Appendix Table 7,
Row (2): As row (1),
Row (3): As row (1),
Row (4): Total is sum of rows (4a), (b) and (4c).

Row (4a): Obtained as the value of all food sales listed in *Sovtorg-1964*, p. 39 less estimated purchases of food products by institutions. These are obtained as follows:

(i) Sales of all products, including non-food, to institutions are obtained as the sum of sales to institutions, organizations and collective farms (given in *Sovtorg-1964*, p. 56) and estimated institutional purchases on the collective farm market. The latter are taken to amount to 10 percent of total sales through 1961 (cf. *Vestnik statistiki*, No. 10 (1961), p. 63). From 1962 total market sales have been inflated by inclusion of sales to restaurants: our estimates are accordingly increased (cf. *Narkhoz-1962*, p. 688). The required data for 1964 have been estimated on the basis of available information for 1962 and 1963.

(ii) Total sales to institutions are then allocated to food and non-food products roughly in proportion of 25:75 (the basis for this distribution was obtained from the relative values of food and non-food consumed by institutions during the years of 1959-1963 [cf. *Narkhoz-1964*, pp. 580-581]).

The resulting distribution of sales to institution (in bil. rubles) is as follows:

Sales to institutions

	In retail trade	On collective farm market	Total sales	Food products	Non-food products
1956	4.11	0.48	4.59	1.51	3.08
1957	4.61	.47	5.08	1.62	3.46
1958	4.77	.48	5.25	1.67	3.58
1959	4.72	.46	5.18	1.64	3.54
1960	4.69	.43	5.12	1.60	3.52
1961	4.88	.47	5.35	1.69	3.66
1962	4.68	.90	5.58	2.07	3.51
1963	4.49	.69	5.18	1.81	3.37
1964	4.50	.65	5.15	1.77	3.38

Row (4b) : Obtained as the value of all non-food retail sales listed in *Sovtorg-1964*, p. 39 less the value of institutional purchases, listed above.

Row (4c) : Obtained as the sum of (i) rent payments; (ii) dues, (iii) tuition and (iv) "other services, given in *SNIP—1956–1958*, pp. 3, 5, 54, 57 and *SNIP—1958–1962*, pp. 105, 107, 120. The respective values for 1963 and 1964 are estimated from data in *Narkhoz-1964*, pp. 594, 610 as (i) rent—0.70 and 0.77 bil. rubles; (ii) dues—1.23 and 1.31 bil. rubles; (iv)—"other"—10.53 and 12.06 bil. rubles.

Row (5) : Appendix Table 7

Row (6) : Sum of rows (4a), (4b), (4c) and (5)

Row (7) : Row (3) less row (6)

Row (8) : *Narkhoz-1958*, pp. 751–752; *Narkhoz-1961*, pp. 646–647; *Narkhoz-1964*, p. 636; *Sovtorg-1964*, pp. 118–119.

Row (8a) : As row (8)

Row (8b) : As row (8)

Row (9) : *Narkhoz-1958*, p. 788; *Narkhoz-1961*, p. 665; *Narkhoz-1963*, p. 546; *Narkhoz-1964*, p. 657.

Row (10) : *Narkhoz-1959*, p. 677; *Narkhoz-1962*, p. 532; *Sovtorg-1964*, p. 165; *Narkhoz-1964*, p. 647.

APPENDIX TABLE 2

The relevant data from Appendix Table 1, divided by estimates of population. The figures used in the calculation are (in millions) :

1956	199.7
1957	203.2
1958	206.9
1959	210.6
1960	214.2
1961	217.9
1962	221.4
1963	224.7
1964	227.7
1965	230.6

The underlying population data for end of each year are in *Narkhoz-1964*, p. 7 and *Pravda*, February 8, 1966.

APPENDIX TABLE 3

Row (1) : *Narkhoz-1958*, pp. 386–389; *Narkhoz-1962*, pp. 247–249; *Narkhoz-1964*, pp. 278–279–291, *Pravda, July 1966.*

Row (2) : As row (1)

Row (3) : As row (1)

Row (4) : *Sel'khoz-1960*, p. 385, *Narkhoz-1962*, p. 53, *Narkhoz-1964*, p. 68.

Row (5) : As row (4)

Row (6) : *Narkhoz-1964*, p. 517

Row (7) : As row (6)

Row (8) : As row (6)

Row (9) : *Sel'khoz-1960*, p. 190; *Narkhoz-1961*, p. 380; *Narkhoz-1964*, p. 338, *Pravda*, February 8, 1966.

Row (10) : *Narkhoz-1962*, p. 328; *Narkhoz-1964*, p. 387, 388; *Sel'khoz-1960*, pp. 428, 432, 436.

Row (11) : Nancy Nimitz, *Farm Employment in the Soviet Union, 1928–1963*, RM-4623-PR (Santa Monica, Calif.: The RAND Corporation, 1965), p. 7. The figure for 1964 has been kindly estimated by Miss Nimitz for the use in this paper.

Row (12) : As row (11)

Row (13) : As row (11)

APPENDIX TABLE 4

Calculated from data on sown areas and number of households in *Sel'khoz-1960*, pp. 52, 145; *Narkhoz-1958*, pp. 502, 503; *Narkhoz-1964*, pp. 402–403.

APPENDIX TABLE 5

1956–1958 *Narkhoz-1958*, p. 493
1959–1961 *Narkhoz-1961*, p. 417
1962–1964 *Narkhoz-1964*, p. 389
1965 *Pravda*, February 8, 1966

APPENDIX TABLE 6

Output in 1955 prices is obtained from physical data on the volume of output of grains, sugar beets, raw cotton, flax fiber, tobacco, potatoes, vegetables, sunflower, milk, meat (slaughtered weight), eggs and wool, as given in *Narkhoz-1964*, pp. 255, 295, 311, 309, 314, 316, 319, 321, 361 and *Sel'khoz-1960*, pp. 202, 329, (in case of tobacco for the years 1960–64, the output figure are taken to exceed procurements by 2 thousand tons annually).

Prices used in the calculation represent unpublished estimates of average 1955 prices realized by collective farms and the private sector in all forms of marketings, including collective farm market. These prices are (rubles/ton): grain—88; sugar beet—13.5; raw cotton—337; flax fiber—1,660; tobacco—7,170; potatoes—96; vegetables—87; sunflower—185; milk—127; meat, slaughtered weight—980; eggs—69 (per thousand); wool—1,640.

Data on investment in agriculture are from *Narkhoz-1964*, p. 517.

APPENDIX TABLE 7

1956–1957 *SNIP—1956–1958*, p. 2 with the following exceptions: Row (1): The figures were recalculated using information on the size of workers and employees labor force from *ibid.*, p. 47 and adjusting the average annual wage to 8,820 rubles in 1956 and 9,120 rubles in 1957. The basis for adjustment is provided by monthly data on average wages and salaries in *Narkhoz-1964*, p. 555 and changes in the average wage as given by S. P. Figurnov, *Real'naia zarabotnaia plata i pod"em material'nogo blagosostoianiia trudiashchikhsia v SSSR* (Moscow: 1960), p. 198.

Row (4): Estimated independently on the basis of data in *Sel'khoz-1960*, p. 118; *Narkhoz-1958*, p. 498; *Kratkii ekonomicheskii slovar'*, p. 128; I. D. Ignatov, *Puti razvitiia kolkhoznoi torgovli* (Moscow: 1959), p. 30, 89, 129; *Narkhoz-1958*, p. 787. Total value of sales by collective farms and households taken together to the state, to cooperatives and on the collective farm market is given for both years; the adjustments consist of eliminating from this total sales by collective farms (including those converted to state farms in 1957) in order to arrive at figures referring to households alone.

Row (11): A. G. Zverev, *Natsional'nyi dokhod i finansy SSSR* (Moscow: 1961), pp. 229, 232.

Row (12): Figurnov, *op. cit.* (above under row (1), p. 177 less repayments from *SNIP—1956–1958*, pp. 95–96.

1958–1962 *SNIP—1958–1962*, pp. 7–9, except for the figures in row (1) which were adjusted on the basis of information provided *ibid.*, p. 66 and monthly data on average wages in *Narkhoz-1964*, p. 555. (The adjustment is minimal, since A. Becker's estimates of average wages came extremely close to the amounts released recently by the Soviet authorities).

1963–1965 Row (1): Calculated from data on the size of the workers and employees labor force as given in *Narkhoz-1964*, p. 546 and *Pravda*, February 8, 1966 and information on the average monthly wage in *ibid.*, and *Narkhoz-1964*, p. 555.

Row (4): extrapolated from data for 1962 using methods employed in *SNIP, 1958–1962*.

Row (2): The figure for 1963 has been released by TASS in a broadcast on February 14, 1964 in reporting Khrushchev's speech (it was subsequently omitted from the printed version of that speech). The figures for 1964 and 1965 are extrapolations based on trends in total income of collective farms. For the purpose of checking the validity of these estimates, an attempt was also made to reconstruct the allocation of collective farm income in 1964 and 1965 (as given in *Narkhoz-1964*, and *Pravda*, February 8, 1966. The figures given here fit well with the best estimates that can be made of unknown magnitudes (principally the value of production expenses).

Row (3): For 1963 and 1964, we have the joint total of collective farm and household sales to state and cooperative agencies, given as 18,446 and 18,966 million rubles in *Narkhoz-1964*, p. 257. Sales by converted farms are estimated at 120 million rubles in each year. Sales by farms in existence are given in *ibid.*, p. 400 as 13.7 billion rubles for 1963 and 15.3 billion for 1964. This leaves 4.6 billion rubles for sales of households to state and cooperatives in 1963; for 1964 the corresponding figure is 3.6 billion. *Narkhoz-1964*, p. 677 shows total collective farm market sales (including sales through cooperatives) as 4.98

billion rubles in 1963 and 5.23 billion rubles in 1964. Given earlier trends on the share of collective farms in this trade, it is estimated that households accounted for 4.22 billion in 1963 and 4.45 billion in 1964.

The figure for 1965 is an arbitrary extropolation.

Row (6): Estimates based on A. Becker's figure for 1962 and Marshall Sokolovskii's statement reported in *New York Times*, February 19, 1965, to the effect that Soviet armed forces are at the level of 2,423 thousand men. It is assumed that the decline occurred in 1964 (rather than immediately in the aftermath of the Cuban affair) and that there was also a small increase in 1965 as a result of tensions over Vietnam.

Row (7): Estimates based on methods used in *SNIP—1958–1962*.

Row (8): The 1965 figure is derived by extrapolation. The figures for 1963 and 1964 are obtained by methods used in *SNIP—1958–1962*, using the information on pensions, allowances, and net purchases of bonds given in *Narkhoz—1964*, pp. 772–774. The only arbitrary estimate involves stipends, assumed to have remained at the level of 0.7 billion rubles (or the same they achieved in 1962). Interest payments on savings accounts are calculated at the rate of 2.4 percent on mid-year deposits, obtained from information in *Narkhoz-1962*, p. 492, *Narkhoz-1964*, p. 597 and *Pravda*, February 3, 1966.

Row (9): Sum of rows (1) through (8).

Row (10): Figures for 1963 and 1964 are from *Narkhoz-1964*, p. 770 plus an allowance for minor taxes and fees.

Row (13): Row (9) minus row (12).

Row (14): Obtained from data on the size of savings deposits given in sources listed under row (7) above.

Row (15): Row (13) minus row (14).

APPENDIX TABLE 8

Row (1): *Pravda*, April 10, 1966.

Row (2): Kosygin in *Ekonomicheskaia gazeta*, No. 14 (April, 1966), p. 10, gives the 1970 figure as 115 rubles per month.

Row (3): Row (2) x the midpoint of the range in row (1).

Row (4): Kosygin, *loc. cit.* ("about 40 per cent").

Row (5): Row (3) x 1.4.

Row (6): Row (5) less row (3).

Row (7): The lower limit of the range of the figure is calculated on the assumption that the sum of the wage bill and collective farm distributions to members—row (5)—will amount to 78 percent of disposable money income in 1970 (as it did in 1964 and 1965—(cf. Appendix Table 7.)

The upper limit of the range is calculated on the assumption that the appropriate figure in this context is 75 (rather than 78 per cent). While direct taxes are to decline in 1966–70, it is also likely that other incomes will rise. This is particularly true of the income from handicrafts and of income from sales of farm products by households.

Row (8): Row (7) divided by 123.81 billion rubles (disposable money income in 1965 as given in Appendix Table 1.)

Row (9): I first assume that the various outlay categories in 1965 were: foods—64 billion; non-food products—40 billion; services—16 billion (see Appendix Table 1 for 1964 data.) The assumption is based on past trends as well as on the data for increases in various types of retail sales, given in *Pravda*, February 3, 1966.

Next, I assume that the increase in the *volume* of the corresponding outlay categories between 1965 and 1970 are as follows: foods—30 per cent; non-foods—60 per cent; services—150 per cent. The figure for services is given by Kosygin, *loc. cit*, who also shows the total increase in state retail sales during this period as 43.5 per cent. The percentages for non-food products and foods are estimated from data in Row (11) of this table.

The figures shown in the table are then estimated on the basis of two alternative assumptions. For the lower limit of the range, I assume a decline of 10 per cent in prices of all goods (service prices are not likely to decline with this kind of increase in volume of what is a very neglected and mismanaged sector). Together with the indicated increase in volume, this gives a value of 75 billion rubles for foods, 58 billion rubles for non-food products and 40 billion rubles for services, for a total of 173 billion. The alternative assumption (which yields

the upper limit of the range) is that prices will not decline at all. This gives values of 83 billion for foods, 64 billion for non-food products and 40 billion for services, for a total of 187 billion.

Row (10): See sources for row (9).

Row (11): Kosygin, *loc. cit.*, and *Pravda*, April 10, 1966. The latter source gives planned per capita increases in per cent: meat and products—20–25; milk and products—15–18; sugar—about 25; vegetables and melons—35–40; fruit and grapes—45–50; vegetable fats—40–46; fish products—50–60. All these percentages are multiplied by 1.07 in order to arrive at total consumption. I assume that the 1970 population will exceed that of 1965 by 7 per cent.

Sources to Text Tables

TABLE 1

Row (1): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 575.

Row (2): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 511; *Kapstroi-1961*, p. 40.

Row (3): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 546.

Row (4): *Pravda*, July 26, 1965; *Narkhoz-1964*, p. 272.

Row (5): *Narkhoz-1964*, p. 7; *Pravda*, February 3, 1966. The expected 1965 population is estimated on the basis of the statement in V. S. Tiukov and R. A. Lokshin. *Sovetskaia torgovlia v period perekhoda k kommunizmu* (Moscow: 1964), p. 151, that the average (mid-year) population in 1963 was 225 million instead of the 220 million which was the figure expected for 1963 when the Seven Year Plan was being prepared. Urban population (which came to 117 million in mid-1963) was 12 million above the expected figure.

Row (6): As row (5).

Row (7): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 124.

Row (8): As row (7).

Row (9): As row (7).

Row (10): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 246.

Row (11): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 622.

Row (12): *Pravda*, February 5, 1959 and February 3, 1966; *Narkhoz-1964*, p. 605; *Kapstroi-1960*, p. 191.

Row (13): As row (12).

TABLE 2

Rows (1) through (3): *Narkhoz-1964*, p. 246; *SSSR v tsifrakh v 1965 godu*, p. 69.

Rows (4) through (6): Rows (1) through (3) respectively divided by an index of population calculated from data in *ibid.*, p. 7.

Rows (7) and (8): Independent calculation by the writer; the per capita index is obtained by dividing the index in row (7) by an index of urban population, obtained from data in *Narkhoz-1964*, p. 7.

Rows (9), (11) through (21): *Sel'khoz-1960*, pp. 254–255, 329; *Narkhoz-1959*, pp. 309, 314; *Narkhoz-1964*, pp. 246, 295, 309, 311–312, 314, 316, 318, 321, 336, 361; *SSSR v tsifrakh v 1965 godu*, pp. 73, 80.

Row (10): These are USDA estimates for 1959 and 1964; the figures for 1965 are estimated by the writer on the basis of preliminary estimates of USDA. Cf. *The 1965 Eastern European Agricultural Situation*, Economic Research Service, ERS-Foreign-115 (Washington, D.C.: U.S. Department of Agriculture, 1965), p. 10, and *The USSR and Eastern Europe Agricultural Situation*, Economic Research Service, ERS-Foreign-151 (Washington, D.C.: U.S. Department of Agriculture, 1966), p. 5.

TABLE 3

Calculated from data in Appendix Table 1.

TABLE 4

Calculated from data in Appendix Table 2.

TABLE 5

Calculated from data in Appendix Table 8.

TABLE 6

Data on stocks are from *Sel'khoz—1960*, pp. 409, 413, 415; *Narkhoz—1956*, pp. 155, 159; *Narkhoz—1964*, pp. 380, 384. Data on shipments are from Appendix Table 5. Data on retirements and percentage share of retirements in shipments are calculated from data on stocks and shipments.

TABLE 7

Calculated from data in Appendix Table 6.

TABLE 8

Row (1): *Narkhoz—1958*, p. 909; *Narkhoz—1960*, p. 850; *Narkhoz—1962*, p. 642; *Narkhoz—1964*, p. 777.
Row (2): *Narkhoz—1960*, p. 851; *Narkhoz—1962*, p. 642; *Narkhoz—1964*, p. 777; *Voprosy ekonomiki*, No. 9 (1964), p. 52.
Row (3): Calculated from data in row (1).
Row (4): *Narkhoz—1962*, p. 639; *Narkhoz—1964*, p. 774; *Den'gi i kredit*, No. 3 (1958), p. 5.
Row (5): *Sel'khoz—1960*, pp. 56–57; *Narkhoz—1960*, p. 492; *Narkhoz—1962*, p. 330; *Narkhoz—1963*, p. 340; *Narkhoz—1964*, p. 390.
Row (6): *SNIP—1949–1955*, pp. 35, 211; *SNIP—1956–1958*, p. 98; *SNIP—1958–1962*, p. 148.
Row (7): As for row (6).

TABLE 9

Calculated from output and procurement data (the former are in physical weight, the latter in the so-called accounting weight) as given in *Narkhoz—1961*, pp. 366–367, 349; *Narkhoz—1962*, pp. 272–273, 289; *Narkhoz—RSFSR—1962*, 226–229, 252; *Narkhoz—1964*, pp. 296, 325.

TABLE 10

Sel'khoz—1960, pp. 128–129, 266–269; *Narkhoz—1962*, pp. 252–253, 303–304; *Narkhoz—1964*, pp. 272–273, 353–354.

TABLE 11

Jerzy F. Karcz, "The New Soviet Agricultural Programme," *Soviet Studies*, XVII:2 (October 1963), 149.

TABLE 12

All figures on collective farm market sales through 1962 are from J. F. Karcz, "Quantitative Analysis of the Collective Farm Market," *American Economic Review*, LIV, No. 4, pt. 1 (June, 1964), 325 (figures for 1952, 1953, 1961, 1962 were amended in the light of more accurate information provided by *Sovtorg-1964*, pp. 259, 260, 266). Data for 1963 and 1964 are estimated in the same manner on the basis of indices given in *Narkhoz—1964*, p. 658.

Data on the volume of sales through sttae and cooperative channels are given in the following sources:

1953—*Vestnik statistiki*, No. 7 (1964), pp. 85–91 and Pravda, July 14, 1964. Here, as elsewhere in this calculation, butter was converted to milk at the ratio of 1:22.9 suggested by K. M. Skovoroda, S. I. Grigor'ev, *Balansy tovarov narodnogo potreblenia i metody ikh razrabotki* (Moscow: 1959), p. 93.

1958, 1962, 1963—*Narkhoz—1963*, p. 508. The 1958 figures for potatoes and vegetables are estimates based on data for 1957 in Skovoroda and Grigor'ev, *op. cit.*, p. 123. The 1962 data on potatoes and vegetables are from *Stroitel'stvo*, VIII, 25.

1960—*Stroitel'stvo*, VI, 18.
1961—*Stroitel'stvo*, VI, 351.
1964—*Narkhoz—1964*, p. 592.

Code to Source Abbreviations

1. Publications of the RAND Corporation:

SNIP—1956–1958: Nancy Nimitz, *Soviet National Income and Product*, 1956–1958, RM-3112-PR (Santa Monica, Calif.: The RAND Corporation, 1962).

SNIP—1956–1962: Abraham S. Becker, *Soviet National Income and Product, 1958–1962, Part I—National Income at Established Prices* (Santa Monica, Calif.: 1965).

SNIP—Seven Year Plan: Abraham S. Becker, *Soviet National Income and Product in 1965: The Goals of the Seven Year Plan*

2. Publications of the Soviet Central Statistical Agency (Tsentral'noe Statisticheskoe Upravlenie pri Sovete Ministrov SSSR):

Kapstroi—1961: Kapital'noe stroitel'stvo v SSSR (Moscow: 1960).
Narkhoz—1956: Narodnoe khoziaistvo SSSR v 1956 g. (Moscow: 1957).
Narkhoz—1958: Narodnoe khoziaistvo SSSR v 1958 g. (Moscow: 1959).
Narkhoz—1959: Narodnoe khoziaistvo SSSR v 1959 g. (Moscow: 1960).
Narkhoz—1960: Narodnoe khoziaistvo SSSR v 1960 g. (Moscow: 1961).
Narkhoz—1961: Narodnoe khoziaistvo SSSR v 1961 g. (Moscow: 1962).
Narkhoz—1962: Narodnoe khoziaistvo SSSR v 1962 g. (Moscow: 1963).
Narkhoz—1963: Narodnoe khoziaistvo SSSR v 1963 g. (Moscow: 1965).
Narkhoz—1964: Narodnoe khoziaistvo SSSR v 1964 g. (Moscow: 1965).
Sel'khoz—1960: Sel'skoe khoziaistvo SSSR (Moscow: 1960).
SSSR v tsifrakh v 1965 godu: SSSR v tsifrakh v 1965 godu (Moscow: 1966).
Vneshtorg—1959–63: Vneshnaia torgovlia SSSR za 1959–1963 gody (Moscow: 1965).
Vneshtorg—1964: Vneshnaia torgovlia SSSR za 1964 god (Moscow: 1965).

3. Other Publications:

Stroitel'stvo: N. S. Khrushchev. *Stroitel'stvo kommunizma v SSSR i razvitie sel'skogo* khoziaistvo (Moscow: 1962–1964). 8 volumes.
Plenum—December, 1959: Plenum Tsentral'nogo Komiteta Kommunisticheskoi Partii Sovetskogo Soiuza 22–25 dekabria 1959 g. (Moscow: 1960).
Plenum—March, 1962: Plenum Tsentral'nogo Komiteta Kommunisticheskoi Partii Sovetskogo Soiuza, 5–9 marta 1962 g. (Moscow: 1962).
Plenum—March, 1965: Plenum Tsentral'nogo Komiteta Kommunisticheskoi Partii Sovetskogo Soiuza, 24–26 marta 1965 g. (Moscow: 1965).

AGRICULTURAL REFORMS SINCE KHRUSHCHEV

BY

KEITH BUSH

CONTENTS

AGRICULTURAL REFORMS SINCE KHRUSHCHEV

The state of agriculture which faced Khrushchev's successors has been fully and competently described by Professor Karcz, and I shall not attempt to duplicate his work. The fortunes of this lagging branch during Khrushchev's term of office are succinctly summed up in the index of gross agricultural production. According to Soviet data, in the first 5 years after Stalin's death the gross agricultural product increased by 50 percent; during the last 5 years of Khrushchev's administration, which ended with the exceptionally favorable crop year of 1964, the index rose by 13 percent.[1] An even more meaningful index which rarely appears in official pronouncements is that of the net agricultural product: during the period 1959–64 this rose by only 7 percent in constant prices, which is less than the population growth during this period.

The purpose of this paper is to set out the principal agricultural reforms which have been introduced by the new leadership in the period between Khrushchev's removal from power and the 23d Party Congress. Many of these reforms were proposed at the March 1965 Plenum of the Central Committee and implemented shortly thereafter or incorporated in the 5-year plan. Where considered necessary, references are made to past performance and evaluations offered of the viability of some of the measures. Emphasis has been laid upon the material provisions made for the agricultural sector and the financial concessions offered the rural population, for if Soviet agriculture in its present socialized form is to be cajoled or shoved out of its slough of despond and lethargy—and this is a very big if—then the increased capital inputs and, above all, the material incentives now provided will have played the major role.

I. Procurement and Delivery Targets

A. GRAIN

Under both Stalin and Khrushchev, state grain purchase targets were generally set at unrealistically high levels. Indeed, the plans were fulfilled only three times during the 10 years prior to the March 1965 Plenum.[2] The intensive pressure to fulfill and overfulfill these targets, applied by all levels of the party machinery from the First Secretary down, led to efforts to maximize production each year, with little or no regard to the following harvest or to long-term agronomic effects. Farms were denuded of feed and seed grain; inroads were frequently made into the grain set aside for trudoden payments. For each local party official it was this year

[1] Narodnoe Khozyaistvo SSSR v 1964 godu, p. 247.
[2] Plenum TsK KPSS 24–26 marta 1965 g. Stenograficheski Otchet, p. 10.

that mattered; of less import was the fact that the harvest of next year, or the harvests of the next decade for that matter, might be threatened—with any luck the official concerned might be posted away by that time. In addition to being set too high, state purchase plans were changed from year to year, frequently even during the course of the year. Such practices tended to negate any meaningful system of crop rotation and any long-term soil preservation measures.

These besetting weaknesses have been largely corrected by the reduced and stable procurement and delivery targets announced at the March Plenum. The planned state purchases for the period 1965–70 are fixed at approximately the average level of actual purchases during the preceding 5 years:

Grain procurements and deliveries by Republics

[Thousands of metric tons]

Republic	1960–64 average	1965–70 planned *
Russian Soviet Federated S.R.	32,672	34,475
Including Northwest region	65	(**)
Including central region	943	(**)
Including Volga-Vyatka region	604	(**)
Ukrainian S.S.R.	10,116	10,116
Byelorussian S.S.R.	277	251
Uzbek S.S.R.	263	287
Kazakh S.S.R.	9,290	9,607
Including Tselinny Krai	6,300	7,262
Georgian S.S.R.	82	67
Azerbaijan S.S.R.	123	134
Lithuanian S.S.R.	70	75
Moldavian S.S.R.	499	400
Latvian S.S.R.	68	67
Kirghiz S.S.R.	145	170
Tadzhik S.S.R.	36	30
Armenian S.S.R.	27	20
Turkmen S.S.R.	15	20
Estonian S.S.R.	34	30
Total, U.S.S.R.	53,717	55,749

* These are the planned totals as announced at the March 1965 Plenum (3). Shortly thereafter the all-Union grain purchase target was reduced to 53,100,000 tons (5); presumably this was done at the request of republican spokesmen at the plenum (6) and in view of the inclement weather. A later reference (5) implies that the reduction was valid for 1965 only and that the higher target remains for the period 1966–70.

** Not available.

3 Pravda, 27.3.65.

4 See Zakupki Selskokhozyaistvennykh Produktov, No. 7, 1965, p. 1, and Vestnik Statistiki, No. 8, 1965, p. 17.

5 For example, Pysin's request, Plenum TsK KPSS, op. cit., p. 51.

6 Martovskii Plenum TsK KPSS O Podeme Selskogo Khozyaistva, Ekonomika, Moscow, 1965, p. 9.

Sources: The 1960–64 average purchases for all Republics and regions less the Tselinny Krai were derived from Narkhoz 1961, p. 367 and Narkhoz 1964, p. 325. Data for the Tselinny Krai are taken from Narkhoz 1960, p. 443; Narkhoz 1961, p. 375; Narkhoz 1962, p. 293 and Pravda, 14.8.64 and 24.10.64.

The new purchase targets are stable and provide graingrowers with a workable basis for long-term planning. They are also more moderate and more attainable than Khrushchev's grandiose projections; for example, he had inferred a state grain purchase total of over 90 million tons for 1970.[7] In the light of the past records of each Republic and in view of the increased purchase prices and other beneficial measures promulgated by the Soviet Government, the basic targets for 1966–70 appear to be feasible—on an average annual

7 Pravda, 15.2.64.

basis—with the exception of the contribution expected from the virgin land areas. The marginal soil of these new lands has been subjected to over 10 years of monoculture with wholly inadequate fallowing. Since the fall of Khrushchev statistical data pertaining to the virgin lands within the Russian Soviet Federated S.R. have been scarce, but from the available figures for the Tselinny Krai, the heartland of the virgin lands program, it is evident that the average yields there declined ominously from 1958 through 1963, while the harvest of 1965 appears to have yielded the lowest deliveries for 10 years. Even if it were to be made available in sufficient quantities, mineral fertilizer would have a minimal, and possibly harmful, effect upon much of this dry soil,[8] and irrigation is feasible for only a small portion of the area. The essential precondition for stable long-term yields is for as much as one-third of the land to be left to clean fallow each year.[9] However, even after the reductions promulgated by the March Plenum, the target set for the Tselinny Krai proved to be excessive again in 1965. The extension of fallow advocated by agronomists was not implemented, and once again the judgment of the farmer on the spot was overruled by central directive.[10] In the event, the Kazakh Republic appears to have delivered less than one-third of its target,[11] and to judge from statements by its spokesmen [12] pressure may once more be applied to sow every available hectare and to put off the widespread employment of fallow.

The planned total of state grain purchases for 1965 roughly consisted of 76 percent bread grains, 14 percent feed grains and 10 percent minor grains and pulses.[13] On repeated occasions it has been made quite clear that the planned volume of state purchases falls short of the total required to supply the urban population, the armed forces, industry, state livestock farms, and other state-supplied consumers as well as to build up the state grain reserves and to supply the Soviet Union's traditional external customers. For these purposes the state will need at least another 10 million tons each year by the end of the current 5-year plan, and it hopes to attract this surplus with the generous premia offered for above-plan purchases.

B. LIVESTOCK AND LIVESTOCK PRODUCTS

The scale of state purchases of livestock and livestock products outlined by Brezhnev at the March 1965 plenum is much more modest—and more realizable—than his predecessor's projections. For example, the new 1970 target figure for meat and poultry is only a fraction over the 1965 control figure of 11.1 million tons as laid down in the 7-year plan.[14] The targets for 1965–70 are here compared with the actual levels of state purchases in 1964:

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[8] Much of the Tselinny Krai, for example, enjoys an average annual precipitation of less than 12 inches.

[9] As recommended at a recent VASKhNIL conference on virgin land farming, Ekonomicheskaya Gazeta, No. 10, 1966, p. 17.

[10] See the frank complaint by a director of a sovkhos in the Tselinograd Oblast, Izvestia, 30.1.66.

[11] Derived from Kunaev's report to the 23d Party Congress, Pravda, 31.3.66.

[12] For example, Kunaev's speech to the Kazakh CP CC Plenum, Kazakhstanskaya Pravda, 28.1.66.

[13] Zakupki Selskokhozyaistvennykh Produktov, No. 7, 1965, pp. 1–2.

[14] G. I. Samborski "Kratki Spravochnik O Semiletnem Plan S.S.S.R.," Gosplanizdat, Moscow, 1960, p. 86.

State purchases of livestock and livestock products

Produce	1964	1965	1966	1967	1968	1969	1970
Livestock and poultry (liveweight) (million tons)	8.3	8.5	8.9	9.5	10.2	10.7	11.4
Milk and milk products (million tons)	31.4	[1] 33.7	34.6	36.2	38.4	40.8	43.4
Eggs (billions)	8.3	9.4	10.0	10.8	11.9	13.5	15.0
Wool (scoured) (thousand tons)	353	348	362	373	387	407	430

[1] The original target of 33,000,000 tons was later revised upward in connection with the reduction in butterfat standards, Pravda, 15.4.65 and 20.4.65.

Sources: 1964, "Narkhoz 1964," p. 367; 1965-70P, Pravda, 27.3.65.

Benefiting from the excellent grain harvest of 1964 and from the beneficial measures passed by the new leadership, the state purchase targets for these products were all overfulfilled in 1965; indeed, the purchases of meat, milk, and eggs exceeded the goals set for 1966.[15]

II. Prices

A. GRAIN

1. Procurement prices for wheat and rye

The new procurement prices (i.e., those paid to kolkhozes) which were announced by Brezhnev in March 1965 signify increases of about 12 percent for most regions and a 53-percent jump for the nonchernozem areas of the R.S.F.S.R., and Byelorussian, and the Baltic republics:

Average procurement prices for wheat and rye

[Rubles per ton]

Region	Wheat		Rye	
	Old	New	Old	New
Russian Soviet Federated Socialist Republic, excluding the northwestern, the central and the Volga-Vyatka regions, the Kaliningrad and Perm oblasts and the Udmurt A.S.S.R.	77	86	73	81
The Ukrainian S.S.R. excluding the Polesye region, and the Moldavian S.S.R.	67	76	64	76
The Kazakh S.S.R.	71	80	65	80
The Kirghiz S.S.R.	76	85	71	80
The Uzbek, Georgian, Azerbaijan, Tadshik, Armenian, and Turkmen S.S.R.	80	90	75	85
The northwestern, the central and the Volga-Vyatka regions of the R.S.F.S.R., the Kaliningrad and Perm oblasts and the Udmurt A.S.R., the Polesye region of the Ukrainian S.S.R., and the Belorussian, Lithuanian, Latvian, and Estonian S.S.R.'s	85	130	85	130
All-Union weighted average	74	83	75	92

Sources: "Ekonomika Selskogo Khozyaistva," No. 6, 1965, p. 23 and "Problemy Mira i Sotsializma," No. 5, 1965, p. 35.

These average prices cover wide regional variations within each republic; in 1961, for example, soft wheat procurement prices in the R.S.F.S.R. varied from 63 rubles per ton in zone I to 85 rubles per ton in zone XVII.[16]

As a rule, hard wheat has been purchased at a premium of 40 percent above the price paid for soft wheat, and it is presumed that this differential will be maintained.

[15] Pravda, 3.2.66.
[16] Jerzy Karcz "A Compendium of Soviet Farm Prices in 1961," Berkeley, 1964, p. 2.

The so-called "sliding prices" (skolzyashchiye tseny) have been abolished. These had been introduced in 1958 with the avowed aim of stabilizing farm income: when yields were high, the prices were to decline and in poor years the prices should have risen. However, shortly after new purchase prices were announced during the bumper harvest year of 1958, procurement prices for grain, oilseed and sugar-beet "slid down" and remained down by between 5 and 13 percent during the poor years of 1959–62.[17]

For the above-plan procurements required, a very real incentive is offered in the shape of an increment of 50 percent to the basic price. Thus the low-cost Ukrainain kolkhozes will receive 114 rubles, while the marginal farms in the last category will be paid 195 rubles for 1 ton of above-plan wheat.

No wholly comparable cost data are on hand for these grains, but a table in the statistical handbook for 1964 does give the average kolkhoz costs of production by republics for all grain less corn. With labor valued at sovkhoz wage rates (kolkhoz wage rates are scheduled to approach the levels obtaining in sovkhozes with effect from July 1966) the average costs of production of 1 ton of grain excluding corn in 1964 were: all-union, 48 rubles; R.S.F.S.R., 47 rubles; Ukrainian S.S.R., 39 rubles; and Kazakh S.S.R., 41 rubles.[18] Although a comparison of these costs and the new procurement prices ignores discrepancies between physical and accounting weights and also the differing costs of the other, minor, grains, it does however indicate that the new prices cover the costs of production for average farms and provide a substantial profit margin.

2. Delivery prices for wheat and rye

The delivery prices previously paid to sovkhozes for these grains were considerably lower than the procurement prices paid to kolkhozes. Under the new price scales, however, this gap has been lessened, and for the favored republics delivery prices are now identical with procurement prices. Like the kolkhozes, the sovkhozes will receive a 50-percent bonus for above-plan deliveries.

Average delivery prices for wheat and rye

[Rubles per ton]

Region	Wheat		Rye	
	Old	New	Old	New
RSFSR, excluding the North-Western, the Central and the Volga-Vyatka regions, the Kaliningrad and Perm oblasts and the Udmurt ASSR	50	59	56	63
The Ukrainian SSR, excluding the Polesye region, and the Moldavian SSR	36	45	30	45
The Kazakh SSR	49	65	51	60
The Kirghiz SSR	47	65	39	60
The Uzbek, Georgian, Tadzhik, Azerbaijan, Armenian and Turkmen SSR's	40–47	90	34–39	85
The North-Western, the Central and the Volga-Vyatka regions of the RSFSR, the Kaliningrad and Perm oblasts and the Udmurt ASSR, the Polesye region of the Ukrainian SSR and the Belorussian, Lithuanian, Latvian and Estonian SSR's	68	130	65	130
All-Union weighted average	48	60	57	75

Sources: Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 23.
Problemy Nira i Sotsializma, No. 5, 1965, p. 35.

[17] "Martovskii Plenum," op. cit., pp. 8–9.
[18] "Narkhoz 1964," p. 394.

3. Buckwheat, millet, and rice

All kolkhozes and sovkhozes, regardless of location, will receive the following common prices for these crops.[19]

[Rubles per ton]

	Old price	New price
Buckwheat	200	300
Millet (best quality)	80	110
Rice	220	300

4. Barley and oats

The prices paid for barley and oats have been increased to 90 and 75 rubles per ton respectively for the kolkhozes and sovkhozes of the northwestern, central and Volga-Vyatka regions of the R.S.F.S.R., the Kaliningrad and Perm oblasts, the Udmurt A.S.S.R., the Byelorussian and Baltic Republics, and the Polesye regions of the Ukrainian S.S.R.[20] The new prices represent increases of from 20 to 100 percent.[21]

B. MEAT

In June 1962, Khrushchev had announced an overall increase of 35 percent in the prices paid for livestock and butter.[22] The higher prices did not, however, cover the costs of production for most farms; in 1962, kolkhozes lost just over 1 billion rubles from livestock procurements, and this loss rose to 1.3 billion rubles in 1963.[23]

To restore the necessary incentives to livestock raisers, Brezhnev announced sizable increments to the existing prices which represent average increases, on an all-union basis, of 36 percent for cattle, 32 percent for hogs, and 33 percent for sheep and goats. Although the First Secretary did not stress the point, later publications have made it quite clear that these increments are meant to be temporary only.[24] Presumably this stems from a pious hope that the costs of livestock production can be lowered to such an extent that the increments will no longer be required, yet this would be one of the less realistic assumptions of the more pragmatic leadership, and these increments may well prove to be no more temporary than the "temporary" increases in meat and butter retail prices decreed in June 1962[25] or the "temporary" suspension of the gradual abolition of income tax which was announced later that year.[26]

The percentage increases in state purchase prices for each republic are:[27]

[19] Pravda, 11.4.65.
[20] Ibid.
[21] Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 11.
[22] Pravda, 1.6.62.
[23] Martovskii Plenum, op. cit., p. 51.
[24] For example, Martovskii Plenum, op. cit., p. 51.
[25] Pravda, 1.6.62.
[26] Izvestiya, 25.9.62.
[27] Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 25.

Republic	Cattle: kolkhoz and sovkhoz	Hogs: kolkhoz and sovkhoz	Sheep and goats:	
			Kolkhoz	Sovkhoz
R.S.F.S.R.	35	[1] 33	[1] 20	[1] 10
Ukrainian S.S.R.	35	[1] 33	[1] 30	[1] 20
Belorussian S.S.R.	55	40	70	60
Uzbek S.S.R.	45	35	10	----------
Kazakh S.S.R.	20	30	10	----------
Georgian S.S.R.	55	70	10	----------
Azerbaijan S.S.R.	55	70	10	----------
Lithuanian S.S.R.	35	40	70	60
Moldavian S.S.R.	35	33	30	20
Latvian S.S.R.	30	30	70	60
Kirghiz S.S.R.	20	30	10	----------
Tadzhik S.S.R.	35	35	10	----------
Armenian S.S.R.	55	70	10	----------
Turkmen S.S.R.	35	35	10	----------
Estonian S.S.R.	30	30	70	60

[1] Raises of 70 percent for hogs, sheep, and goats are established for kolkhozes and sovkhozes in the northwest, central, and Volga-Vyatka regions, the Kaliningrad and Perm oblasts of the R.S.F.S.R., the Udmurt A.S.S.R., and for the Polesye regions of the Ukranian S.S.R. For all farms in the mountainous regions of the R.S.F.S.R., the Ukrainian, Georgian, Azerbaijan, Armenian, Kirghiz, and Tadzhik S.S.R.'s, a 100-percent increase to the existing purchase prices for sheep and goats was decreed.

Some examples are provided which illustrate the effect of the price increases:[28]

	Rubles per ton (liveweight)	
	Old price	New price
Cattle:		
R.S.F.S.R.:		
Kolkhozes	900	1,215
Sovkhozes	810	1,095
Ukrainian S.S.R.:		
Kolkhozes	880	1,188
Sovkhozes	785	1,060
Kazakh S.S.R.: Sovkhozes	770	925
Hogs:		
R.S.F.S.R.: Kolkhozes	1,050	1,396
Ukrainian S.S.R.: Kolkhozes	1,000	1,330
Latvian S.S.R.: Kolkhozes	1,100	1,430

The new prices are estimated to allow a profitability rate in beef-raising of about 12 percent in kolkhozes and 22 percent in sovkhozes in all republics less the Georgian S.S.R. Here additional measures will be necessary to lower the costs of production in kolkhozes; in 1964, the actual kolkhoz cost of production for 1 ton (liveweight) of beef in Georgia was 1,722 rubles, compared with an all-union average of 927 rubles.[29]

Before the temporary increments were announced, the meat industry was already in receipt of a subsidy from the budget to cover the difference between the purchase and retail prices of meat. The sum of 1.3 billion rubles had previously been set aside for meat subsidies in 1965, and the scheduled increments were to bring the total subsidy up to about 3 billion rubles.[30] If the increments remain in force and if state retail prices remain pegged, the size of this annual subsidy will rise with the growing purchase totals. The U.S.S.R.

[28] Ibid.
[29] Narkhoz 1964, p. 397.
[30] Plenum TsK KPSS, op. cit., pp. 130–131.

must surely be the only country in the world which spends nearly 2 percent of its national income upon meat subsidies.

C. MILK AND CREAM

1. Paid to farms

As most urban Soviet housewives are aware, fresh milk has not always been readily available in the stores. One of the principal reasons for this has been the disincentive effect of the low state purchase prices for this commodity. In 1963, for example, against a procurement price of 8 kopeks a liter were quoted costs of production ranging from 14.7 kopeks in Bashkiria to 19 kopeks in the Moscow oblast.[31] One of the first purchase prices to be announced after the deposition of Khrushchev was that of milk, given in Garbuzov's speech to the Supreme Soviet in December 1964.[32] Differentiated prices were announced for 12 zones of the R.S.F.S.R. and 2 zones of the Kazakh S.S.R.; no other republics are to be price zoned. The new prices, valid for both kolkhozes and sovkhozes, are:[33]

Republic	Milk (rubles per ton)	Cream—10-percent fat content (kopeks per kilo)
R.S.F.S.R.	130-230	27-47
Kazakh S.S.R.	155-180	32-38
Belorussian and Baltic S.S.R.'s	160	36
Remainder	155	32

In 1965 some 720 million rubles were set aside in budgetary allocations to cover the cost of these increases.

2. Price of skimmed milk purchased by farms

With effect from January 1, 1965, the price of skim milk sold back to milk-producing farms by dairies and separating plants was raised to a uniform 30 rubles a ton.[34] This was later reduced to 10 rubles a ton effective May 1, 1965.[35]

3. Butterfat content norm

The butterfat content norm for milk purchased by the state was reduced to 3.7 percent for the Russian Soviet Federated S.R., 3.6 percent for the Ukrainian and Georgian S.S.R.'s, 3.5 percent for the Moldavian S.S.R. and 3.4 percent for the Lithuanian S.S.R.[36] This had the effect of increasing farm incomes, since farms had hitherto on occasions been penalized for delivering milk of a lower butterfat content than the norm allowed.

D. SUNFLOWER SEED

Previously, the price paid to sovkhozes for sunflower seed was 70 rubles a ton. With effect from May 1965, the sovkhozes were to

[31] Sovetskaya Rossiya, 12.7.63 and Selskaya Zhizn, 5.9.63.
[32] Pravda, 10.12.64.
[33] Zakupki Selskokhozyaistvennykh Produktov, No. 2, 1965, pp. 52–53.
[34] Ibid.
[35] Pravda, 15.4.65.
[36] Ibid.

receive the same price as the kolkhozes, i.e., from 160 to 225 rubles a ton. As an additional incentive, the sovkhoz will receive 15 kilograms of oil cake at reduced prices for each centner of the planned deliveries of sunflower seed, and 30 kilograms of oil cake for each centner of above-plan deliveries. A bonus of 70 kopeks will also be paid to the work units in sovkhozes and kolkhozes for each centner of sunflower seed sold to the state. Furthermore, bonuses are offered for above-average quality seed, and 4 kilograms of sunflower seed oil will be sold back at half price for each centner of seed delivered.[37]

E. THE EXTRA COST OF STATE PURCHASES IN 1965

Official spokesmen have repeatedly stressed that the costs of the price increases for agricultural produce will not be passed on to the consumer;[38] the burden of these increases must, therefore, be borne by the state.

The additional cost of planned grain purchases from the increased prices was put at 866 million rubles for 1965, with the additional income divided almost evenly between kolkhozes and sovkhozes.[39] About 760 million rubles of this was earmarked for wheat and rye,[40] leaving approximately 100 million rubles to cover the purchases of other grains. Although the state grain purchase target for 1965 was not fulfilled, above-plan purchases were reportedly made in the Ukraine, Byelorussia, Moldavia, and the Baltic Republics[41] which would cost an additional 100 million rubles or so, and so it is probable that the total extra cost of planned and above-plan purchases could not have fallen far short of 800 million rubles in 1965.

While it is true that the temporary increment to meat prices came into effect only in May 1965, the bulk of the year's meat supply was slaughtered and processed after that date and, furthermore, over a million tons of meat above the plan was produced in 1965. The cost of the additional meat subsidy must, therefore, have exceeded the 1.9 billion rubles forecast by Garbuzov.

As has been noted, provision had previously been made for over 2 billion rubles in meat subsidies and additional payments for milk in the state budget for 1965 (1,300 million rubles for meat and 720 million rubles for milk). This sum was presumably increased by about 120 million rubles in view of the 15 percent above-plan purchases of milk recorded for 1965. To this should be added nearly 3 billion rubles attributable to the price increases announced at the March Plenum, making a total price support bill of about 5 billion rubles in 1965.

For the period 1966–70, Garbuzov estimated the total cost of "additional state assistance to the kolkhozes and sovkhozes" at over 22 billion rubles;[42] the bulk of this sum is attributable to meat subsidies and extra payments for grain. It should be emphasized that

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[37] Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 13.
[38] The first promise was made by Brezhnev in his speech to the plenum, Pravda, 27.3.65.
[39] Martovskii Plenum, op. cit., p. 23.
[40] Izvestiya, 13.4.65.
[41] Ekonomicheskaya Gazeta, No. 11, 1966, p. 4; Sovetskaya Byelorossiya, 5.2.66; Sovetskaya Moldavia, 8.2.66; Sovetskaya Litvya, 29.1.66; Sovetskaya Latvya, 4.2.66; Sovetskaya Estoniya, 5.2.66.
[42] Plenum TsK KPSS, op. cit., pp. 132–133.

this is in addition to the extra payments existing before the March 1965 Plenum.

III. Investments

When the planners, under Khrushchev's guidance, drew up the agricultural investment targets for the 7-year plan, they unrealistically assumed that the kolkhozes would find over two-thirds of the total. This herculean task for the kolkhozes was hardly lightened by subsequent subjective decisions to reduce procurement prices and to double the price of agricultural spares. The agricultural investment targets for the new plan period, as outlined by Brezhnev at the March 1965 Plenum and confirmed in the provisions of the new 5-year plan, are more realistic in their distribution between the state and the kolkhozes. State investment in agriculture and in rural construction is scheduled to form 26 percent of all state investment during the current 5-year plan, compared with 19 percent during the preceding 5 years.[43]

Investment in agriculture

Billion rubles[1]	1959–65 planned	1959–65 actual	1961–65 actual	1966–70 planned
Total	50.0	55.2	43.0	71.0
Including State	15.5	30.3	24.7	41.0
Including Kolkhoz	34.5	24.9	18.3	30.0

[1] In constant prices of 1955.

Sources: 1959–65 (planned), G. I. Samborski, op. cit., p. 90. 1959–65 (actual), and 1961–65 (actual), SSSR v Tsifrakh v 1965 godu, pp. 112–113. 1966–70 (planned), Pravda, 27.3.65.

It has not been made clear whether the state investment total of 41 billion rubles includes nonproductive investment or whether it embraces noncentralized investment made from sovkhoz funds; it seems probable, however, that the sum represents productive investment from centralized and sovkhoz funds and that nonproductive investment may add up to 10 billion rubles to the overall figure.

IV. Agricultural Machinery

After recording impressive growth rates during the first 5 years of Khrushchev's administration, the supply of machinery to agriculture faltered and, for certain important items, the annual deliveries actually declined. Not only were the farms in some respects worse served quantitatively, but the profusion of models multiplied, recommendations for standardization went unheeded, and the chronic shortage of spare parts seemed to grow more acute. At the March 1965 Plenum, it was Yezhevsky, the chairman of Soyuzselkhoztekhnika, who came in for the most blistering and personal attacks. His mea culpa contained some refreshingly frank admissions: speaking of faults in design, for example, he confessed that one model of seeder had 212 points which needed greasing every day—an operation which took five hours.[44]

[43] Ibid., p. 194.
[44] Plenum TsK KPSS, op. cit., p. 152.

Great things have been promised for the future in respect of improved models, standardized designs and availability of spares,[45] and already the cost to farms of agricultural machinery and vehicles has been significantly reduced by allowing them to purchase these items at wholesale prices.[46]

As far as quantity is concerned, a very substantial expansion of the machinery park is planned over the next 5 years; this is exemplified by the growth rates scheduled for three major items. Allowing for normal rates of retirement, the numbers of tractors, trucks, and grain combines on farms are set to rise by 50, 37, and 51 percent respectively during the period 1966–70.

The planners have evidently adopted as a target the "optimum inventory" announced in 1962,[47] although this was set with somewhat different requirements and production levels in mind. It is also pertinent to compare the Soviet target for 1970 with the U.S. reality of 1962, bearing in mind that the sown cropland in the United States amounts to approximately 60 percent of the Russian total.

[In thousands of units]

	Period	Tractors	Trucks	Combines
Delivered to farms	1961–65	1,093	361	384
Planned deliveries to farms	1966–70	1,790	1,100	550
Machinery park	1965	1,650	982	520
Planned machinery park	1970	2,490	1,370	780
"Optimum park"		2,700	1,650	845
U.S. park	1962	5,170	2,900	1,020

Sources:
1961–65 derived from Narkhoz 1961, p. 417; Narkhoz 1964, p. 389; and Pravda, Feb. 3, 1966.
1966–70, Pravda, Mar. 27, 1965.
Machinery park in 1965, SSSR v Tsifrakh v 1965 godu, p. 89.
Planned park in 1970, Ekonomicheska Gazeta, No. 10, 1966, p. 13.
"Optimum park," Pravda, Mar. 6, 1962.
U.S. park, Joint Economic Committee Annual Economic Indicators for the U.S.S.R., Washington, 1964, p. 29.

V. Mineral Fertilizers

Khrushchev's emphasis upon mineral fertilizers has been maintained by his successors; the only significant difference is that his ambitious production target of 70–80 million tons by 1970, has been modified to a more realizable 64 million tons.[48] At present, the weight of commercial fertilizer applied per hectare of cropland in the U.S.S.R. is about one-quarter of the American level, and much of this is reserved for technical crops. An increasing share of the total production is to be devoted to grain, which cannot but have a distinct effect, especially in the areas of adequate precipitation like the non-chernozem region.

Enough has been written and spoken about the shortcomings of Soviet fertilizer production and use—the excessive degree of ballast, the lack of packaging, the unsuitable transportation and the shortage of specialized machinery for its application—to insure that

[45] See, for example, Yezhevsky's article in Ekonomicheskaya Gazeta, No. 10, 1966, pp. 13–14.
[46] Pravda, 26.12.65.
[47] Pravda, 6.3.62.
[48] Pravda, Feb. 20, 1966.

everyone concerned must, by now, be aware of what is to be done, and an all-round improvement is to be expected. However, one of the main reasons for the unsatisfactory utilization of that fertilizer which has been allocated to grain has been the inadequate material incentives for the farmers to collect and apply the fertilizer properly. Frequently fertilizers have been delivered to a railroad station only to lie there uncollected, because the farms for which they were destined accorded them minimal priority. The missing incentive has now been supplied in the shape of higher planned purchase prices for grain and the 50 percent bonus for above-plan production

Curiously, in view of its admitted shortage of mineral fertilizer, for many years past the Soviet Union has been exporting about one-fifth of its annual production.[49] From the provisions of the 5-year plan, it would appear that a smaller proportion of the total production by 1970 will be shipped abroad [50]; this is only rational, for when the probable response is at least 1.3 tons of wheat per ton of fertilizer, it makes little sense to export 1 ton of fertilizer for the equivalent of $22 in soft currency and import wheat at anything up to $80 a ton in hard currency.

VI. Irrigation, Drainage, and Land Improvement

The target for irrigation work over the period 1966–70 provides the only case where a goal set by Brezhnev at the March 1965 plenum has been scaled down in the directives for the 5-year plan.[51] Nevertheless, even the slightly lower target is higher than the total land brought under irrigation during the previous 20 years, and will cost an estimated 5 billion rubles. The provision of irrigation is not enough, as experience has shown, and increasing concern has been voiced for the maintenance and correct utilization of the existing network.[52]

Drainage work is scheduled on 6 million hectares of land, which is about the same area as has been drained during the past 20 years.[53]

The annual cost of draining, liming and clearing the land and applying peat in the non-chernozem regions has been estimated at 300 million rubles.[54] At the March 1965 plenum it was announced that the state would henceforth shoulder the whole financial burden of this land improvement, thereby saving the kolkhozes of this region some 85 million rubles a year.[55]

VII. Direct Marketing of Produce

The principal reason why Soviet urban housewives pay the higher prices of the kolkhoz market for their fruit and vegetable purchases is that the state retail system is so cumbersome and inefficient that its wares are either distinctly jaded or not available at all. In an

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[49] See Vneshnyaya Torgovlya SSSR za 1959–63 gody, pp. 46–47.
[50] The production target is 64 million tons, while the amount scheduled for delivery to agriculture is 55 million tons (Pravda, Feb. 20, 1966); part of the discrepancy is attributable to the time lag between production and delivery.
[51] From "more than 3 million hectares" (Pravda, Mar. 27, 1965) to "2.5 to 3 million hectares" (Pravda, Feb. 20, 1963).
[52] See, for example, Pravda, Oct. 2, 1963.
[53] Pravda, Mar. 27, 1965.
[54] Martovski Plenum, op. cit., p. 43.
[55] Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 13.

effort to cut out the middlemen and the resultant delays, a new procedure has been approved. Farms are now encouraged to deliver vegetables and fruit direct to the stores, restaurants, and industrial enterprises; for their produce they receive the retail price less a small discount. For example, R.S.F.S.R. kolkhozes which deliver potatoes direct to the stores or catering enterprises receive the retail price less a discount of 10 percent during December through March, 7 percent in April and May and 15 percent during other months.[56] Similar concessions are offered farms which deliver slaughtered meat to the state stores.[57]

VIII. Kolkhozes

A. INCOME TAX

Under the previously existing system, a standard 12.5 percent tax was paid by kolkhozes upon their gross income in cash and kind less a certain amount of the money and produce used for productive purposes.[58] During the period 1959–63, this tax amounted to 8.6 percent of the gross income of all R.S.F.S.R. kolkhozes.[59]

Conceding that it was inequitable to levy tax upon the gross income of a kolkhoz, Brezhnev announced at the March 1965 plenum that tax would henceforth be levied on a kolkhoz's net income. A simple example of the provisions of the new tax law was provided by the Deputy Minister of Finance.[60]

With effect from January 1, 1965, a standard 12-percent tax was to be levied on that portion of a kolkhoz's net income which exceeded a profitability rate of 15 percent. In the example quoted, a kolkhoz receives 1,200,000 rubles for produce marketed plus 70,000 rubles for services rendered; it also distributes payments in kind to the value of 130,000 rubles. If its total costs of production amount to 1 million rubles, then its net income is 1,200,000+70,000+130,000−1,000,000=400,000 rubles. The profitability of the kolkhoz is the ratio of its net income to costs: in this case it would be 400,000:1,000,000, or 40 percent. Since profitability up to 15 percent is exempt from taxation, the kolkhoz's taxable net income will be 250,000 rubles. It is this sum which will be taxed at 12 percent, yielding 30,000 rubles in tax.

In addition, tax at the rate of 8 percent is due on that portion of the wage fund which exceeds the tax-free maximum of 60 rubles per month for each kolkhoznik. Thus if 340 kolkhozniks work on the kolkhoz in question, the tax-free wage fund equals 244,800 rubles (340 times 720 rubles). Any wages above this will be taxed at 8 percent; the tax will be deducted from the wage fund and not from the kolkhozniks.

The new kolkhoz income tax system was expected to have the effect of halving the total income tax revenue from kolkhozes in 1965; i.e., from about 1 billion rubles to about half a billion rubles.[61]

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[56] Ibid., p. 22.
[57] Martovski Plenum, p. 52.
[58] Ekonomika Selskogo Khozyaistva, No. 12, 1963, p. 82.
[59] Voprosy Ekonomiki, No. 1, 1965, p. 60.
[60] Selskaya Zhizn, Apr. 24, 1965.
[61] Ibid.

B. DEBTS WRITTEN OFF

As a once-only measure, Gosbank was authorized to write off state loans to economically weak kolkhozes in the amount of 2,010 million rubles, which included 1,450 million rubles in long-term loans and short-term loans (earlier deferred) amounting to 560 million rubles.

The same decree deferred the repayment from kolkhozes on monetary advances received from procurement organizations which totaled 120 million rubles. The liquidation of the deferred indebtedness has to be carried out by the kolkhozes concerned during the course of the 5 years beginning in 1970.

A further debt of 120 million rubles was canceled; this represented the amounts still due from kolkhozes in respect of the equipment, facilities, and machinery purchased by them on the dissolution of the MTS and RTS.[62]

As a result of the cancellation or deferment of repayment of debts, during 1965 kolkhozes were expected to pay about 300 million rubles less on the repayment and servicing of loans than had hitherto been envisaged.[63]

C. PENSIONS

To correct an obvious injustice, it was announced at the March 1965 plenum that former kolkhoz members (including members of fishing kolkhozes), whose land had been transferred to sovkhozes or other state enterprises, would be assigned and paid old-age pensions and disability pensions on the same scale as kolkhozniks, commencing June 1, 1965.[64]

At the 23d Party Congress it was promised that the minimum pensions for workers, employees, and kolkhozniks were to be raised by more than 30 percent[65] and that kolkhozniks would henceforth qualify for pensions at the same ages as workers and employees; i.e., 55 years for women and 60 years for men.[66]

D. CREDITS

In 1965 kolkhozes were to receive state credits exceeding 7 billion rubles, compared with a total of 4.7 billion rubles in 1964. The 1964 figure represented 38 percent of the kolkhozes' annual productive outlays. About 80 percent of kolkhozes' operating expenditures during the first half of the year are covered by state credits.

Repayment terms of credit for capital construction were extended from 15 to 20 years; annual interest on these loans is 0.75 percent. Credits for the purchase of equipment were extended from 5 to 8 years.[67]

E. CONVERSION TO SOVKHOZES

During the first 6 years of the 7-year plan, the number of kolkhozes was almost halved through conversion into sovkhozes and

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[62] Pravda, Apr. 20, 1965.
[63] Ekonomika Selskogo Khozyaistva, No. 6, 1965, p. 14.
[64] Pravda, Apr. 20, 1965.
[65] The existing minimum pensions were: 9 rubles a month for a single ex-kolkhoznik; 12 rubles for a pensioner with one dependent and 15 rubles for an ex-kolkhoznik with two or more dependents (Pravda, July 16, 1964).
[66] Pravda, Apr. 6, 1966.
[67] Trud, 9.4.65.

amalgamation (from 67,681 at the end of 1958 to 37,618 at the end of 1964). During the same period, the number of sovkhozes rose by 68 percent (from 6,002 to 10,075).[68] Brezhnev implied at the March 1965 Plenum that this process was to slow down or halt altogether: "At the present stage, it is not our duty to accelerate the transformation of one form into another, but to promote in every way the development and prosperity of both types of public farming."[69]

F. GUARANTEED PAY

The one concession which could go further than any other measure of the new leadership in providing the basis for a renewed upsurge in kolkhoz production was hinted at by Brezhnev at the 23d Party Congress. "It was proposed," he said, "to introduce guaranteed monthly pay for the kolkhozniks in conformity with the level of sovkhoz workers' pay for corresponding work specifications and norms."[70] At the time of writing, no precise details of this proposal had been promulgated. The discrepancy between sovkhoz rates of pay and the kolkhoznik's income from the communal sector has been considerable; in 1963, the former averaged 67.1 rubles a month,[71] while the latter (for a slightly shorter working month) has been estimated at 28.5 rubles in cash and kind.[72]

The vicious circle which has hitherto plagued the kolkhoz sector may briefly be described as follows: until the kolkhozniks stop devoting much of their time and most of their energy on their private plots and livestock holdings, the communal sector will not yield a response commensurate with the capital invested in it, it will not adequately feed the population and it will not provide a decent living wage to the farmers; until the kolkhozniks can earn a decent wage from the communal sector, they must continue to cultivate their private plots. However, even if the offer of a reasonable and secure wage succeeds in tempting the kolkhozniks to devote more time and energy to the collective task, it is by no means certain that the gross agricultural product will immediately benefit. The communal sector's gain will be the private sector's loss, and these private plots have shown themselves to be remarkably productive.

A good start was made in 1965 toward raising kolkhozniks' earnings to the level of sovkhozniks: in a year when the gross agricultural product rose by only 1 percent, their average earnings grew by 16 percent.[73]

IX. Sovkhozes

A. KHOZRASCHET

Ever since their inception in 1919, sovkhozes have consistently made an overall loss, with the sole exception of 1956.[74] In 1963, nearly 70 percent of all sovkhozes operated at a loss and required

[68] SSSR v Tsifrakh v 1964 godu, p. 95.
[69] Pravda, 27.3.65.
[70] Pravda, 30.3.66.
[71] Narkhoz 1964, p. 555.
[72] Nancy Nimitz, Farm Employment in the Soviet Union, 1928–63, Rand Memorandum RM–4623–PR, November 1965, pp. 97 and 112.
[73] Pravda, 3.2.66.
[74] See Benediktov's ill-considered admission in Kommunist, No. 18, 1956, p. 73.

state subsidies of nearly 3 billion rubles.[75] Even in 1964, a year which brought bumper harvests of practically all crops, the sovkhozes made an overall loss of 764 million rubles.[76]

At the March 1965 Plenum, Brezhnev declared that "the principles of economic accountability (khozraschet) have been violated in the very economic relationships between the state and sovkhozes * * *. "We must renounce excessive regimentation in the distribution of capital investments and subsidies for sovkhozes, and transfer sovkhozes in the near future to full economic accountability." [77]

Later that year, an experiment was launched with the aim of running sovkhozes on a khozraschet basis. The pilot sovkhozes taking part in the experiment were to receive the same prices as the local kolkhozes for their produce; like the kolkhozes they had to finance all basic and working capital from their gross incomes.[78] From this experiment it should perhaps prove feasible to make a meaningful appraisal of the respective merits of the two systems of socialist agriculture.

The bad weather of 1965 must have brought considerable losses to the giant grain sovkhozes in the virgin lands, but other measures which improved the financial status of sovkhozes in general were the increased delivery prices, which raised sovkhoz incomes by an estimated 2 billion rubles and the decision that a sovkhoz would be permitted to retain 42 percent of the profits it generated.[79]

B. PAY OF OFFICIALS

Sovkhoz officials had been nursing a very legitimate grievance over their pay system. It appears that specialists like agronomists, engineers, and veterinarians were penalized by the loss of up to 30 percent of their base pay if their sovkhoz did not meet its annual production targets, even if the failure were attributable to inclement weather.[80] This injustice was corrected by a decree of April 1965, which also announced certain premia for profitability and costs reduction.[81]

X. The Private Sector

A. RESTRICTIONS ON PRIVATE PLOTS LIFTED

One of the first actions of the new leadership was to lift the "groundless" restrictions which had been applied to the size of private plots and to the amount of livestock in private ownership. The tax upon private holders of livestock in urban areas was also lifted.[82]

These minute plots of land occupy only 3 percent of all arable land in the U.S.S.R.; yet, with private livestock holdings, they produce one-third of all agricultural production and one-sixth of all marketed produce. Ideologically their retention may be objection-

[75] Izvestiya, 25.11.64.
[76] Sovetskaya Rossiya, 24.4.65.
[77] Pravda, 27.3.65.
[78] Pravda Ukrainy, 17.11.65.
[79] Pravda, 10.12.64.
[80] For an articulate exposé of this grievance, see Sovetskaya Rossiya, 9.3.65.
[81] Pravda, 22.4.65.
[82] Pravda, 6.11.64.

able, but economically their contribution is essential, and has been implicitly admitted as such on repeated occasions by the new leadership.

B. CREDITS FOR THE PURCHASE OF LIVESTOCK

On December 18, 1964, the U.S.S.R. Council of Ministers adopted a resolution permitting Gosbank to extend credits for the purchase of cows and heifers to kolkhozniks, and to workers and employees living in rural areas, cities and suburbs. A 5-year credit up to 300 rubles per family for buying cows and up to 150 rubles for buying heifers may be granted. Repayment of loans for buying cows begins the second year, and for buying heifers the third year, after the loan has been granted.[83]

C. SALE OF MIXED FEED AND FEED GRAIN TO PRIVATE LIVESTOCK HOLDERS

The State Committee for Procurements was instructed, in December 1964, to make available an additional 925,000 tons of feed grain for sale to private livestock holders. A special trading network was set up in towns and workers' settlements for the sale of mixed feed and feed grain.[84]

XI. Other Concessions to the Rural Population

A. RURAL SURCHARGE LIFTED

A source of discontent in the countryside was the so-called rural surcharge (selskaya nadbavka). This was a supplement of about 7 percent to the retail prices of many manufactured goods and foodstuffs[85] and was justified by the higher costs of distribution in the country. Although Brezhnev promised at the March Plenum to remove this surcharge, the state budget was evidently under such pressure in 1965 that it was found possible to free only one-half of the goods in question from the nadbavka in April 1965, while the remaining prices were adjusted in January 1966.[86]

B. CHARGES FOR ELECTRICITY REDUCED

Soviet agriculture consumes only 4 percent of the electricity generated in the country, including only 2 percent on productive purposes, yet even for this relatively small amount farmers had to pay higher rates than urban consumers. The ending of this discrimination had been sought prior to the March Plenum,[87] but again the budgetary resources were so strained that it was not until January 1966 that power charges for the farmers were reduced from 1.9 kopeks per kilowatt hour to the urban and industrial rate of 1 kopek per kilowatt hour.[88]

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[83] Izvestiya, 2.4.65.
[84] Ekonomicheskaya Gazeta, 9.12.64, p. 40.
[85] Moscow Radio, domestic service, 1900 hours G.m.t., 30.12.65.
[86] Pravda, 25.4.65.
[87] Izvestiya, 21.11.64.
[88] Moscow Radio, domestic service, 1800 hours G.m.t., 4.1.66.

C. KOLKHOZ MARKETS AND RAILROAD SALES

The fixing of prices by administrative order in the kolkhoz markets was ordered to be discontinued. Funds have been made available for the construction and modernization of buildings and facilities in these free markets. Most of the food sold on the kolkhoz markets comes from private plots, some is surplus kolkhoz produce and a little comes from hunters and fishermen, who need no longer fear the label of "'speculator" if they bring their trophies to be sold. Peasants are also allowed, once more, to set up stalls on railroad platforms and at river landing stages.[80]

XII. Budgetary Redistribution

In addition to the growing state investments in agriculture, the implementation of the various reforms listed above has necessitated a considerable redistribution of state budgetary income and expenditure in favor of the rural sector in the 1966 budget and is also reflected in the shape of the 5-year plan. The magnitude of this reallocation in 1965 and 1966 may give some indication of the total impact of the new agricultural program during the next few years.

In 1965 the sum of over 2 billion rubles in budgetary outlays had been set aside for meat subsidies and increased milk prices. Additional expenditures in the amount of three and a half billion rubles were authorized to cover the increased prices of meat, grain, sunflower seed plus the cost of land improvement in certain kolkhozes now assumed by the state. Of this total, some 1.3 billion rubles was to be paid to sovkhozes and could be set off against their annual operating subsidies; the net additional outlay was, therefore, in the region of 2.2 billion rubles. However, the reforms provided not only for additional expenditures but also for cuts in budgetary income from the revision of kolkhoz income tax and the initial decrease in the rural surcharge amounting to over 1 billion rubles. In 1966 and subsequent years, the budgetary allocations will increase with the higher planned purchases of meat and the anticipated above-plan purchases of grain, while the budgetary shortfalls will be further increased by the lifting of the remaining rural surcharge and by the sharply reduced prices for vehicles, machinery and spare parts purchased by the farms. This redistribution should be viewed in the context of estimated state budgetary income and expenditure averaging approximately 120 billion rubles during the period 1966-70.

XIII. Conclusion

Khrushchev's successors have introduced or proposed many significant reforms aimed at improving the state of Soviet agriculture and the rural population in addition to the measures listed above. One of their first steps was to annul Khrushchev's bifurcation of the CPSU into industrial and agricultural halves, which he pushed through in November 1962. Lysenko has been publicly discredited and several of his supporters removed from prominent positions,

[80] Sovetskaya Rossiya, 13.5.65 and Izvestiya, 14.5.65.

although the harm he has done may take many years to eradicate. Some of Khrushchev's most harmful crop policies have been identified and discontinued. Matskevich was brought back from the wastes of Kazakhstan to head a revitalized Ministry of Agriculture. Plans were outlined at the 23d Party Congress to foster the siting of subsidiary and handicraft industries on farms to provide year-round employment. Similarly, more food and light industrial enterprises are to be constructed in the smaller towns and villages, with the aim of mopping up the pockets of regional unemployment. Finally, a genuine effort seems at last to be underway to reduce the enormous economic, social, and cultural gap between town and country life.

The scope of the reforms implemented within the 18 months since Khrushchev's removal is indeed impressive yet, as Kosygin and others have admitted, this is only the beginning of a long and slow road. No longer are to be heard boasts to overtake the United States in per capita production of meat; at the growth rate projected for the next 5 years, it will be after 1980, after the completion date for the now-ignored 20-year program, before the Soviet per capita consumption of meat and eggs can reach even the current West European level.

Estimated per capita supply

	Kilograms per year—				
	United States, 1962	United Kingdom, 1962–63	France, 1960–61	Federal Republic of Germany, 1962–63	U.S.S.R., 1963–64
Grains and pulses (as flour)	65	87	106	82	175
Potatoes	47	94	194	128	125
Sugar (refined)	41	47	29	30	27
Meat and poultry	97	77	74	61	30
Eggs	19	15	11	13	4
Fats	21	23	17	26	9

Sources:
Western supplies, "FAO Production Yearbook," vol. 17, 1963, pp. 248-249.
Soviet supplies, W. Klatt in "Soviet Agriculture: The Permanent Crisis," editors, Laird and Crowley, Praeger, 1965, p. 109.

A host of obstacles remain which can nullify the financial and material provisions of the reforms listed. At least three principal stumbling blocks could be removed without the disbursement of any further resources. The first is the marked second-class status of the kolkhoznik; it is to be hoped that this injustice will be at least partially remedied at the forthcoming Third All-Union Congress of Kolkhozniks. The second is the state and party's petty tutelage over every phase and aspect of the farmer's activity. Lipservice was paid at the March plenum to the necessity for ending this stifling and bumbling supervision by central and local bodies, but instructions continue to pour from above which demand constant and detailed meddling by outsiders, and the habits ingrained over 30 years die hard: indeed, there has been little evidence during the past year of any significant improvement in the operational independence and autonomy of the farmer. The third is the lack of responsibility and

interest felt by the kolkhoznik toward the communal land and property of the kolkhoz. A radical solution for this has been aired on occasions by the youth newspaper *Komsomolskaya Pravda* and others: these advocate that teams of five or six kolkhoz families be allocated an area of from 600 to 1,600 hectares, depending upon the soil and the crops grown, and granted complete operational and economic autonomy over the farming of that land for a period of several years. However, since such a development would virtually signify the removal of any *raison d'etre* for the kolkhoz, it is improbable that the Soviet leaders would permit even a partial implementation of the proposal unless or until it becomes clear that the current program of reforms is inadequate.

Stalin reputedly did not put a foot inside a farm for the last 25 years of his reign and chose to accept the picture of prosperous and contented peasants conjured up by his film industry. In contrast, Khrushchev spent more time in the fields than, surely, any other Prime Minister, yet his unbalanced and subjective management brought Soviet agriculture to a new period of stagnation. From the extremely frank account of the proceedings of the March plenum, as recorded in the stenographic report, it is clear that the Soviet leadership is, unlike Stalin, fully aware of the state of agriculture, and is resolved to avoid Khrushchev's errors.

The capital inputs and financial concessions of the new agricultural program perhaps go about as far as is presently feasible, in view of available resources, to provide the preconditions for renewed growth. The scheduled application of fertilizers and the provision of machinery, irrigation and drainage alone should lead to an appreciable return in terms of higher yields and output, regardless of any improvement in the quality of farm labor. A new sobriety has come over agricultural planning; this is evidenced by the agricultural targets for the next 5 years which, unlike Khrushchev's wholly unrealistic projections, represent the upper limits of a feasible range of production possibilities and may well be met, given average to good weather. Yet although a response to these inputs may soon be manifested by the production totals, it may take many years before the party and state can gain the confidence and cooperation of a peasantry which has been first brutalized then kept cowed and exploited for over 30 years.

AGRICULTURE IN THE UNITED STATES AND U.S.S.R.

BY

HARRY E. WALTERS

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AGRICULTURE IN THE UNITED STATES AND U.S.S.R.

Introduction

In the following tables the structure, resource allocation, and performance of agriculture in the United States and the Soviet Union are compared. International comparisons can at best serve as a rough measuring device for comparing agricultural performance. The major unrevealed differences between the two countries are the natural conditions and economic organization in which agricultural production is carried out in both countries.

The Soviet Union lies in a latitude which is for the most part north of that of the United States, and in this respect the U.S.S.R. is comparable with Canada. Generally speaking, climatic conditions in the U.S.S.R. are much less favorable for agriculture than in the United States, and many portions suffer from recurring droughts.

Land in the Soviet Union is the property of the Government. Farm management, production, distribution, and the allocation of resources between agriculture and other sectors of the economy and within agriculture is planned and controlled by the Government. The prices received for many farm products as well as the prices paid by farms for inputs and by farmers for consumer goods are administered by the Government in the U.S.S.R. In the United States the Government plays an active role in many spheres of agricultural production, marketing, and trade, but this takes the form primarily of measures designed to work within the guidelines set by the market for agricultural products. The objective of these measures is to insure a smooth and plentiful flow of agricultural products to consumers at home and abroad and a reasonable income to farmers.

Within the confines of these major differences the other distinguishing characteristics of agriculture in both countries are clearly evident from the tables. The Soviet Union uses much more land and labor and much less capital, machinery, fertilizer, and other economic inputs than does the United States. Soviet agriculture is still relatively backward and labor intensive, while U.S. agriculture is relatively prosperous and capital intensive. Agricultural output in the United States exceeds that of the Soviet Union and agricultural productivity—per man, per acre, and per livestock unit—is much higher in the United States than in the U.S.S.R. A large proportion of U.S. agricultural production is exported and the U.S. diet is heavily weighted with meat and dairy products, vegetables, fruits, and other high quality products. The Soviet diet is still largely made up of grains and potatoes and, even by Soviet standards, is deficient in dairy and meat products, vegetables, and fruits.

TABLE 1.—*United States and Soviet Union: Agricultural resources*

Item	Year	Unit	United States	Soviet Union [1]	U.S.S.R. as percentage of United States (Percent)
Population	1964	Millions	[2] 192.1	227.7	119
Civilian labor force (work experience)	1964	do	[3] 85.1	[4] 116.0	136
Annual average employment	1964	do	[2] 70.4	[4] 103.4	147
Agricultural labor force (work experience).	1964	do	[3] 7.1	[4] 46.5	655
Annual average employment in agriculture.	1964	do	[3] 4.8	[4] 39.1	815
Farm share of total labor force (work experience).	1964	Percent	8.3	40.1	----------
Farm share of total employment (annual average).	1964	do	6.8	37.8	----------
Sown cropland	1964	Millions of acres	[5] 306	526	172
Sown cropland per capita	1964	Acres	1.6	2.3	144
Tractors on farms	Jan. 1, 1965	Thousands	[6] 4,625	1,539	33
Motor trucks on farms	do	do	[6] 2,925	954	33
Grain combines on farms	do	do	[6] 990	513	52
Agricultural consumption of electricity	1964	Billions of kilowatt-hours.	[7] 29.9	18.4	62
Use of commercial fertilizer in terms of principal plant nutrients:					
Total	1964	1,000 short tons	[8] 8,131	5,500	68
Per acre of sown area	1964	Pounds	59	21	36

[1] Narodnoe khozyaystvo SSSR v 1964, Moscow, 1965.
[2] Statistical abstract of the United States, U.S. Bureau of the Census, Washington, D.C., 1965, p. 5.
[3] Monthly Labor Bulletin, No. 48, U.S. Department of Labor, Washington, D.C., January 1965, p. —.
[4] U.S. Bureau of the Census preliminary estimates.
[5] 59 crops planted or grown. Crop Production 1965 Annual Summary, U.S. Department of Agriculture (USDA), Statistical Reporting Service (SRS), Washington, D.C., Dec. 20, 1965, p. 43.
[6] Changes in Farm Production and Efficiency, USDA, Economic Research Service (ERS), Washington, D.C., July 1965, p. 22.
[7] Estimated from average consumption in June. Agricultural Prices, USDA, SRS, Washington, D.C., November 1965, p. 23.
[8] Changes in Farm Production and Efficiency, op. cit., p. 27.

TABLE 2.—*United States and Soviet Union: Farm numbers and size, and selected data per farm, 1964*

Item	Unit	U.S. farms	Soviet Union	
			Collective farms	State farms
Total	Number	[1] 3,479,000	[2] 37,600	[2] 10,078
Land area per farm	Acres	[1] 333	[3] 32,010	[3] 140,026
Sown area per farm [4]	do	88	7,284	21,405
Workers per farm	Number	[5] 1.4	[6] 418	[7] 721

[1] Number of Farms and Land in Farms, USDA, SRS, Washington, D.C., Jan. 12, 1966, p. 1.
[2] Narodnoe khozyaystvo . . ., op. cit., p. 245.
[3] Ibid., pp. 245 and 264.
[4] Sown area divided by number of farms.
[5] Average annual employment divided by total number of farms.
[6] Collective farm households. Narodnoe khozyaystvo . . ., op. cit., p. 391.
[7] Ibid., p. 410.

TABLE 3.—*United States and Soviet Union: Crop acreage, 1964*

Crop	United States [1]	Soviet Union [2]	U.S.S.R. as percentage of United States
	1,000 acres	*1,000 acres*	*Percent*
Corn, grain	57,291	12,602	22
Wheat	49,121	167,781	342
Rye	1,711	41,513	2,426
Oats	20,432	14,085	69
Barley	10,624	53,621	505
Sorghum grain	11,977	[3]	
Rice	1,786	494	28
Cotton	14,057	6,081	43
Soybeans for beans	30,754	[3]	
Sunflowers	[3]	11,384	
Peanuts harvested for nuts	1,405	[3]	
Flax	[4] 2,831	3,926	139
Sugarbeets	1,395	10,148	727
Sugarcane, for sugar and seed	578	[3]	
Tobacco	1,078	[5] 410	35
Potatoes	1,294	21,048	1,627
Sweetpotatoes	183	[3]	
Vegetables	[6] 3,327	3,652	110
Fruits, grapes and berries, including citrus	[7] 2,580	5,350	207
Citrus	778	[3]	
Hay, all	67,619	[8] 65,331	97

[1] Crop Production . . ., op. cit., pp. 41–43, 51.
[2] Narodnoe khozyaystvo . . ., op. cit., pp. 295–336.
[3] Not available.
[4] Flax seed United States; flax fiber U.S.S.R.
[5] USDA estimate.
[6] U.S. 21 fruits only, Crop Production . . ., op. cit., p. 51.
[7] Narodnoe khozyaystvo . . ., op. cit., pp. 267, 268.
[8] Perennial and annual grasses.

TABLE 4.—*United States and Soviet Union: Yield per acre and production of major crops, 1964*

Crop	Unit	Yields per acre		U.S.S.R. as percentage of United States	Unit	Production		U.S.S.R. as percentage of United States
		United States [1]	U.S.S.R. [2]			United States [1]	U.S.S.R. [3]	
				Percent				*Percent*
Corn, grain	Bushels	62.6	27.8	44	1,000 bushels	3,583,780	[4] 362,186	10
Wheat	do	26.3	12.6	48	do	1,290,650	[4] 2,120,843	164
Rye	do	19.5	12.1	62	do	33,318	[4] 503,910	1,512
Oats	do	43.1	19.1	44	do	880,095	[4] 268,657	31
Barley	do	37.9	20.4	54	do	402,895	[4] 1,093,110	271
Grain sorghum	do	41.1	([5])		do	491,884	([5])	
Rice, rough	Pounds	4,096	1,725	42	1,000 short tons	3,657	426	12
Cotton, lint	do	517	647	125	1,000 bales	15,180	8,200	54
Soybeans for beans	Bushels	22.8			1,000 bushels	701,917	[4] 9,186	1
Sunflower seed	Pounds	([5])			1,000 short tons	([5])	[4] 6,145	
Peanuts harvested for nuts	do	1,569	([5])		do	1,102	([5])	
Flaxseed	Bushels	8.6	([5])		1,000 bushels	24,406	([5])	
Sugarbeets	Short tons	16.9	8.8	52	1,000 short tons	23,389	89,500	382
Sugarcane, for sugar and seed	Tons	36.6			do	25,053	([5])	
Sugar production					do	[6] 6,501	[7] 7,700	118
Tobacco	Pounds	2,067	989	48	1,000 lbs	2,227,347	[8] 405,646	
Fiber flax	do	([5])	194		1,000 short tons	([5])	381	
Potatoes	Hundredweight	185	109	59	1,000 hundredweight	239,403	[9] 1,845,250	771
Sweet potatoes	do	84	([5])		do	15,284	([5])	
Vegetables		([5])	125		1,000 short tons	18,789	21,494	114
Citrus		([5])	([5])		do	7,669	([5])	
Grapes		([5])	([5])		do	3,489	2,898	83
Total fruits (including citrus, grapes and berries)		([5])	([5])		do	[10] 18,891	10,466	55
Hay, all kinds	Short tons	1.72	.06	34.9	do	116,100	[9] 37,030	32

[1] Area harvested. Crop Production, . . ., op. cit., pp. 41–43, 51.
[2] Derived.
[3] Narodnoe khozyaystvo, . . ., op. cit.
[4] USDA estimate.
[5] Not available.
[6] Continental beets and cane, including Hawaii, Puerto Rico, and Virgin Islands for 1964–65. World Agricultural Production and Trade, USDA, Foreign Agricultural Service (FAS), Washington, D.C., June 1965, p. 8.
[7] From domestic beets only.
[8] Government purchases (procurements).
[9] Perennial and annual grasses only.
[10] Excludes berries. Fruit Situation, USDA, ERS, Washington, D.C., January 1966, p. 29.

TABLE 5.—*United States and Soviet Union: Livestock numbers, 1965—beginning of year*

Livestock	United States [1]	Soviet Union [2]	U.S.S.R. as percentage of United States
	Million head	*Million head*	*Percent*
All cattle	107.2	87.2	81
Cows	[3] 50.4	[4] 38.8	77
Hogs	53.1	52.8	99
Sheep	26.6	125.2	471
Horses	[5] 3.0	7.9	263
Poultry	[6] 381.8	[7] 456.0	119

[1] Livestock and Poultry Inventory, January 1, USDA, SRS, February 1966, p. 1.
[2] Narodnoe khozyaystvo . . ., op. cit., p. 360.
[3] Cows 2 years and older, included in cattle.
[4] All cows, included in cattle.
[5] Data for 1964. Series discontinued by USDA.
[6] Chickens and turkeys only.
[7] All poultry.

TABLE 6.—*United States and Soviet Union: Production of livestock commodities, 1964*

Commodity	Unit	United States	Soviet Union [1]	U.S.S.R. as percentage of United States
				Percent
Beef and veal	Million pounds	[2] 19,459	6,746	35
Pork	do	[2] 12,531	4,630	37
Mutton, lamb, and goat	do	[3] 715	1,940	271
Poultry meat	do	[4] 10,475	[5] 1,323	13
Lard	do	[4] 2,210	926	42
Margarine and shortening	do	[6] 4,506	[7] 1,336	30
Tallow and grease	do	[4] 4,408	542	12
Milk (cows)	do	[8] 126,598	119,048	94
Butter	do	[9] 1,434	[7] 2,099	146
Eggs	Billion	[2] 64.5	[5] 26.7	41
Wool	Million pounds	[10] 265	[4] 752	284

[1] USDA estimate. Soviet series includes unspecified quantities of fat and offals. Offals and fat are excluded in USDA estimate and these deductions provide the basis for estimated production of lard, tallow, and grease.
[2] Livestock and Meat Situation, USDA, ERS, Washington, D.C., November 1965, p. 33.
[3] Turkeys, chickens, and eggs. Production Disposition, Cash Receipts and Gross Income, 1963–64, USDA, SRS, Washington, D.C., April 1965, p. 9.
[4] Narodnoe khozyaystvo . . ., op. cit., p. 251.
[5] Preliminary. Fats and Oil Situation, USDA, ERS, Washington, D.C., November 1965, p. 17.
[6] Fats and Oil Situation, USDA, ERS, Washington, D.C., March 1965, pp. 24, 26.
[7] Narodnoe khozyaystvo . . ., op. cit., p. 226.
[8] Milk Production, USDA, SRS, Washington, D.C., Jan. 11, 1966, p. 1.
[9] Milk Production and Dairy Products, USDA, SRS, Washington, D.C., February 1965, p. 11.
[10] World Agricultural Production and Trade, USDA, FAS, Washington, D.C., December 1965, p. 27

TABLE 7.—*United States and Soviet Union: Area of major grains, 1955–59, average, 1964*

Item	1955–59 average			1964		
	United States [1]	U.S.S.R.[2]	U.S.S.R. as percentage of United States	United States [1]	U.S.S.R.[3]	U.S.S.R. as percentage of United States
	1,000 acres	*1,000 acres*	*Percent*	*1,000 acres*	*1,000 acres*	*Percent*
Corn, grain	66,409	11,853	18	57,291	12,602	22
Oats	33,093	36,109	109	20,432	14,085	69
Barley	14,391	24,809	172	10,624	53,621	505
Sorghum grain and pulses [4]	14,742	5,189	35	11,977	26,197	219
4 feed grains	128,635	77,960	61	100,324	106,505	106
Wheat	49,128	158,722	323	49,121	167,781	342
Rye	1,729	44,742	2,588	1,711	41,513	2,426
Buckwheat	90	5,384	5,982	41	3,459	8,437
Rice	1,547	299	19	1,786	494	28
4 food grains	52,494	209,147	398	52,659	213,247	405
Total, 8 grains	181,129	281,918	156	152,983	319,752	209

[1] Crop Production . . ., op. cit., p. 41.
[2] U.S. and Russian Agriculture—A Statistical Comparison, ERS-Foreign-127, USDA, ERS, Washington, D.C., p. 6.
[3] Narodnoe khozyaystvo . . ., op. cit.
[4] Sorghum grain for U.S.; pulses for U.S.S.R.

TABLE 8.—*United States and Soviet Union: Yields per acre of major grains, 1955–59 average, 1964*

	1955–59 average			1964		
	United States [1]	U.S.S.R.[2]	U.S.S.R. as percentage of United States	United States [1]	U.S.S.R.[3]	U.S.S.R. as percentage of United States
	Bushels	*Bushels*	*Percent*	*Bushels*	*Bushels*	*Percent*
Corn, grain	48.7	25.0	51	62.6	28.7	46
Oats	38.7	22.9	59	43.1	19.1	44
Barley	29.5	17.8	60	37.9	20.4	54
Sorghum grain and pulses [4]	28.2	10.6	38	41.1	14.0	34
4 feed grains [5]	2,074	883	43	2,748	971	35
Wheat	22.2	12.0	54	26.3	12.6	48
Rye	15.6	13.4	86	19.5	12.1	62
Buckwheat	17.5	7.2	41	24.4	9.5	39
Rice, rough	70.9	36.8	52	91.0	40.6	45
4 food grains [5]	1,376	720	52	1,683	740	44
Total, 8 grains [5]	1,874	762	41	2,366	817	35

[1] Crop production . . ., op. cit., p. 44.
[2] U.S. and Russian Agriculture . . ., op. cit., p. 6.
[3] Derived from tables 6 and 7.
[4] Sorghum grain for United States; pulses for U.S.S.R.
[5] Pounds per acre.

TABLE 9.—*United States and Soviet Union: Production of major grains, 1955–59 average, 1964*

	1955–59 average			1964		
	United States,[1]	U.S.S.R.[2]	U.S.S.R. as percentage of United States	United States[1]	U.S.S.R.[3]	U.S.S.R. as percentage of United States
	Million bushels	*Million bushels*	*Percent*	*Million bushels*	*Million bushels*	*Percent*
Corn, grain	3,235	297	9	3,584	362	10
Oats	1,278	828	65	880	269	31
Barley	424	441	104	403	1,093	271
Sorghum grain and pulses[4]	430	55	13	492	367	74
4 feed grains[5]	133	32	24	138	52	138
Wheat	1,095	1,911	174	1,291	2,120	164
Rye	27	599	2,218	33	504	1,527
Buckwheat	2	38	1,900	1	[6] 33	3,300
Rice, rough	110	11	10	162	[6] 23	14
4 food grains[5]	36	75	208	43	79	183
Total, 8 grains[5]	169	107	63	181	131	72

[1] Crop Production . . ., op. cit., p. 46.
[2] U.S. and Russian Agriculture . . ., op. cit., p. 7.
[3] USDA estimate. The U.S.S.R. and Eastern Europe Agricultural Situation, ERS-Foreign-151, USDA, ERS, Washington, D.C., March 1966, p. 5.
[4] Sorghum grain for the United States; pulses for the U.S.S.R.
[5] Million short tons.
[6] Narodnoe khozyaystvo . . ., op. cit.

TABLE 10.—*Soviet Union: Production of 5 major grains and total grain, USDA estimates and official Soviet estimates, 1958–65*

[In million metric tons]

	Total grain[1]		5 major grains[2]	
	USDA[3] estimates	Soviet official[4]	USDA[3] estimates	Soviet official[4]
1958	115.0	134.7	110.0	128.9
1959	94.2	119.5	90.6	115.3
1960	95.0	125.5	89.4	118.4
1961	109.4	130.8	102.2	122.5
1962	111.9	140.2	101.6	127.9
1963	89.3	107.5	81.6	96.5
1964	115.1	152.1	107.4	135.9
1965	[5] 100.0	[6] 120.5	[5] 89.4	[7] 109.8

[1] Wheat, rye, barley, oats, corn for grain, millet, buckwheat, rice, pulses (immature corn excluded in both categories).
[2] Wheat, rye, barley, oats, corn for grain.
[3] Estimates are of usable grain. The U.S.S.R. and Eastern Europe Agricultural Situation . . ., op. cit., p. 5.
[4] In bunker weight, i.e. as originally harvested, not cleaned or dried. Narodnoe khozyaystvo . . ., op. cit., p. 295.
[5] Preliminary USDA estimates.
[6] Sel'skaya zhizn', Feb. 3, 1966.
[7] SSSR v tsifrakh v 1965 godu, Moscow, 1966, p. 73.

INSIDE THE AGRICULTURAL INDEX OF THE U.S.S.R.

BY

ROGER E. NEETZ

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TABLES

INSIDE THE AGRICULTURAL INDEX OF THE U.S.S.R.

Summary

In view of the dynamic and continuing economic changes taking place in Soviet agriculture, it becomes increasingly important to reexamine and to review available data for measuring the economic position of this sector of the Soviet economy.

A major shortcoming for measuring the importance and efficiency of the agricultural sector has been the limited amount of data on the prices of agricultural products and on the quantity and value of material purchases by agriculture from other sectors of the economy.

The present study was undertaken to fill this gap. Two sets of Soviet agricultural price weights are compared and a determination of their applicability in the construction of an index is made. Price data used are those defined by the Soviet Union as uniform "comparable" prices and procurement prices.

The results of this study show that the uniform comparable price weights are the better of the two sets of price weights for approximating the Soviet valuation of gross agricultural production for 1 year or for a series of years. Additionally, the data can be used to estimate a net value added output of agriculture in fixed prices that conforms closely to the Soviet definition of net agricultural output. With these values it becomes possible to examine the economic efficiency of agriculture as viewed by the Soviets as well as to reexamine the current contribution of the agricultural sector to the overall economic growth of the Soviet economy.

I. Introduction

The numerous agricultural policy changes introduced during the Khrushchev period were not only designed to stimulate production but also represented a beginning effort to modernize the total agricultural plant. However, it is important to note that such changes as the upward shift in the proportion of total investment funds for agriculture, the upward adjustment of agricultural prices, and the long-term movement toward fixed wages for agricultural workers have necessarily made agricultural products more costly in relation to other goods and services in the U.S.S.R. In view of these policy changes it becomes increasingly important to refine existing economic guidelines for measuring the rate of change in output and to estimate a net ruble value of production that could be used to analyze the efficiency of agricultural production.

Although net agricultural indexes have been published in various studies in the United States, no effort has been made to relate them to Soviet indexes.[1] Moreover, since the numerous indexes were calculated

[1] Economic Research Service: 1966. The U.S.S.R. and Eastern Europe Agricultural Situation, Review of 1965 and Outlook for 1966, U.S. Department of Agriculture, March.
Johnson, D. Gale: 1963. "Agricultural Production," Economic Trends in the Soviet Union, A. Bergesen and S. Kuznets, Harvard University Press, Cambridge, Mass.
Joint Economic Committee, Congress of the United States:
1964. Annual Economic Indicators for the U.S.S.R., Washington, D.C., pp. 29–32.
1962. Willett, Joseph W., "The Recent Record in Agriculture," Dimensions of Soviet Economic Power, Washington, D.C., p. 98.

from various price weights, the computed values need adjustments when used in the analysis of Soviet national income.

The purpose of this monograph is to develop a methodology for calculating a net ruble value of agricultural production in fixed prices which would approximate the official Soviet version. While there are reasonable doubts about the adequacies of official Soviet statistics and using them for analysis,[2] these shortcomings are outweighed by the need to gain a better understanding of how the Soviets measure agricultural production.

II. Official Definitions and Concepts of Soviet Gross and Net Agricultural Production

The first postwar publication of an official index of agricultural production appeared in the Statistical Yearbook for 1958 and an extension of this index has been published in subsequent yearbooks. The index is defined as an index of the gross production of agriculture and is derived from the summation of the gross value of crops,* livestock,** flowers and decorative plants, and unfinished production—a vague term which is related to the value of work performed in the fall on crops that are harvested in the summer of the following year.[3]

The index of gross production of agriculture is calculated from official production data of crops and livestock at the so-called comparable uniform all-Union prices established by the Central Statistical Administration of the U.S.S.R.[4] Comparable prices for agricultural products have been defined as the average prices of the marketable and nonmarketable products of agriculture in a given base year. The average prices used in the official index include: 1951 base prices for the period 1950–56; 1956 base prices for the period 1956–58; and 1958 base prices for the years after 1958.

According to Soviet statements, comparable prices have been derived from the average procurement and market prices for both marketable and nonmarketable portions of farm production. A closer analysis, however, shows that a wide range of prices actually is used. For collective and state farms the average price of the marketable portion of agricultural products is based on the official sales price of such commodities to the state. State farm products, for example, are valued at the low procurement prices which existed during the noted years. In contrast, the prices of agricultural products produced on the household plots of collective farm members and other private plot holders are valued at the higher average free market prices.[5]

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[2] Foreign Agriculture: 1965. Walters, Harry E., Soviet Agricultural Statistics, Washington, D.C., March 22.
Kahan, Arcadius: 1963. "Soviet Statistics of Agricultural Output," Soviet Agricultural and Peasant Affairs, University of Kansas, Lawrence, Kans., pp. 134–168.
Richter, Luba O.: 1963. "Commentary on Soviet Statistics of Agricultural Output," Arcadius Kahan, Agricultural and Peasant Affairs, University of Kansas, Lawrence, Kans., pp. 161–168.
Volin, Lazar: 1951. Agricultural Statistics in Soviet Russia: Their Usability and Reliability, American Statistical Association, April–May.

*Crops include: grain crops, industrial crops, tubers, vegetables, melons, berries, fruits, feed, legumes, flowers, and decorative plants.

**Livestock include: the increase and accrual of liveweight of livestock and poultry and the value of livestock breeding, i.e., the amount of milk, wool, eggs, down, and honey.

[3] Kuparadze, G. Z.: 1960. Spravochnik ekonimista, Tiblisi, Izdatel'stvo, GSKhI.
[4] Ibid.
[5] Ibid.

For the nonmarketable part of production—that production used for personal consumption or for further production in agriculture—the average price of a commodity for collective and state farms is derived by estimating the cost of production of a particular commodity, but the price used for commodities produced on the private household plots is an average of the procurement and free market prices.[6]

Although this artificial determination of prices of agricultural commodities has been criticized by Soviet economists for its inaccurate reflection of the actual costs of production, the concept of comparable prices appears to be the basis for computing the gross value of agricultural production of the U.S.S.R.[7]

Since the concept of gross agricultural production in the Soviet Union includes the value of all agricultural commodities, some portions of crop production in effect are subject to a double count. Gross agricultural production accordingly is calculated without deducting the value of products that are used for further production in agriculture within the same or other farm enterprises; e.g., seed, livestock feed, etc. The value of livestock feed, for example, is counted not only as part of the gross of field crops but also as a part of the gross production of animal products.

Because of such double counting, the Soviet aggregative data of agricultural production cannot be used for the many purposes of economic measurement and comparisons customarily employed by Western economists. That Soviet economists are aware of this shortcoming is evidenced by the fact that net agricultural production is calculated for inclusion in the total national income, although there is no official record that a net ruble value of production in fixed prices for a series of years has been published.

The net index of agricultural production, according to an official Soviet definition, represents that part of the value of gross production which has been created by labor, and is calculated as the difference between the value of gross agricultural production of a given year and the value of all material expenditures for the production of agricultural products in the accounting year.[8] The net agricultural production, thus defined, conforms more nearly with the western concept of net value added and, if published, would be an invaluable guide for a deeper analysis of the agricultural sector of the Soviet Union. Lacking data the problem becomes one of developing a methodology for calculating a net value added index in fixed prices which would approximate the official Soviet index.

III. Components of the Gross Agricultural Production Index

Because of the wide acceptance in academic circles that Soviet agricultural statistics are generally inflated, little attention has been given to developing a gross and net production index employing Soviet statistics and methodology. Alternatively, changes in Soviet agricultural production have been analyzed from data that are based on the estimated production of the 11 most important agricultural crops and animal products, including changes in inventories of livestock.[9]

[6] Ibid.
[7] Grushetskiy, L.: 1963. Planovoye khozyaystvo, No. 6, June, pp. 64-70
[8] Op. cit., 3.
[9] Op. cit., 1, Johnson and Willett, Economic Research Service, USDA.

State procurement prices paid to collective farmers in 1958 were used to weigh the components in the Johnson and Willett indexes and average West European prices for 1957–59 for the USDA index. In order to avoid double counting of commodities used in the production of other agricultural products, deductions were made for the amounts of grain, potatoes, and milk fed to livestock and for the amounts of grain and potatoes used as seed. The indexes constructed from the data were defined as net of the gross amount after deductions of agricultural products consumed or wasted in the further production of agricultural products, and have been used principally to estimate the direction of change in agricultural production over a period of time.

The usefulness of these indexes is limited by their incomplete coverage of agricultural production, by the absence of deductions of the value of material purchases from other sectors of the economy, and consequently by the inability to directly compare them with Soviet measures.

Since the objective of this monograph is not to debate the validity of Soviet statistics, but rather to approximate the net ruble value of output that would be similar to official data, the primary need to reach his objective was to find production and price data of the commodities used by the Soviets in their official calculation of gross agricultural production and to use this base for developing a net ruble value of production.

Official production data for most of the commodities used in the calculation of the official gross production index is readily accessible in official yearbooks. Price data that would fit the Soviet definition of comparable uniform prices were more difficult to locate. Most of the price weights finally used were those derived from an article on "The Methods of Calculating Comparable Prices for Farm Produce," published in Planovoye khozyaystvo.[10]

The published comparable prices for 1958 and the calculated weights in relation to a metric ton of grain are shown in table 1. These prices were combined with the official production data of 15 agricultural field crops,* major livestock products,** and changes in livestock inventories to compute the gross value of agricultural production for the years 1953 through 1965.

The results of this exercise, which are shown in table 2, indicated that the calculated gross value of production for the noted years compared very favorably with the official values. The calculated index also moved in the same direction in nearly all years and the magnitude of change from year to year is reasonably close to the official index.

Additionally, the calculated gross value of production, except for 1953, was always less than the official data. Separate calculations of crop production and livestock production, moreover, indicated values that were consistently lower than official data. This statistical discrepancy can be partially attributed to the incomplete coverage of crops and livestock products, the omission of unfinished fieldwork, the use of a standard conversion factor for estimating the slaughter

[10] Op. cit., 7.

*All grain, sunflower seed, sugarbeets, raw cotton, flax fiber, flaxseed, potatoes, grapes, tea leaves, tobacco, makhorka, vegetables, fruits and berries, hay and straw.

**Meat, including poultry; milk, eggs, and wool.

weights of livestock, and the lack of precise data for the various grades of livestock products.

A second index was made by using the 1958 official procurement prices paid for agricultural products produced on collective farms. Although these prices do not fit the definition of "comparable" prices, they have been used before as price weights, for example, in the indexes constructed by Johnson and Willett. The gross value of production, calculated from these prices, is lower than that obtained by using the 1958 "comparable" price weights, see table 2. Moreover, the index computed with the "comparable" prices is generally closer to the official index than is the index computed with procurement prices. Therefore it seems that the "comparable" prices reproduced in table 1 at least closely approxmiate the prices used by the Soviets in computing the official index of gross agricultural production.

IV. Building a Net Value Added Index

The construction of a net value added index from the previously calculated value base required two steps. The first was to estimate the production of each agricultural commodity consumed or wasted by the agricultural sector to obtain a net value of production, and the second to determine the value of the inputs purchased by agriculture from other sectors. The value of these purchased inputs was then deducted from the net value of production to arrive at the estimated net value added.

Basic to the first step was the acceptance of the 1958 comparable prices as the best choice of price weights as well as the acceptance of the feed rations, spoilage, and waste factors developed in USDA studies of Soviet agriculture. A 10-percent waste factor was also applied to the gross production of vegetables and fruits and berries, but no waste or loss was considered for flax seed, tea, tobacco, and makhorka. The results of the first step are shown in table 3, which presents the calculated data in the form of two indexes, one representing a calculated gross value of production and the other representing a calculated net value of production. The latter is defined as being net of the calculated gross after deducting the percentage value of agricultural products consumed or wasted in the further production of agricultural products. An additional calculation in the same table also shows the value of these deductions as a percentage of total gross production.

From the data in table 3 it can be seen that the movement and magnitude of change of the two indexes are very similar for the years up through 1958. A break in the direction of the two indexes, however, developed in 1959 and this is reflected in the upward shift in the percentage of agricultural production consumed and wasted in the agricultural sector after 1958 though 1960. While it is difficult to find Soviet data to check the estimates of losses over a period of years, it can be shown that the calculated percentage of consumption and waste by the agricultural sector for 1959 is approximately 18 percent higher than that of the official 1959 estimate made by the Soviets for the input-output flow table published in 1960.[11] Although this single check is inadequate to draw positive conclusions, the con-

[11] 1960. Narodnoe khozyaystvo SSSR v 1960, Moscow, pp. 136–143.

siderable error suggests that the agricultural sector may have been credited in the Soviet accounts with a value for waste, harvested loss, and spoilage; i.e., the "bunker weight" output of crops is being valued despite the fact that part of this is excess moisture, trash, and dirt.

There may be some question of the comparability of the prices derived from the Soviet input-output flow table, particularly since this flow table was constructed in terms of 1959 final purchaser's prices; e.g., prices which include transportation margins as well as turnover taxes. But after deducting the transportation and distribution margins in the input-output study, the gross value of agricultural production in terms of 1959 final purchaser's prices amounted to 50.1 billion rubles as compared to the officially reported value of 49.6 billion rubles.

Estimates of the cost of material purchases from other sectors have been made only for the period 1958 through 1965. The major source of information for estimating the cost of material purchases was the above-mentioned input-output study, table 4. Average prices paid for material inputs were calculated from this data. These prices were then applied to changes in the consumption of material inputs for the years noted (1958–65).

Because official data on the consumption of material inputs for agriculture are limited, some estimates were made. It is believed, however, that these estimates will not adversely affect the aggregative cost of material inputs in a single year.

Official data are available for the consumption of mineral fertilizers and electric power. The consumption of oil and lubricants is an estimate.[12] Feed products produced by the food processing industry include the aggregated quantity of milled byproducts, oil meal and cake, and the pulp of sugarbeets. Milled byproducts have been estimated from the total flour production for a single year;* oil meal and cake is the residual after the processing of sunflower seed for oil;** and beet pulp has been estimated at 50 percent of the raw crop by weight, containing 8 to 10 percent dry matter. Official data on the horsepower of trucks and tractors available to agriculture has been used as a substitute for estimating the cost of spare parts.[13] It has been assumed that a direct relationship exists between the amount of horsepower and the cost of replacements. The number of trucks, tractors, and combines were used as a substitute for calculating the cost of repairs. Again a direct relationship between the number of units of equipment and the cost of repairs was assumed.

It has been estimated that the total amount of these selected inputs in any single year amounted to approximately 87.8 percent of the total value of all material purchases by agriculture.†

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[12] 1964. Yedinyy energeticheskiy balans narodnogo khozyaystvo. Moscow, pp. 296–307.

*Extraction rate of flour has been estimated at 80 percent and the residual used as an estimate for byproducts.

**Extraction rate of sunflower seed has been estimated as 35 percent and the residual used as an estimate for cake and meal.

[13] 1965. Narodnoe khozyaystvo SSSR v 1964. Moscow, pp. 378–380.

† Estimate based on value data of input/output study made in 1959. Projections through 1965 assumed that the value of other inputs increased at the same rate as the increase of selected inputs. Included in this group are glass, rubber, paper, sheet metal, lumber products, metal products, electrical machinery, and other chemicals.

The final estimates of the cost of nonagricultural purchases derived from this methodology indicated that the total volume of purchases increased at the rate of 6.1 percent per year during the 1958–65 period, and that the total costs of all inputs ranged from 9.5 to 12.7 percent of the gross value of agricultural production during the same time period.

V. Conclusion

The preliminary estimates of the net value added to production by agriculture and an index calculated from this data are shown in table 5. The most significant estimate is the percentage decline in production for 1963. Since the net value added derived by the outlined methodology follows Soviet practices and concepts, it is believed that the results would not only be in close harmony with the official Soviet estimates of net agricultural production but also that this data could be used to make preliminary measurements of the performance of agriculture.

It may be pointed out that where statistical checks of official data could be made, the results show that the final estimate of the net value added appeared to be within a tolerable range of statistical error. Official data of net agricultural production in 1958, presumably in 1958 prices, for example, show that the net value of agricultural production in the national income account amounted to 30.5 billion rubles and that the calculated percentage difference between the official gross agricultural production and net agricultural production in constant 1958 prices amounted to 37.1 percent.[14] The estimated net value added for the same year amounted to 30 billion rubles and the percentage of waste, consumption by the agricultural sector, and material purchases amounted to 38.1 percent.

The index of value added does not always move in the same direction as the index of gross output and the magnitude of change of the two indexes differs.

Observations made from the compiled data of the net value added production show that the index of value added does not always move in the same direction as the index of gross output and that the magnitude of change of the two indexes differs substantially in some years. The net value added index thus appears to be a better indicator of the true state of agricultural production. Moreover, the upward movement in the value of material purchases by agriculture from other sectors after 1958 allows for some judgment of the cost involved in raising the level of agricultural output.

Although this first estimate of a net value added output is not without statistical shortcomings, its intended use is to provide an alternative tool to measure agricultural production in the Soviet Union during this period of change and controversy over prices paid for agricultural products, farm wages, and even the more recent arguments for introducing the concept of land rent.*

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[14] 1965. Narodnoe khozvaystvo SSSR v. 1964, Moscow, p. 577. 1962. Problems of Economics, International Arts and Science Press, August, Inter-Branch Balance and its Use in Planning; L. Berri, F. Yotsvog and S. Shatalin. Inter-Branch Balance of the Soviet Product and its Economic Content; M. Eidelman.

*Because land and capital, with minor exceptions, belong to the state, these factors of production are not compensated in the explicit factor payments recorded in money flows, aside from minor exceptions, such as rent of state housing and interest on bank deposits.

TABLE 1.—*Prices and price weights used for the construction of gross agricultural production index in the U.S.S.R.*[1]

Commodity	Uniform comparable prices 1958 (rubles per metric ton)	Weights in terms of grain
Grain	58.0	1.
Sunflower seeds	167.7	2.9
Sugarbeets	22.5	.3
Raw cotton	321.6	5.6
Flax fiber	1,512.0	26.3
Flax seed	381.4	6.6
Potatoes	80.0	1.4
Other vegetables [2]	80.0	1.4
Fruits and berries [2]	266.8	4.6
Grapes	372.0	6.4
Tea leaves	766.5	13.5
Tobacco	1,158.8	20.
Makhorka	448.3	7.8
Hay	338.9	.7
Straw	4.4	.07
Cattle [3]	552.0	9.5
Sheep and goats [3]	659.5	11.4
Hogs [3]	889.0	15.3
Poultry [3]	1,601.1	27.7
Milk	123.6	2.1
Eggs [4]	77.7	1.3
Wool	2,372.2	40.9

[1] Planovoye khozyaystvo, No. 6, June 1963, pp. 64–70.
[2] Estimated from data in Sbernik sprayvochnikh materialov diya kolkhozov, Moscow, 1959.
[3] The price per ton of meat is determined from the weight on the hoof; estimated price of slaughter weight of all livestock was calculated from slaughter factors and amounted to approximately 1,212.2 rubles per metric ton.
[4] In thousands of units.

TABLE 2.—*Official gross value of agricultural production and index of production compared with calculated values and indexes*

Year	Billion rubles			Official index (1953 = 100)	Annual rate of change	Calculated index of comparable prices (1953 = 100)	Annual rate of change	Calculated index of procurement prices (1953 = 100)	Annual rate of change
	Official gross production [1]	Calculated gross production in comparable prices	Calculated gross production in procurement prices						
1953	32.3	32.3	29.6	100	----------	100	----------	100	----------
1954	34.2	33.4	30.6	106	+6.0	103	+3.0	103	+3.0
1955	37.6	36.8	35.9	116	+10.0	114	+10.7	121	+17.4
1956	42.6	42.2	38.8	132	+13.0	131	+14.9	131	+8.3
1957	44.1	42.2	39.4	137	+3.8	131	+1.6	133	+1.5
1958	48.5	47.0	44.6	150	+10.0	146	+11.4	151	+13.5
1959	48.7	47.0	44.1	151	+.7	146	+.7	149	−1.3
1960	49.8	47.6	45.0	154	+2.0	147	+.7	152	+2.0
1961	51.3	48.4	46.0	159	+3.2	150	+2.0	155	+2.0
1962	51.9	48.4	46.9	161	+1.3	150	+.0	158	+1.9
1963	48.0	43.6	42.5	149	−7.5	141	−6.0	144	−9.4
1964	54.9	50.5	48.6	170	+14.1	158	+12.0	164	+13.9
1965	55.3	52.0	49.6	171	+.6	161	+1.9	168	+1.0

[1] SSSR v tsifrakh, 1965, Moscow, 1966, p. 70.

TABLE 3.—*Comparison of indexes of calculated gross and net production and the percentage of production consumed and wasted by the agricultural sector*

[In comparable prices]

Year	1953=100		Percent consumed and wasted
	Index of gross production	Index of net production	
1953	100	100	28.2
1954	103	104	27.6
1955	114	117	26.6
1956	131	130	28.4
1957	131	131	28.3
1958	146	145	28.6
1959	146	143	29.4
1960	147	144	29.9
1961	150	153	26.8
1962	150	152	27.3
1963	141	141	24.9
1964	158	160	26.4
1965 [1]	161	160	28.5

[1] Preliminary.

TABLE 4.—*Percentage distribution of material purchases by agricultural sector in 1959*

Producing sector:	*Percent of total value*
Metal products	0.4
Coal	0.2
Oil	21.5
Other fuels and electric power	1.8
Electrical power machinery, equipment, and tools	1.1
Spare parts for agricultural machinery and trucks	3.7
Sheet metal	3.2
Repairs for all equipment	21.1
Fertilizers	7.3
Other chemicals	1.1
Lumber products	3.0
Feed concentrates and other feed products	32.4
Other products (glass, rubber, paper)	3.2
Total	100.0

[1] Narodnoe khozyaystvo SSSR, 1960, Moscow, 1960, pp. 136–143. Does not include capital outlays for the purchase of fixed capital. Estimates of fixed capital outlays in 1959 amounted to 5,100,000,000 rubles.

TABLE 5.—*Estimated net value added production of agriculture in the U.S.S.R., 1958–63 comparable prices*

Year	Official gross production (billion rubles)	Index (1958=100)	Less feed, seed, and waste (billion rubles)	Percent of gross production	Less purchases from other sectors (billion rubles)	Percent of gross production	Estimated net value added production (billion rubles)	Index (1958=100)
1958	48.5	100	13.9	28.6	4.6	9.5	30.0	100
1959	48.7	100	14.3	29.4	4.9	10.1	29.5	98
1960	49.8	103	14.9	29.9	5.0	10.0	29.9	100
1961	51.3	106	13.7	26.8	5.3	10.3	32.3	109
1962	51.9	107	14.2	27.3	5.7	11.0	32.0	107
1963	48.0	101	12.0	24.9	6.1	12.7	29.9	100
1964	54.9	113	14.5	26.4	6.6	12.0	33.8	113
1965 [1]	55.3	114	15.8	28.5	7.0	12.7	32.5	108

[1] Preliminary estimate.

Section 4. Consumption

RECENT TRENDS IN CONSUMPTION AND DISPOSABLE MONEY INCOME IN THE U.S.S.R.

BY

David W. Bronson and Barbara S. Severin

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RECENT TRENDS IN CONSUMPTION AND DISPOSABLE MONEY INCOME IN THE U.S.S.R.

I. Introduction

One of the basic measures of the performance of an economic system is its success in providing for the material welfare of its members. With such ringing phrases as "Everything for man, for welfare!" [1] Soviet ideologists constantly proclaim communism's superiority in this respect. Certainly one of the principal aims of Soviet policy is to raise the level of living of its citizenry. However, this goal must compete for the allocation of resources, with the demands for military and space programs and for modernization of plant and equipment throughout the economy. Because of its control over economic resources, the regime can manipulate the annual share of gross national product (GNP) allocated to consumption. In addition, through its investment policies the regime can determine the level of inputs for those sectors of the economy that directly supply the consumer—the light and food industries, agriculture, and services.

The formulation of a policy for allocation of resources among the major claimants—consumption, defense, and investment—is intertwined with the whole fabric of Soviet domestic and foreign policy. In the absence of Stalinist repression, the leadership must heed to some extent the popular expectations of a better life. Moreover, the prosperity of the industrial West continues to whet the appetites of Soviet consumers for more rapid progress. Growing contact with the West presumably accelerates this process.

II. Trends in Consumption

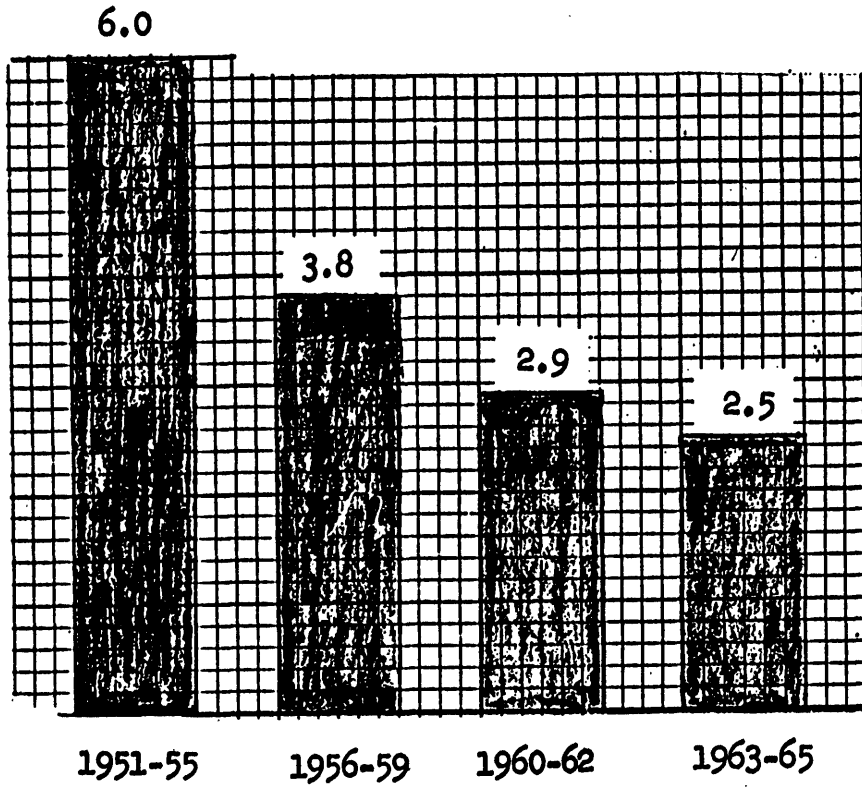
The Soviet population lives markedly better in the mid-1960's than it did at the end of the postwar reconstruction. Between 1950 and 1958, per capita consumption grew at an average rate of over 5 percent per year, but since 1958 the rate has fallen by one-half.* (See fig. 1.) Nevertheless, Soviet consumption per capita has increased from 27 percent of U.S. consumption per capita in 1955 to 31 percent in 1964.

With respect to the major categories of consumption, the annual rate of increase in the consumption of food has been low and declining over time; that of services has been steady and somewhat higher than that for food; that of soft goods has been greater still but has slowed

[1] Sovetskaya torgovlya, July 10, 1965, p. 1.

*Some part of this decline may have been offset by better quality of goods and services. Despite the myriad complaints concerning the quality of goods, observers agree that both variety and workmanship of consumer products have improved noticeably in recent years.

FIGURE 1.—USSR Average annual rates of growth in per capita consumption, 1959–1965 [a]



[a] Derived from the index of consumption, Appendix A.

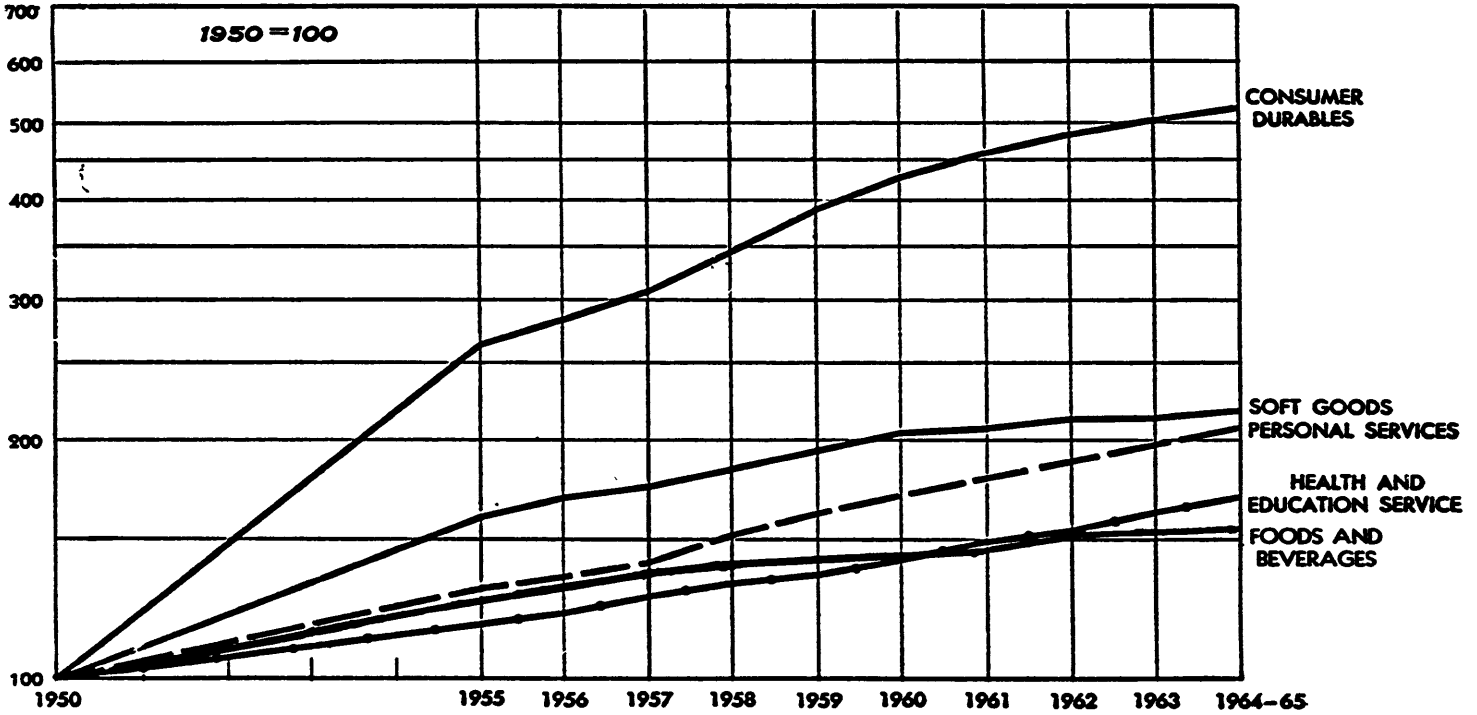
down appreciably; and that of durable goods has grown most rapidly. (See fig. 2.)

A. FOOD AND BEVERAGES

Soviet citizens consume on the average about 3,100 calories per day, or about the same as in the United States. This level, reached by 1953 and maintained since, is adequate for the energy requirements of the Soviet populace. But along with the expansion in real incomes of the population since 1955, the demand for better quality food such as meat and eggs, more variety, and more conveniences has grown. In these respects, changes in the daily diet have not matched consumer expectations. Table 1 shows the trends since 1950 in per capita consumption of the major categories of food.

FIGURE 2.—USSR: Index of Growth in Per Capita Consumption by Major Component 1950–65 [1]

(Plot according to table 8)



[1] See Appendix A for a discussion of the nature of the data used to derive the indexes and the method of construction.

TABLE 1.—*U.S.S.R.: Average annual rates of growth in per capita consumption of food, 1951–65* [1]

[In percent]

	1951–58	1959–65
All food	4.2	1.7
Animal products	4.8	2.2
Processed foods	8.4	4.3
Basic staples	0.4	−1.2

[1] Separate foods were aggregated by use of price weights. Animal products include meat, fish, milk and milk products, and eggs. Processed foods include canned goods, macaroni, margarine and vegetable oil, sugar and confectionery, beer, wine, champagne, and vodka. Basic staples include vegetables, potatoes, and bread and flour.

Per capita consumption of basic foods such as bread and potatoes fell absolutely after 1955 as the supply of animal products and processed foods such as sugar, canned goods, and beverages increased rapidly. After 1959, however, the demand for more meat and dairy products was thwarted by the failure of domestic supply to maintain previous rates of expansion and the unwillingness of the regime to authorize imports. As a result the rate of increase in per capita availability of animal products declined by more than one-half during 1959–63. Beginning in 1964, however, the decline in this growth rate apparently was halted.

As incomes rise, consumers tend to substitute animal products, vegetable oils, fats, sugar, and other "quality" foods for the starchy staples such as potatoes and grains. A change in the share of calories derived from starchy foods, the so-called starchy-staple ratio, therefore, is a good indicator of the changes in the quality of diet that have occurred in the U.S.S.R. In 1953, 70 percent of the caloric content of the average Soviet diet originated in starchy food, 15 percent in animal products. By 1960 the percentage of calories from starchy foods had dropped to about 62 percent (compared to 24 percent in the United States [2]) while animal products supplied almost 20 percent, a decided improvement in diet. From 1960 to 1964, the starchy-staple ratio held nearly constant. But following a large boost in production of meat and milk in 1965, increased availabilities of these foods reduced the starchy-staple ratio to 57 percent.

B. SERVICES

Housing is a particularly vexing problem for the Soviet consumer. Rapid urbanization and low rates of investment in new housing combined to hold per capita living space* for the entire country static during the early 1950's at slightly more than 5 square meters. The new Khrushchev government pledged itself to "overcome the housing shortage," and in 1957 increased state investment plus encouragement of private home building led to a sizable boom. But these policies were both short-lived, and by 1964 the level of investment in housing con-

[2] U.S. Department of Agriculture, "U.S. Food Consumption," Statistical Bulletin No. 364, p. 65.

*Living space is defined in the U.S.S.R. to include living rooms, dining rooms, and bedrooms; it does not include bathrooms, kitchens, hallways, and corridors.

struction was 11 percent below the peak achieved in 1959. Housing space constructed during the 7-year plan (1959–65) fell 30 percent short of the target of nearly 1 billion square meters. Per capita living space in 1965 was about 6½ square meters, far short of the officially designated minimum norm of 9 square meters and less than half the available space per capita in Austria or West Germany.[3]

Although there has been no striking improvement in the per capita supply of living space, there has been an appreciable improvement in personal privacy. Rooms are smaller, thus fewer people per room, and most new state-built apartments now include private baths and kitchens. In addition to new building, much of the reconstruction of old buildings emphasizes creation of smaller, more rationally planned apartments.* However, in Moscow alone, 40 percent of the housing in 1964 was obsolete by Soviet standards, with tenants forced to use community kitchens and bathrooms.[5]

The other services have advanced steadily. Household expenditures for utilities continue to grow, although a large backlog of demand for provision of gas and electricity remains. The population has also used an increasing share of its growing income for transportation, personal care, and repair services. During the past few years the planners have placed great emphasis on increasing the number of clothing and appliance repair shops, laundries, drycleaners, and other service outlets. In part, this policy stems from the increasing stocks of consumer durables and the desire of the regime to rely on commercial channels for the performance of chores formerly done in the home.

Communal services—health, education, and other "free" services (museums, libraries, and the like)—amount to 10–14 percent of total consumption. Achievements in health and education have been impressive, as shown by the comparative indicators in table 2. The quality of many communal services, however, is below U.S. standards, the degree varying from field to field.

TABLE 2.—*U.S.S.R. and United States: Comparative indicators of health and education services, selected years, 1950–64*

	U.S.S.R.[1]			United States,
	1950	1958	1964	1964
Doctors (per 10,000 persons)	13.2	16.8	20.5	14.7
Hospital beds (per 10,000 persons)	56	74	94	[2] 88
School enrollments (thousands)	34,752	31,483	46,664	[3] 41,417
Number of teachers (thousands)	1,475	1,900	2,435	[3] 1,651
Number of students per teacher	23.6	16.6	19.2	25.1

[1] "Tsentral'noye statisticheskoye upravleniye," Narodnoye khozyaystvo SSSR v 1964, Moscow, 1965, pp. 667–68, 773 (hereafter referred to as N.kh. 1964, or for other years in the series of official Soviet statistical yearbooks).
[2] Hospital's Guide, Aug. 1, 1965, pt. II, p. 450.
[3] U.S. Statistical Abstract, 1965, p. 120.

[4] U.N. Economic Commission for Europe, "Annual Bulletin for Housing and Building Statistics for Europe," Paris, 1963, pp. 6, 7, 12, 38.
*Discussing the reconstruction of 1 old building in Moscow, a recent article noted that where 5 or 6 families formerly lived in 1 apartment and shared the kitchen, after reconstruction each family had an individual apartment with private kitchen.[4]
[4] Vechernaya moskva, Jan. 15, 1966, p. 4.
[5] Stroitel'naya gazeta, June 23, 1965, p. 3.

C. SOFT GOODS

Per capita consumption of soft goods—mainly fabrics, clothing, and shoes—increased at an annual rate of about 8 percent between 1950 and 1959. Since 1959, the rate of growth has slowed to an average of 2 percent per year. This decline appears to be due in large part to increasing consumer resistance to poor quality and inappropriate assortment of clothing and shoes.

Although the overall rate of increase in consumption of soft goods has fallen, consumption of some kinds of soft goods has been maintained at a high rate. For instance, in 1964 sales of ready-made clothing were more than four times the level of 1950. On the other hand, sales of fabrics increased by only 1½ times, reaching a peak in 1960 and declining absolutely in volume in the early 1960's. This difference reflects a significant shift from home production to the purchase of factory-made clothing.

D. CONSUMER DURABLES

During 1951–58 production of consumer durables increased at an average rate of 16½ percent per year, declining to 8 percent per year during 1959–65. From slightly more than one-fourth of total sales of nonfood goods in 1950, durables moved up to almost 40 percent in 1963.[6] Stocks of consumer durables on a per capita basis remain very low because of the negligible level of stocks in the base period and, possibly, because of the relatively short service life of Soviet-made durables. Comparisons of the stocks of durables in the U.S.S.R. and the United States are shown in table 3. Even these comparisons result in substantial overstatement, considering the lower quality of Soviet durables and the absence of an estimate for retirements for the U.S.S.R.

TABLE 3.—*U.S.S.R. and United States: Estimated stocks of selected consumer durables, selected years, 1955–64*

[Units per thousand persons]

	U.S.S.R.				United States
	1955	1958	1960	1964	1963
Sewing machines	31	64	92	n.a.	[1] 135
Radios [2]	66	105	130	161	974
Television sets [2]	4	12	22	56	318
Motorcycles and scooters	4	8	13	23	4
Refrigerators	5	8	13	27	288
Washing machines	1	6	13	47	216
Electric vacuum cleaners	2	5	8	18	211

[1] Electric only.
[2] Based on official figures.

E. PROBLEMS IN THE CONSUMPTION SECTOR AND LEADERSHIP RESPONSE

The improvement made to date in consumption is far from sufficient, nor are the problems in maintaining and expanding supplies of consumer goods easy to solve. The leadership has been particularly con-

[6] Sovetskaya torgovlya, Moscow, 1964, pp. 68–69.

cerned about the failure of agriculture to provide the minimum output required for self-sufficiency in food, necessitating the import of large quantities of grain.* Clearly, more resources had to be committed to the output of foodstuffs. In addition, there has been a persistent piling up of inventories of various kinds of consumer goods. The Soviet consumer, having achieved a standard of living above the minimum subsistence level, has shown great reluctance to purchase the available supply of clothing, shoes, and other soft goods despite the ever-increasing level of his money income and savings. At the same time there exists a large pent-up demand for some consumer durables, as shown by the long waiting lists at retail outlets. Finally, the transition to an urban society has not been supported by adequate provision of housing, utilities, repair services, and other amenities taken for granted in Western Europe.

1. The unsatisfied demand for food

Progress in improving consumption of food has become stuck on that part of the leadership's program calling for a better and more varied diet. Although real incomes of the Soviet population have increased appreciably over the past 15 years, the diet has not improved commensurately, nor has the share of income spent on food declined. Households in the U.S.S.R. spend about one-half of their total income for food, compared with less than 20 percent of take-home pay spent by the average U.S. citizen.[7] The unsatisfied demand for high-quality foodstuffs, especially animal products and fruits, finds expression in the continued high prices for these items in the collective farm markets (CFM), where prices reflect changes in demand and supply. Although the proportion of foodstuffs purchased in state stores has been increasing since 1950, the collective farm market continues to play an important role in supplying the population with items in short supply in state outlets—usually perishable foods such as vegetables, fruits, and animal products.

The new leadership has recognized the importance of the CFM, both as a source of supply for the consumer and as a source of income for peasants and collective farms. In May 1965 a liberalization of the rules of trade in the CFM was announced.[8] All price ceilings were lifted, funds were made available to modernize and expand existing markets, and to construct new ones. In addition, measures were taken to improve the transportation of surplus agricultural products to the market. As a result, in 1965 quantities sold in the CFM increased and prices were down by 6 percent.[9]

2. The slowdown in the rate of growth of consumption of soft goods

The decline in the growth of consumption of soft goods as a whole can be traced in large part to the stagnation in physical volume of sales in spite of a moderate growth in overall production. Repeated price cuts for various commodities, particularly cloth, have failed to increase

*Following the disastrous harvest of 1963, the Soviet Union imported about 11 million metric tons of wheat and flour. The good 1964 harvest did not permit an adequate margin for rebuilding depleted stocks, and the poor climatic conditions in 1965 which resulted in another harvest shortfall again forced substantial imports. In contrast to the situation in 1963, however, the quality of bread apparently did not fall (see sec. V).

[7] U.S. Department of Agriculture, "National Food Situation," November 1965, p. 5.

[8] Sovetskaya torgovlya, May 20, 1965, p. 1.

[9] Izvestiya, Feb. 3, 1966, p. 2.

the volume of sales significantly. As a result, a severe problem of inventory accumulation has arisen. Inventories more than doubled from 1959 to 1964, whereas retail sales increased by less than 30 percent (see table 4). At the end of 1964, retail inventories of soft goods were 12.7 billion rubles, more than half as large as total retail sales of soft goods in that year.*

TABLE 4.—*U.S.S.R.: Retail sales and inventories of soft goods, selected years, 1950–64*

BILLION RUBLES

	1950	1952	1958	1960	1963	1964
Sales [1]	9.5	10.8	18.7	21.8	23.3	23.9
Inventories [2]	2.3	4.2	5.8	8.3	11.7	12.7

INDEX (1950=100)

Sales	100	114	197	229	245	252
Inventories	100	183	252	361	509	522

[1] N.kh., 1964, p. 630 except 1952 from N.kh., 1962, p. 521.
[2] N.kh., 1964, p. 637 except 1952 from N.kh. 1962, p. 527.

The difficulty of bringing production and consumption of a given commodity into equilibrium in the U.S.S.R. arises primarily because neither production nor price reacts adequately to changes in demand. The state retains control over the total volume of consumer supplies. Moreover, within the limits of resources devoted to consumption, planners and enterprises do not adjust to changes in consumer demand. Enterprise managers hesitate to innovate when changes may increase the risk of underfulfilling the plan; rather than do so, they will resort to production of goods that they know are unwanted. In recent years the regime has adopted increasingly radical measures in an attempt better to match supply and demand. Although some price cuts on hard-to-sell consumer goods, such as certain clothing, shoes, and household appliances, were announced at the end of 1964, the problems of excess inventories did not appear to be diminishing after the first quarter of 1965. Further retail price reductions, ranging from 6 percent for certain types of clothing to 30 percent for some fabrics in excess supply, were announced in the latter part of April. Simultaneously, the rural-urban price differential on some goods was abolished ** in the hopes that it would encourage rural consumers to purchase more of the goods in excess supply.

Another approach to the problem of matching supply and demand, watched with interest by both Soviet and Western observers, is the experimental establishment of direct contractual relations between factories and retail outlets.*** These were first tried in the Bol'shevik and Mayak clothing firms and were then extended to some 400 clothing, shoe, textile, and leather plants, and in October 1965, into the food industry. In order to be successful the experiments must assume that

*For a fuller discussion of the Soviet inventory problem, see Marshall Goldman, "The Reluctant Consumer and Economic Fluctuations in the Soviet Union," in the Journal of Political Economy, August 1965, p. 366.
**The rural-urban price differential was completely abolished in January 1966.
***Begun under Khrushchev, these experiments not only have been permitted by the new regime to continue but have been expanded. For a more detailed account of these experiments see the paper by Imogene Erro in this volume.

managers of retail outlets are familiar with customer desires and have the necessary incentives to balance sales with purchases. Finally, there must be an arrangement whereby the factory managers are penalized for not producing the assortment reflected in the retail orders. The results of the new system are, as yet, inconclusive. However, the mere fact that the experiment has been extended suggests, at least, that the leadership believes the consumer must be allowed to have a greater influence on the assortment of goods.

3. The pent-up demand for consumer durables

Unsatisfied demand for consumer durables confronts the planners with a different problem from that in the soft goods sector—competition with producer and defense durables for machine-building capacity. Although current production of consumer durables is only 10 percent of total production of all machinery and equipment, the potential impact on the Soviet economy of a shift toward their production is enormous. So far the leadership's solution to the surplus demand has been to use artificial restraints (for example, to freeze waiting lists for automobiles) or to arbitrarily restrict the extent of the market. Thus, in the past there has been no intention to provide a car for each family; the 1964 stock of cars indicates a ratio of 1 car for every 250 people in the U.S.S.R. (compared with 1 car for fewer than 3 people in the United States).[10] Rather than supply each household with domestic appliances, the regime in the past has talked of and has supplied some rental centers and laundromats. In addition, crowded housing conditions and a restricted supply of electricity help to hold back demand for large household durables. Finally, discontent with the quality of various consumer durables and the difficulty in getting repairs done promptly and correctly, or even done at all, undoubtedly has curtailed demand. Because enterprises lack incentive to respond to consumer demand and because of the relatively low priority given producers for allocation of high-quality materials, machinery, and manpower to the production of consumer durables, poor quality and lack of assortment have been especially pronounced.

Nevertheless, a strong demand for selected durables continues to exist. New waiting lists for car purchases were opened in mid-1963 (the previous lists had closed in 1956), and within a very short time hundreds of Moscovites had signed up in spite of relatively high prices.* Just how high car prices are was made clear when it was revealed that a Volga costs just under 1,000 rubles to produce.[11] It costs a Soviet citizen about 5,500 rubles to purchase that Volga. Waiting lists are also evident for other durables. In mid-1964, for example, store clerks were estimating a waiting period of 3 to 4 years for the more desirable refrigerators. In view of the rapid increase in production, it is quite likely that queues shortened during 1965, but a wait is still necessary for the larger, more desirable models. Washing machines now are readily available in larger cities but rural areas are not so well supplied.

The supply situation for vacuum cleaners, popular brands of television sets (including the lower priced models), and transistor radios

[10] Statistical Office of the European Communities, "Basic Statistics of the Community," Brussels, 1965, p. 150.

*The current ruble-dollar price ratio for cars averages about 2 to 1 compared with 1.3 to 1 for food and 0.9 to 1 for all consumer goods and services as a whole (the geometric average of ratios using Soviet and United States weights).

[11] Pravda, Dec. 26, 1965, p. 2.

is relatively better with regard to both quality and quantity. Despite the increasing availability of various durables, however, sales of certain items—sewing machines, watches, bicycles, and cameras—have actually declined in recent years. Moreover, the planners have had only limited success in correcting the imbalance of supply and demand for the several types of durables in surplus inventory. Price reductions and the offering of installment credit have failed to raise sales significantly.

The new 5-year plan (1966–70) set a few goals for consumer durables production—television output is to double, refrigerator output is to triple, and the gross value of furniture output, currently 1.8 billion rubles is to increase by more than 50 percent. Even if these goals are met, stocks per capita of these goods will remain considerably below stocks in the United States. Most striking, however, is the plan to increase production of passenger cars at an average annual rate of 30 percent compared to 8 percent per year since 1960. Nevertheless, this means producing only 700,000 to 800,000 cars in 1970 (less than one-tenth of 1965 U.S. production), a quantity that will not satisfy all of the would-be customers.

4. The inadequate expansion of the service sector

Urbanization and the increase in disposable money income have placed a strain on retail facilities and on the provision of personal services, medical, and educational services, transportation, and communications. In addition, plans for increasing the number of laundries, public baths, and hairdressing and barber establishments are continually underfulfilled. Moreover, the growing stock of consumer durables, coupled with their low quality, requires a major expansion in the repair network. A casual survey of the daily press discloses a flow of articles and letters detailing the inadequate number and variety of repair facilities and the poor quality of the services rendered. Much of the inadequacy stems from the low priority given to construction in the services sector. The new leadership has promised rapid growth of expenditures in this area, calling the fall in investment in the services sector that occurred in 1959–62 "regretable." Nevertheless, the expansion of facilities remains grossly insufficient and the endemic problems of poor-quality repair work will not be solved easily. Public services in rural districts lag far behind those in cities.[12]

In addition, urbanization has placed a growing strain on the supply of housing. It is true, however, that much of the excess demand for housing as expressed in long waiting lists would disappear if the state charged full-cost rentals. State-built housing (currently about 40 percent of the total stock*) is heavily subsidized; as a result of the nominal charges, the average family unit spends only from 3 to 5 percent of its income for housing. Paying full costs would increase rents by 80 percent.[13] Intensifying the pressure on the supply of new state housing has been the decline in private homebuilding.** The 5-year plan indicates that no major shift in investment toward state housing is planned, nor is the leadership apparently going to take the obvious solution of encouraging private home building.

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[12] Izvestiya, July 27, 1965, p. 3.

*During the 7-year plan, however, an average of 60 percent of the housing constructed was in the public sector, thus the share of state-built housing is increasing.

[13] Voprosy ekonomiki, No. 10, 1964, p. 7.

**Throughout the 1950's private home construction by individuals accounted for more than one-third of the value of investment in housing. It will be slightly under one-quarter for the decade of the 1960's.

III. Trends in Disposable Money Income*

Disposable income in the Soviet Union has increased almost 200 percent since 1950. In contract to increases in consumption, however, the major increases came during 1955–65 when disposable income increased at an average annual rate of 8 percent. This rapid growth came about because: (1) wage reforms in 1956–60 and in 1964 sharply raised wage levels for workers employed in state enterprises; (2) a social insurance reform in the 1956 liberalized payments and broadened coverage for state workers, and beginning in 1965, collective farmers and their families were included under a state social insurance program; (3) abolition of compulsory bond purchases in 1958 and a partial abolition of income taxes in 1960–61 increased take-home pay; and (4) the share of money income in the income of kolkhoz peasants rose rapidly.

Table 5.—*U.S.S.R.: Indexes of disposable money income, selected years, 1950–65* [1]

[1950=100]

	1950	1955	1960	1961	1962	1963	1964	1965
Total money income	100	135	187	206	222	231	245	269
1. Gross earnings of wage and salary workers	100	139	200	221	237	248	266	294
2. Collective farm wage payments and household income from sale of farm products	100	131	190	214	250	268	271	(2)
3. Transfer payments	100	141	234	258	271	264	280	(2)
Total state deductions [3]	100	129	96	99	102	106	114	122
Total disposable money income	100	136	202	224	242	252	266	294
Per capita disposable money income	100	125	170	185	197	202	211	229

[1] See appendix B for sources and methodology.
[2] Not available.
[3] Total state deductions include direct taxes on the population, local taxes, fees and fines, and state loans.

Disposable income would have grown even faster had not some of Khrushchev's more flamboyant promises been delayed or shelved. For example, the wage reform for service workers and a rise in the minimum wage scheduled for 1962 were not implemented until 1964–65. A further increase in the minimum wage promised by 1965 was not made.

A. MONEY EARNINGS OF WAGE AND SALARY WORKERS

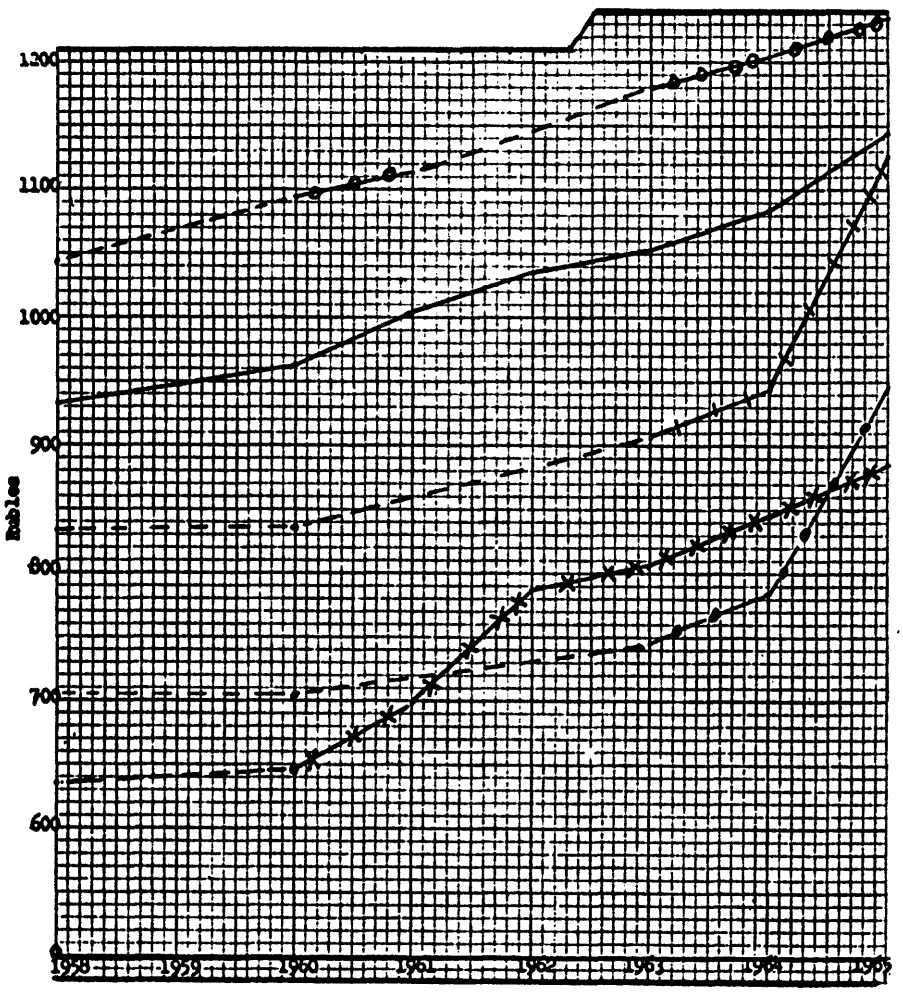
Wages and salaries of workers in state-owned enterprises constitute the largest segment of money income, rising from 65 percent of the total in 1950 to 72 percent in 1965. During this period the average wage of state workers grew by 50 percent, largely as a result of major wage reforms during 1956–60 and 1964–65. The earlier reform affected 50 million workers, added 4.5 billion rubles annually to the wage bill, and raised the average wage of workers in industry, con-

*Disposable income is defined as the total money receipts of the population during a given year minus direct taxes on the population. Money receipts include: (1) money wages and salaries; (2) net income from private activities; (3) dividends paid members of cooperative organizations; (4) pensions, grants, stipends, and other transfer payments; (5) interest on bonds and savings; and (6) net borrowing. This concept of income excludes all imputed payments such as in-kind payments. Direct taxes include: (1) income tax on the earnings of the population and (2) local taxes, fees, fines, etc.

struction, and state agriculture 13 to 25 percent.[14] Designed to restructure the chaotic wage system in the "productive" sectors of the economy, the reform established a set of coordinated job classifications and a simplified wage structure, reestablished base pay as the predominant share of workers' income, and fixed a minimum wage of 27 rubles a month.

To complete the restructuring of wages, service workers were scheduled to receive wage increases in 1962 and the minimum wage was to be raised from 27 to 40 rubles a month for all wage and salary workers. However, the second reform was postponed until 1964–65, when 20 million service workers were granted wage increases averaging 21 percent; these increases added 3.3 billion rubles annually to the wage bill.[15] As can be seen in fig. 3 this change greatly narrowed the differential in wages between the "productive" and service sectors. Also implemented at this time was the postponed hike in the minimum wage.

FIGURE 3.—USSR: Average annual money earnings of wage and salary workers in selected sectors, 1958–65[a] (in rubles).



[a] See Appendix B, Table 2.
NOTE.—Broken line indicates data not available for intervening years.
Legend:
Average for all wage and salary workers: ———— Industry: —o—o—o— Education: —|—|—|— Health: —O—O—O— State farms: -X—X—X-

[14] I. N. Popov-Cherkasov, "Organizatsiya zarabotnoy platy rabochikh SSSR," Moscow, 1965, p. 12. [15] Ibid.

B. MONEY INCOMES OF COLLECTIVE FARMERS AND SECONDARY INCOME OF RURAL RESIDENTS

The peasant population in households attached to collective farms has two primary sources of money income: (1) the remuneration for labor services expended on the collective farm and (2) money income from the sale of farm products produced on private plots. Other rural residents, including state workers, supplement their wages with income from the sale of farm products. During the past decade the average money earnings of collective farmers derived from work on the farm has almost tripled and cash payments now make up about three-fourths of the farmers' total income, compared with 42 percent in 1955. Yet collective farmers remain at the bottom of the economic ladder, with cash incomes averaging less than 400 rubles a year in 1964, or about one-third the level of earnings of state workers. In part, the rapid rise in money payments merely represents the implementation of a state policy to pay money wages rather than to make payments-in-kind. In-kind payments as a share of total income paid out by the collective farm to its members declined from 58 percent in 1955 [16] to 26 percent in 1962.[17] Thus, the tripling of money wages paid to collective farmers by no means represents a threefold increase in total income.

About one-half of the total money income of collective farm families is derived from the sale of farm products either obtained from their "own enterprise"—land allotment and livestock held by the household—or from the sale of products received from the collective farm as in-kind payments.[18] These sales are made in collective farm markets (CFM), where prices fluctuate with changes in supply and demand (see table 6). In general, prices in the CFM declined gradually during the 1950's and increased moderately during the 1960's.

TABLE 6.—*U.S.S.R.: Indexes of sales and prices in the collective farm market, 1958, 1960–64* [1]

[1950=100]

	1958	1960	1961	1962	1963	1964
Sales	104	94	93	95	85	85
Prices	94	93	100	107	111	116

[1] N.kh., 1964, p. 657, N.kh., 1962, p. 540.

Incomes from CFM sales depend not only on prices but also on the supply of goods both in the CFM and in state outlets.* Thus, between 1955 and 1959 the increase in volume of sales more than offset the decrease in prices, and incomes from CFM sales increased by approximately 40 percent. Incomes stagnated during 1960–61 despite higher prices. Khrushchev's restrictions on private agriculture during the early 1960's succeeded in reducing CFM vol-

[16] Kh. E. Pomanov, N. S. Panin (ed.). "Obshchestvenniye fondy kolkhozov i raspredeleniye kolkhoznykh dokhodov," Moscow, 1961, p. 269.
[17] N. Polyakova, "Ekonomika sel'skokhozyaystvennykh predpriyattil," Moscow, 1964, p. 289.
[18] Ye. V. Kasimovskiy, "Problemy ekonomiki truda," Moscow, 1965, p. 169.
*The declining volume of sales in part represents the continuing improvement of food supplies in state stores.

ume sharply. Increased prices did, however, result in a moderate improvement in incomes after 1962. The removal of Khrushchev's restrictions [19] by the present regime indicates a recognition of the need to supplement farm incomes and to provide an outlet for part of the rapidly growing urban incomes.

Although successful in increasing peasant income since 1955 the Soviet leadership has failed to break the vicious cycle of low wages—low productivity—low production. The gulf between the earnings of peasants and state workers has been narrowed, but the difference is still great. Equally important, the state has been either unable or unwilling to alter the basic pay system on collective farms. For the most part peasants are still residual recipients of the farm income, receiving pay at infrequent intervals, and not knowing in advance whether increased effort will be rewarded. Great discrepancies still exist in income distributed not only within each farm, but also from farm to farm.

C. TRANSFER PAYMENTS AND STATE DEDUCTIONS

Transfer payments have doubled since 1955, largely as the result of increasing outlays by the state for pensions and grants. Under the state social insurance program, workers are entitled to benefits for sickness, maternity, and large families, and pensions for old age and disability. Two major social insurance reforms have increased the cost of social insurance from 8 percent of the total state budget in 1955 to over 14 percent in 1965. A revision in the pension law in 1956 sharply raised the size of average payments and considerably increased the number of pensioners by (1) granting partial pensions to workers who have not worked the required number of years necessary for a full pension, (2) abolishing the time limitation following retirement in which one could apply for a pension, and (3) adding new categories of persons entitled to pensions. As a result, the number of state pensioners increased by 2,500,000 between 1956 and 1958 and by an average of 850,000 annually between 1958 and 1965, when 30 million persons drew state pensions.

The second major reform, approved by the Supreme Soviet on July 15, 1964, brought 15 million collective farm households—more than 50 million persons—under a state social insurance system beginning in 1965.* Until the adoption of this program, the establishment of pension programs at collective farms had been optional and entirely at the expense of the individual farm. As a result, many farms had no program at all, and even those with programs usually failed to match the benefits available to workers at state enterprises.

Under the new program for collective farmers, benefits are smaller and eligibility requirements more stringent than those for state workers. The minimum old-age pension for collective farmers is 12 rubles a month—for state workers, 30 rubles a month. Both the collective farmer and the state employee must work 25 years to be eligible for a full pension, but the state employee of retirement age can qualify

[19] Voprosy ekonomiki, No. 4, 1965, p. 30.

*Excluded from coverage under this program are collective farm members who work only on private plots as well as chairmen and certain technical workers who qualify for benefits under the program for state workers.

for a partial pension after only 5 years, whereas there is no provision for partial pensions for collective farmers. The retirement age for male collective farmers is 65 but for state employees only 60 years. Nevertheless, collective farmers are benefiting significantly from the new program, which increased the number of collective farm pensioners from 3 million to 6.8 million, and the average pension from approximately 6 rubles a month to about 17 rubles a month. More than 1 billion rubles was thus added to the money incomes of collective farmers during 1965.

Funding provisions for the program, which is officially estimated to have cost 1.3 billion to 1.4 billion rubles in 1965, limited the cost to the state by requiring mandatory deductions from the gross revenues of the farms. Collective farms were required to contribute 2.5 percent of their gross revenues to a centralized social insurance fund in 1964 and 4 percent in 1965. In addition, a state subsidy, averaging 400 million rubles a year during 1965–67, is to be granted to meet the estimated cost of the program.

State deductions from workers' incomes declined from 14 percent of total money income in 1955 to 7 percent in 1960, substantially increasing disposable income during this period. The reduction was caused primarily by the suspension of compulsory bond purchases in 1958. Further, Khrushchev announced in 1960 a program for abolishing personal income taxes, which averaged 6.6 percent of total money income in that year. The program began in October 1960 with the lowest income groups and was to be applied to a progressively higher income group each October thereafter until all income tax payments were eliminated in 1965. After completing about one-tenth of the program, however, the regime announced in September 1962 that additional military spending brought about by the "increasingly aggressive actions of imperialism" necessitated a suspension of the program.[20] In a speech to the 23d Party Congress, Brezhnev made a vague promise to reduce the income tax "in the future." In 1965 state deductions still amounted to 6.4 percent of total money income.

IV. Implications of the Diverging Trends in Income and Consumption

In recent years increasing money incomes combined with a slowing growth rate in consumption have led to an imbalance between total money supplies and the amounts needed for purchases of consumer goods and have thus generated inflationary pressures of varying intensity.

For the purpose of this paper, inflationary pressure is defined as the excess monetary demand for consumer goods caused by a gap between the amount of money supplied to the economy and the amount actually needed to purchase current levels of output at planned prices. Given the presence of excess demand for goods, "open" inflation results if prices rise in response. If, instead, prices are fixed by decree, so-called "repressed" inflation exists in that consumers are forced to hold cash or savings deposits in excess of the amount desired, that is, they would spend the money if only the proper goods and serv-

[20] Izvestiya, Sept. 25, 1962.

ices were available. It is important to note that under "open" inflation the higher prices become someone's higher income, whereas under so-called "repressed" inflation, this element of the inflation process is largely absent.

A. INDICATIONS OF INFLATION

At best, the measurement of inflationary pressures in the U.S.S.R. is difficult because of the lack of comprehensive official data on income, price levels, real output, and the money supply. No attempt is made in this paper to measure an "inflationary gap." Instead, the trends in prices are presented, using the differential between state retail prices and collective farm market prices as the best indicator of inflationary trends over time. Further evidence is provided by examining trends in savings.

1. In the U.S.S.R., almost all nonfood goods and most food goods are sold in state stores at fixed prices. Inasmuch as these prices are changed infrequently, excess monetary demand has resulted typically in "repressed" inflation. Some of this excess purchasing power flows into the CFM, the only organized free markets in the U.S.S.R., and, therefore, prices in the CFM are a barometer of the extent of "repressed" inflation. The ratio between prices in the CFM and state retail prices for food is probably the best single measure of the failure of the state to drain off excess purchasing power. Although during 1959–64 the ratio of the prices in the two markets rose from 1.31 to 1.63, the ratio still is well below the ratio in 1955.

U.S.S.R.: Ratio of CFM prices to state retail prices for food, 1955–64

1955	1.75
1958	1.38
1959	1.31
1960	1.35
1961	1.43
1962	1.50
1963	1.54
1964	1.63

Furthermore, the ratios prevailing in recent years are still far below the ratio of about 2.2 in 1940. Even these ratios overstate the case for the importance of "repressed" inflation because they do not take account of the diminishing importance of the collective farm markets in total retail trade.

Franklyn Holzman has suggested the use of a measure of repressed inflation that expresses the ratio of the difference between actual expenditures in collective farm markets and these same expenditures valued at official state retail prices to the sum of total state retail sales plus collective farm market sales valued at state prices.[21] An index of these adjusted ratios (1955=100) presented in the tabulation below shows a 150-percent increase in the index between 1950 and 1955, indicating increasing inflationary pressure. This sharp increase was due primarily to large reductions in state retail prices, which resulted in shortages and queues. During 1955–60 the ratio declined to below its 1950 level, not because of changing prices, but because of a decline in

[21] F. D. Holzman, "Soviet Inflationary Pressure, 1928–57: Causes and Cures," Quarterly Journal of Economics, May 1960, p. 170.

the higher priced CFM sales as a share of total sales. Since 1961 the ratio has again increased, reflecting rising CFM prices.

1950	39
1955	100
1956	59
1957	40
1958	41
1959	32
1960	31
1961	36
1962	37
1963	36
1964	41

2. Savings deposits* more than doubled from 1958 to 1965 compared with an increase in retail sales (for all goods) of about 50 percent. Trends in retail sales and personal savings accounts during 1950–65 are indicated in the following table:

TABLE 7.—*U.S.S.R.: Retail sales and personal savings accounts, selected years, 1950–65*

BILLION RUBLES

	1950	1958	1961	1962	1963	1964	1965
Retail sales [1]	40.9	71.8	85.0	91.2	95.5	100.4	108.3
Personal savings accounts [2]	1.9	8.7	11.7	12.7	14.0	15.7	18.7
PERCENT INCREASE OVER PREVIOUS YEAR							
Retail sales			3.4	7.3	4.7	5.1	7.9
Personal savings accounts			7.0	8.5	10.2	12.1	19.1

[1] "Sovetskaya torgovlya," Moscow 1964, p. 39; "SSR v tsifrakh v 1965 godu." Moscow, 1966, p. 144.
[2] N.kh., 1960, p. 854; N.kh., 1964, p. 595; Tsifrakh, 1965, p. 152.

The rapid increase in personal savings held in banks suggests that it is not a lack of aggregate consumer purchasing power that is causing growing inventories of selected goods. Rather, the improved income and living standards of the Soviet consumer now permit him to be more selective in his purchases. In other words, the sellers' market characteristic of the Stalin era, when extreme conditions of scarcity assured a ready market for whatever goods were available, has given way to a buyers' market for many products. A second consideration is the evident confidence the average citizen now places in the value of the ruble.** Almost every Communist state has a history of ruthless devaluation of money holdings, and the current confidence of the So-

*Data on total savings held by Soviet households (personal savings accounts deposited in state banks plus personal holdings) are not published. However, there is no evidence that deposits are increasing as a share of total savings.

**The Soviets are in the embryonic stage of studying consumer demand and apparently have not developed sample surveys to determine, for example, the motivations for savings (in and out of banks). But a recent issue of the official journal of Gosbank did provide the following:

"Savings (in banks) by the population in the U.S.S.R. promote a proper and planned budget for the worker. In some cases, the savings are deposited for a determined purpose; for example, for the purchase of a television set, refrigerator, motor scooter, furniture, or for future purchase of an apartment in a housing cooperative, or for trips to resorts. . . ." [3]

[3] "Deng'i i kredit," No. 6, 1965, pp. 10–11.

viet population, if well founded, represents an important economic development.

B. LEADERSHIP RESPONSE

Although the indicators described above do not provide precise measures of the degree of repressed inflation both suggest that such pressures have grown in the past several years. These indicators, coupled with the growing divergence between incomes and outlays on goods and services have posed a potentially serious problem for the Soviet leadership. In contemplating an anti-inflationary program in 1962, the regime was able to consider a range of actions: (1) raise retail prices; (2) freeze wage and salary levels; (3) reduce the rate of increase in transfer payments; (4) increase income taxes; and (5) reinstitute compulsory bond purchases. As noted above, Khrushchev chose to postpone the promised increases—in the wages of service workers, the minimum wage of all workers, and the minimum pension level. Also, shelved in 1962 was the program to abolish the income tax. Finally, prices were raised, up to 30 percent, for selected consumer items—which led to civil unrest.[22]

Although inflationary pressures apparently were not easing, Khrushchev in 1964 announced the intent to grant substantial wage increases to service workers and to provide pensions for collective farmers—programs that would add some 5 billion rubles annually to money incomes. These measures were carried out in late 1964 and 1965.

V. The New Leadership—Consumer Oriented or Not

The new regime has not come out with a clear-cut indication of its overall policy toward the Soviet consumer. Nevertheless, during the year and a half since Krushchev's removal there have been new initiatives on the part of the leadership, some in response to immediate problems in the consumption area and others undertaken with a long-range view. A brief description of some of the measures adopted to increase the level of living is presented below. In addition, an analysis is undertaken of the current leadership's response to the harvest failure of 1965 compared with Khrushchev's handling of a comparable problem in 1963. A comparison of the emergency measures enacted in the two cases provides insight into the comparative attitudes of the two regimes and is perhaps suggestive of a more positive approach on the part of the new government in at least maintaining levels of living under abnormal conditions.

A. CONSUMER POLICY BEFORE THE 1965 HARVEST FAILURE

Up to the time of the disappointing 1965 harvest, there were a number of indications that the new regime had adopted measures that would raise the proportion of national income allocated directly to consumption. In addition, there was evidence that a larger share of investment resources was planned for consumer-oriented programs. The leadership in outlining its 1965 plan and in subsequent statements promised the following:

[22] New York Times, Oct. 8, 1962, p. 1.

(1) A promised increase of more than 7 percent in real income in 1965, twice the officially claimed average rate of growth for the period 1959–64. Great stress, moreover, was laid on an expected sharp rise in the quality of goods and services. Although the 1965 plan did not show how the overall rise in real incomes was to be obtained, it appeared to be based on the presuppositions of a much improved supply of processed foods (reflecting a 10-percent jump in 1964 farm output), a marked improvement in the quality of goods and services, an increase of 13 percent in urban-type housing construction, an acceleration in the output of selected consumer durables, and a major expansion in personal services.

(2) A new farm program, promulgated in March 1965, which called for large increases in the allocation of resources to socialized agriculture over the next 5 years, thus apparently committing the state not only to achieve self-sufficiency in basic foods, but also to effect a major improvement in the quality of the diet.

(3) An agreement signed with the Italian industrial firm, Fiat, "to cooperate with the U.S.S.R. in the field of automobile production." If this accord is carried out, it will bring about a significant improvement in the quality of Soviet cars as well as expand the number produced. Moreover, Fiat may be asked to assist in establishing a network of service and parts centers. The ancillary facilities to support the operation of personally owned motor vehicles—gasoline stations, repair shops, and the like—are practically nonexistent at present.

(4) Selective reductions on retail prices of soft goods in surplus supply.

(5) The relaxation of some restrictions on private activity in two important areas of consumption—home construction and the cultivation of gardens and maintenance of livestock.

(6) An increase in the share of new orders for chemical equipment used in the production of consumer-oriented products.

Some of the above measures were short run, reminiscent of those taken after Stalin's death and again shortly after Khrushchev's ascendancy to power in 1957, and may have been designed to win popular support. But some, such as the 5-year program for agriculture, suggest that the regime felt impelled toward material improvement of certain areas of consumption.

During the latter part of 1965, however, after the regime was made painfully aware of the low 1965 wheat harvest, there was a moratorium on statements or actions either in affirming previously taken actions or in taking new steps designed to raise consumption levels. This situation is in keeping with the lack of evidence of clear-cut decisions on relative priorities for the several major resource claimants in the new 5-year plan. Undoubtedly, the recurrence of a harvest failure (the second in 3 years), requiring outlays of another $500 million for wheat purchases, reopened the question of overall resource allocations. In addition to possible conflict within the leadership over the relative priorities of, for example, consumption versus defense, there may be serious disagreement as to emphasis on alternative measures to further consumer welfare. For example, the views of those political leaders in favor of allocating more re-

sources to agriculture than outlined in the March 1965 plenum and at the expense of, for example, expanded programs for consumer durables, may be in conflict with other views as to relative priorities. Thus it would appear logical for the leadership to hold in abeyance any announcements concerning decisions affecting consumer welfare if major allocational problems remain unresolved.

B. THE REGIME'S RESPONSE TO THE 1963 AND 1965 HARVEST FAILURES

There was a marked contrast in the regime's response to the serious shortfalls in production of wheat in 1963 and 1965. After the earlier crisis the Soviet leaders attempted to enforce a number of conservation measures to reduce the overall use of grain. Among these steps were (1) an increase in the yield of every ton of grain by raising the extraction rate in milling grain into flour, thus degrading the quality of bread*; (2) restrictions on the sale of bread and flour in retail stores; (3) a step-up in the drive against feeding bread to livestock; (4) a revival of campaigns against waste and theft of bread and grain products; and (5) a reduction in the need for feed grains by slaughtering more livestock than usual. These and other measures were taken in September 1963 very soon after the Kremlin became aware of the harvest failure.

The 1965 crisis, on the other hand, appears to have been deliberately underplayed by the new leadership, which referred only obliquely to the need for large imports of wheat, assuring the population that the Government had taken measures to provide for "normal supplies of bread and bread products." Apparently no restrictive measures comparable to those employed by Khrushchev were adopted. The reluctance of the new regime to take such steps may be due in large part to the experience gained under comparable conditions during the 1963–64 consumption year. Certain measures, such as the campaigns against feeding of bread to livestock, were ineffective; others, such as degrading the quality of bread, caused severe widespread consumer dissatisfaction, manifested in reduced labor productivity and civil disturbances.

Among the ways to hold down grain imports and thus conserve foreign exchange, the raising of the extraction rate when converting grain into flour is probably the most tempting alternative open to the regime. For every percentage point rise in the average extraction rate in state milling enterprises, about 370,000 tons [23] of grains, or roughly $30 million in hard currency, are saved in terms of wheat imports foregone. This saving assumes the maintenance of total flour production in the present consumption year at approximately the same level as in previous years. Furthermore, it does not allow for the loss of the residual in milling grain into flour, part of which can be processed into livestock feed.

The average extraction rate for flour (at state mills) dropped from 87 percent in 1940 to 85 percent in 1950 and to 81 percent in 1955,

*The extraction rate in milling grain into flour is expressed as a proportion or percent and determines the volume of flour that can be obtained from a given volume of grain. For example, if 72 kilograms of flour are obtained from 100 kilograms of grain, the extraction rate is said to be 72 percent. The quality or desirability of the bread baked from flour is inversely related to the extraction rate—the higher the extraction rate in milling the grain, the lower the "quality," or consumer satisfaction.

[23] Tonnages are given in metric tons.

where it remained fairly constant through 1962. Based on incomplete data, the extraction rate during the 1963–64 consumption year appears to have risen to about 96 percent.[24] If the rate did rise by 15 percentage points (from 81 to 96 percent) the savings in foreign currency can be estimated at about $450 million. In other words, if extraction rates had been maintained at the relatively low level of 81 percent, 5½ million tons of additional grain imports would have been required to provide the same absolute number of calories as that obtained with the 96-percent rate. Although it is doubtful if the average extraction rate during the 1964–65 consumption year was actually reduced to the pre-1963 level, there was a decided improvement in the quality of bread and the availability of other products requiring high-quality flour.* The extraction rate may have fallen to, say, an average between 85 and 90 percent.

Since June 1965 the U.S.S.R. has contracted for the purchase of about 7.5 million tons[25] of wheat and flour from Western suppliers at a cost of about $500 million.** If the average extraction rate of 87 percent had returned to the 96-percent level, import requirements would have been reduced by nearly one-half, a saving of about $250 million. However, the quality of bread has not been downgraded and, as far as is known, the milling rate has not been raised again.[26] In fact, in September, Brezhnev announced that the "CPSU Central Committee and the Council of Ministers envisage further improvement in supplying the population with bread both qualitatively and quantitatively."[27] That the supply of flour has improved is attested by U.S. tourists who have recently noticed it for sale in state stores in several smaller cities, but not in either Moscow or Leningrad.

C. PROSPECTS

In the planned goals for 1966–70, outlined by Kosygin at the 23d Party Congress, Khrushchev's successors have pledged themselves to provide a rapidly improving level of living for the Soviet populace. The promises are wide ranging: higher wages, better quality goods, increased pensions, lower taxes, and more housing. Also, the gap between urban and rural levels of living is to be narrowed. Per capita consumption is to increase slightly more than 4 percent annually during 1966–70 in contrast to 3 percent during 1961–65. Continual references to quality improvement in the plan indicate the regime recognizes that low quality of consumer goods is a sore point with the populace. No major reallocation of resources is planned; rather, planners are counting on providing the additional goods and services for con-

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[24] Sovetskaya torgovlya, Moscow, 1964, p. 98.

*By the summer of 1964, top-quality white bread had become sporadically available, and by autumn most areas had white bread some of the time. In addition, macaroni, noodles, and other grain products requiring a high-quality wheat flour in their manufacture have been continually available since mid-1964. Nevertheless, the best quality bread has remained unavailable on a continuing basis since 1963, even in major cities, and, with the exception of small rations preceding holidays, state flour sales to the public have not yet been resumed in major cities.[28]

**Actual deliveries for 1965–66 (July 1 to June 30) are estimated at about 10 million tons of grain at a cost of about $700 million. All of these deliveries were contracted for by the present regime.[29]

[25] U.S. Department of Agriculture, "Soviet Grain Imports," ERS Foreign 135, September 1965, p. 2.

[26] Letter to the author from Dr. B. Meeker, U.S. agricultural attaché, Moscow.

[27] Izvestiya, Sept. 30, 1965, p. 2.

[28] U.S. Department of Agriculture, ERS Foreign 115, p. 4, and ERS Foreign 135, p. 15.

[29] Journal of Commerce, Dec. 30, 1965, p. 22.

sumption through a restoration of previous rates of growth in productivity and national income. The confidence of the leadership is indicated by new programs to boost money incomes substantially by 1970. According to Brezhnev, during 1966–70 the minimum wage will be increased from 40 to 60 rubles a month, collective farmers will receive a guaranteed wage, minimum pension levels will be raised and the collective farm pension program will be liberalized. Brezhnev also renewed the old promise to abolish the income tax.

The key to the assessment of prospects under the new 5-year plan is the plan's dependence on restoration of former growth rates in productivity and national income. The same forces that reduced these rates of growth in the 7-year plan are still operative: (1) the pre-emption by the military of increasing quantities of high-quality manpower, machinery, and materials; (2) the difficulty of raising production, technology, and incentives in agriculture; and (3) the failure to modernize industrial plant and equipment, together with the inability to translate new developments in technology into actual industrial practice. Therefore, prospects for simultaneously reaching all the new consumption goals by 1970 are dim.

Appendix A. Derivation of the Index of Consumption

1. General

The overall index of consumption comprises four major categories: (1) foods and beverages; (2) soft goods; (3) consumer durables; and (4) services. These components are combined with 1955 expenditure weights, which are essentially estimates of household outlays for goods and services in 1955 for consumption purposes (including military and prisoner subsistence) plus consumption-in-kind of household-produced items (chiefly food products and housing) plus all health and education services, whether purchased or provided by government. The weight assigned some services is based on 1955 expenditures on "inputs"—wages paid persons employed in providing the service plus the value of materials used. Health and education services are the most notable example of this procedure. Expenditures on the purchase of goods and services were directly obtainable from official data (retail sales and the like) for one-half of the total in the base year (1955); official production data and prices provided 21 percent more; and quantity estimates valued with official prices were required for the remaining 29 percent.

Each component of the index is moved back to 1950 and forward to 1965 by the use of volume indexes. However, the volume indicators probably do not adequately reflect the improvement in the quality of goods and services over time. The resulting downward bias is relatively unimportant for food, the major component of the aggregated index, but is most important in the case of soft goods and health services. Because of these deficiencies in the construction of the index, it should not be viewed as a reliable indicator of change in any two consecutive years. Nevertheless, despite the data limitations inherent in the over-all consumption index and its subcomponents, it is believed that the statistical measures over time are reasonably reliable. Data recently published by the USSR tends to confirm this assumption (see Section 3, Appendix A). Table 8 presents the indexes of per capita increases in the availability of components of consumption.

2. Specific details with respect to the derivation of the four separate indexes

(a) The food goods index

(1) Estimates are made of Soviet output of 20 representative food products in three categories:

(a) Basic foods—food grains, potatoes, and vegetables;

(b) Animal products—fish, meat and slaughter fats, milk, butter, cheese, and eggs;

(c) Processed foods—sugar, vegetable oil, confectionery, beer, grape wine, champagne, vodka, canned goods, macaroni, and margarine.

(2) The production data are adjusted to exclude waste, losses, and seed and animal feed, and are further adjusted to reflect net imports and inventory changes.

(3) In order to eliminate double counting of products at different stages of production, the portion of these products which undergoes further processing is netted out of the gross supply available for human consumption. For example, an adjustment is made for the vegetables which are canned.

TABLE 8.—*U.S.S.R.: Indexes of consumption and per capita consumption, by components, 1955–65*

AGGREGATE

[1960=100]

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Consumption	145.6	154.9	164.2	172.5	181.2	190.1	197.8	208.0	212.2	219.6	233.3
Soft goods	173.6	188.0	196.5	211.7	226.3	240.5	249.9	261.2	264.6	271.8	278.8
Consumer durables	283.5	311.6	341.1	392.7	450.3	504.7	551.1	592.3	628.4	655.3	743.3
Foods and beverages	138.0	145.6	154.7	159.6	165.7	170.8	176.1	184.8	186.2	191.4	204.8
Services	133.5	142.3	151.9	161.0	171.2	184.1	196.2	208.6	221.6	235.8	251.1
Personal	140.6	150.3	162.6	174.7	189.0	204.2	217.5	235.2	249.3	264.1	284.6
Health and education	128.1	136.2	144.2	150.7	157.9	169.0	180.1	188.6	200.6	212.9	225.9

PER CAPITA

Consumption	138.7	139.7	143.6	150.1	155.1	159.9	163.3	169.2	170.0	173.6	182.0
Soft goods	169.4	169.7	174.2	184.4	193.6	202.3	206.5	212.5	212.0	214.9	217.5
Consumer durables	260.3	281.2	302.4	342.1	385.2	424.5	455.5	481.9	503.5	518.0	579.8
Foods and beverages	126.7	131.4	137.1	139.2	141.7	143.6	145.5	150.4	149.2	151.3	159.8
Services	122.6	128.4	134.7	140.2	146.4	154.8	162.1	169.7	177.6	186.4	195.9
Personal	129.1	135.6	143.8	152.2	161.7	171.7	179.8	191.4	199.8	210.4	222.0
Health and education	117.6	122.9	127.8	131.3	135.1	142.1	148.8	153.5	160.7	168.3	176.2

(4) The volume index is then obtained by weighting the individual series in the aggregate index with the value of consumer outlays for each food in 1955.

(5) The product coverage in the volume indicator is nearly the same as in the base year, thus it is representative of the universe.

(*b*) *The soft goods index*

(1) Retail sales in 1955 are obtained for selected items—cotton, wool, silk, and rayon cloth and linen, sewn products, hosiery, leather footwear, tobacco and makhorka (a low-grade of tobacco), and knitted outerwear and underwear.

(2) The 1955 values are moved over time by production indexes based on official data obtained from Soviet handbooks. The production data have not been adjusted for net imports, changes in composition, or inventory changes and therefore, the value series are not precise indications of consumption.

(3) Summation of the individual value series provides the basis for the index.

(4) The sample accounts for almost all the retail sales of soft goods, therefore product coverage is representative of the universe.

(5) Data for benchmark years pertaining to actual retail sales indicate that the use of production series did not lead to important error in the earlier years.

(6) There undoubtedly is a large degree of downward bias due to quality improvement in the soft goods sector. See Appendix A, 3, c for its possible magnitude.

(*c*) *The consumer durables index*

(1) Retail sales in 1955 are obtained for selected items—furniture (including metal beds), bicycles and motorcycles, radios and television sets, watches and clocks, electrical appliances, sewing machines, cameras, kerosene burners, and musical instruments.

(2) The 1955 values are moved over time by production indexes based on official data obtained from Soviet handbooks. The data have not been adjusted for net imports, changes in composition, or inventory changes, and therefore, as in the case of soft goods, the value series are not precise indications of consumption.

(3) Summation of the individual value series provides the basis for the index.
(4) The sample accounts for about 45 percent of total retail sales of "non-soft goods" but it includes all major durable goods except automobiles.
(5) Although there undoubtedly is a degree of downward bias present because of quality improvement, it is believed small.

(d) The services index

(1) Components of the services index include outlays on household operation, communications, personal transportation, recreation and sports, expenditures on religion, personal care and repair services, housing, health and physical culture, and education.
(2) Total expenditures on these items are derived for 1955.
(3) Each item is moved over time by the appropriate volume indicator. For example, expenditures on health and physical education are moved by an index derived from budget expenditures on health and physical education (a combination of material expenditures and wages); expenditures on education are moved by an index based on budget expenditures on education in the same way.
(4) The services sector is relatively less important in the consumption picture and error here has little effect on the aggregated index.

3. COMPARISON OF THE OFFICIAL AND THE COMPUTED INDEXES

(a) General comparison

The USSR recently published an index of consumption for the period 1959–63.[30] The index, hereafter referred to as the official index of consumption, is assumed to be a valid measure of changes in actual consumption. Various cross checks indicate the data is consistent with other data issued in official publications.

The official index of consumption differs from the independently constructed index used in this paper in the following ways:

(1) A major difference arises from the fact that the official index is based on sales (actual consumption) of all goods, with the addition of a value for the consumption-in-kind of food products, but the computed index is based primarily on production data adjusted for various uses. The computed index implicitly assumes that production of any year is consumed in the given year whereas sales of goods produced in a given year frequently occurs in the succeeding year. Thus there is a definite lag effect in the official index, or, expressed another way, the computed index measures, in part, consumption before it occurs.
(2) In the official index income-in-kind is valued by a combination of average market prices and average procurement prices.[31] The computed index values income-in-kind at retail prices.
(3) The Marxian concept of social product excludes all work done outside the branches of material production thereby excluding such benefits from measured consumption. Nearly all services are excluded—those of teachers, doctors, nurses, etc., and those providing passenger transportation, a large part of communication services, all sanitary services, recreation and entertainment, and so on. Only material expenditures by the institutions providing these services are included. Thus, the purchases of medicines or food by the hospital, for instance, are included but the cleaning service for the same hospital is not. The computed index attempts to value all expenditures on services. The Western concept considers all such services to be a part of consumption and thus of the level of living. Therefore changes in the quantity and quality of services provided affect the rate of growth of total consumption.

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[30] N.kh. 1964, pp. 580–89. The table is entitled "Consumption of food and nonfood goods by the population and material expenditures of institutions serving the population, of scientific organizations and of government from 1959–63." It includes both expenditures in current rubles and indexes of rates of growth expressed in constant prices.
[31] V. Treml, "The 1959 Soviet Intersectoral Flow Table," Vol. 1, RAC–TP–137, Research Analysis Corp., McLean, Va., November 1964, p. 10.

(4) The official index excludes the value of housing. The computed index sets a rental value on the stock of housing.

The following tables compare the adjusted computed index with the official index and selected components of each. Table 9 compares the actual indexes. Table 10 compares the rates of change. All categories of the computed index have been adjusted to conform with the classification used in the official index. Because of the adjustments the computed indexes do not agree with the indexes presented in Part 1 of Appendix A.

TABLE 9.—*Comparison of official and computed indexes of consumption, 1959–63*

[1959=100]

	1959	1960	1961	1962	1963
Total consumption:					
Official index (excluding amortization)	100	108	111	118	122
Computed index (adjusted) [1]	100	105	109	115	117
Total food goods:					
Official index	100	107	110	115	120
Computed index	100	103	106	111	112
Processed food:					
Official index	100	110	115	123	130
Computed index	100	105	113	124	130
Total nonfood goods:					
Official index	100	110	113	120	125
Computed index	100	108	114	120	125
Soft goods:					
Official index [2]	100	111	112	119	120
Computed index	100	107	113	119	121
Radio and television sets:					
Official index [3]	100	119	132	132	158
Computed index	100	120	130	139	155

[1] Adjusted to approximate the coverage of the official index through the exclusion of rent, expenditures on services and on salaries in health and education.
[2] Products of light industry.
[3] Products of radio industry.

TABLE 10.—*Comparison of rates of change of official and computed indexes of consumption* [1]

[Percent]

	1960	1961	1962	1963	Average annual rate (1960–63)
Total consumption:					
Official index	8	3	6	3	5.1
Computed index	5	4	6	2	4.0
Total food goods:					
Official index	7	3	5	4	4.7
Computed index	3	3	5	1	2.9
Processed food:					
Official index	10	5	7	6	6.8
Computed index	5	8	10	5	6.8
Total nonfood goods:					
Official index	10	3	6	4	5.7
Computed index	8	6	5	4	5.7
Soft goods:					
Official index	11	1	6	1	4.7
Computed index	7	6	5	2	4.9
Radio and television sets:					
Official index	19	11	0	17	11.6
Computed index	20	8	7	14	12.1

[1] Derived from table 9.

The trend of both indexes is upward with similar accelerations and decelerations. However, there is, in general, better agreement over time than between any two consecutive years. But two major questions arise: (1) the slower rate of growth in the computed index of food consumption which is reflected in the lower rate of growth for total consumption, and (2) the anomaly in the trend of the soft goods component.

(b) The Problem in the Food Sector

Further investigation of the food sector indicates that the basis of the differential between the two indexes is in the animal products components (see the following tabulation). Where other components can be matched, the movement is similar.

	1959	1960	1961	1962	1963	Average annual rate, 1960–63
Animal products:						
Official index [1]	100	105	108	109	113	3.1
Computed index [2]	100	100	102	107	111	2.6

[1] Includes meat, milk, fish, and zhivotnovotstvo.
[2] Estimates of the total production of the same categories available for consumption.

The computed index for animal products remains unchanged from 1959 to 1960 while the official index increased 5 percent. The discrepancy apparently arises from the difference between production of animal products and their sales in a given year. 1958 was an extraordinarily good year for agriculture. Above-normal production of food and feed grains permitted an expansion of herds in 1959 and a large gain in the output of animal products. The computed index (based on production of the current year) thus is at a higher base in 1959 than is the official index (based on actual sales of the current year). Thus, the lag in marketing caused by processing moves a part of the increased production into sales occurring in 1960. Sales of meat in 1960 registered a particularly great increase, 15 percent. At the same time the relatively poor harvest in 1959 caused herds to decline slightly in 1960 and consequently the supply of animal products (again based on production of the current year) declined.

To test the validity of this explanation the base year for both indexes was shifted to 1958 (the official index was extended to 1958 using a combination of retail sales of animal products and estimated consumption of animal products as income-in-kind valued at a combination of procurement and retail prices) in order to move both indexes forward from a period when sales and production were more nearly balanced. The following tabulation shows that as the result of the recalculation the movement of the two indexes is similar.

	1958	1959	1960	1961	1962	1963	Average annual rate, 1959–63
Animal products:							
Official index	100	104	109	112	113	117	3.2
Computed index	100	107	107	109	114	119	3.5

(c) The anomaly of the soft goods indexes

A special problem in soft goods also arises from the use of production data for the computed index and sales data for the official. As previously noted the soft goods computed index is biased downwards because of the impossibility of measuring quality change. Nor has the computed index been adjusted for inventory changes. As indicated in the text, growth in inventories of soft goods in recent years has accelerated at a much faster pace than actual sales.

Thus, had the computed index adequately reflected qualitative improvements over time it would have been expected to increase at a faster rate than the official index.

The following tabulation is indicative of the extent of the downward bias of the computed index.

	1959	1960	1961	1962	1963
Soft goods:					
Official index	100	111	112	119	120
Official index (adjusted to include inventories)	100	113	119	126	134
Computed index	100	107	113	119	121

The exercise of comparison was useful, pointing up the areas of greatest problems but, at the same time, demonstrating that the methodology used to derive the computed index of consumption is adequate for measuring changes in consumption over time. The agreement between the two indexes for the 5 year period adds validity to the computed index for the longer period of time as used in this paper.

Appendix B. Derivation of the Index of Disposable Income

The USSR does not publish estimates of total disposable money income, but estimates for components covering approximately 80 percent of the total can be derived directly from official Soviet statistics. In constructing estimates for the remaining components it is necessary to use Soviet data appearing in a number of different sources and, in some cases, to derive independent estimates.

TABLE 11

1. Total money income

(*a*) 1950, 1955–64—Sum of lines 2 through 8.

(*b*) 1965—10 percent increase over 1964 reported in *Pravda*, 7 Nov, 1964.

2. Gross earnings of wage and salary workers

(*a*) 1950, 55, 58–64—Average annual number of wage and salary workers, *N. kh.* 1964, p. 545, times the average monthly money earnings of wage and salary workers adjusted to an annual basis, *N. kh. 1964*, p. 555.

(*b*) 1956–57—Money earnings from S. P. Figurnov, *Real'naya zarabotnaya plata i pod'yem material'nogo blagosostoyaniye trudyashchikhsya v SSSR*, Moscow, 1960, p. 192; employment from *N. kh. 1958*, p. 659.

TABLE 11.—*U.S.S.R.: Personal disposable money income, 1950, 1955–65*

	1950	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
1. Total money income....billions of rubles..	45.58	61.46	66.77	72.69	76.62	80.36	85.14	93.99	101.36	105.50	111.57	122.72
2. Gross earnings of wage and salary workers.do....	29.83	41.53	44.13	48.21	50.97	53.56	59.59	65.95	70.65	74.11	79.25	87.85
3. Gross earnings of cooperative artisans.....do....	.88	1.17	.80	.90	.91	1.00						
4. Collective farm wage payments.....do....	1.18	3.06	4.34	4.49	5.15	4.91	4.94	6.00	6.63	6.79	7.68	8.62
5. Net household incomes from sale of farm products.....do....	4.54	4.46	4.73	5.19	5.77	6.32	5.95	6.26	7.69	8.53	7.82	(1)
6. Profits distributed to cooperative members-do....	.07	.15	.11	.15	.15	.15	.11	.11	.11	.11	.11	.11
7. Military pay and allowances.....do....	4.40	4.50	4.90	4.18	4.14	3.92	3.60	3.60	3.60	3.60	3.60	3.60
8. Transfer payments.....do....	4.68	6.59	7.76	9.57	9.53	10.50	10.95	12.07	12.68	12.36	13.11	(1)
(a) Pensions and grants.....do....	3.60	4.47	5.25	8.03	8.40	9.00	9.50	10.60	11.20	11.60	12.20	14.70
(b) Stipends to students.....do....	.46	.74	.77	.69	.63	.61	.63	.63	.69	.75	.83	.83
(c) Loan service.....do....	.51	1.43	1.63	.70	.37	.69	.70	.80	.80	.10	.10	.10
(d) Insurance payments less premiums-do....	.04	.04	.06	.06	.06	.06	.06	.06	.06	.06	.06	.06
(e) Net borrowing.....do....	.07	−.09	.05	.09	.07	.14	.06	−.02	−.07	−.15	−.08	(1)
9. Total state deductions.....do....	6.48	8.33	8.75	7.26	6.17	6.20	6.20	6.40	6.60	6.90	7.40	7.90
10. Direct taxes on the population.....do....	3.58	4.83	5.05	5.20	5.19	5.50	5.60	5.80	6.00	6.30	6.80	7.30
11. Local taxes, fees, fines, passports, etc.....do....	.20	.30	.27	.13	.58	.50	.50	.50	.50	.50	.50	.50
12. State loans.....do....	2.70	3.20	3.43	1.93	.40	.20	.10	.10	.10	.10	.10	.10
13. Total disposable income.....do....	39.10	53.13	58.02	65.43	70.45	74.16	78.94	87.59	94.76	98.60	104.17	114.82
14. Population.....million persons at midyear..	180.1	196.1	199.6	203.1	206.8	210.5	214.2	217.9	221.4	224.7	227.8	230.8
15. Per capita disposable income.....rubles..	217.1	270.9	290.7	322.2	340.7	352.3	368.5	402.0	428.0	438.8	457.3	497.5
16. Price index (1950=100).....	100.0	76.6	75.7	75.4	77.4	76.7	76.3	76.4	77.9	78.8	79.5	(1)
17. Per capita real disposable income.....rubles..	217.1	353.7	384.0	427.3	440.2	459.3	483.0	526.2	549.4	556.9	575.2	(1)
Index of per capita real disposable income (1950=100).....	100.0	162.9	176.9	196.8	202.8	211.6	222.5	242.4	253.1	256.5	264.9	(1)
Annual increase in per capita real disposable income.....percent..	[2] −10.3		8.6	11.2	3.0	4.3	5.2	8.9	4.4	1.4	3.3	(1)

[1] Not available. [2] Average annual.

(*c*) 1965—*Pravda*, Dec. 8, 1965.

3. Gross earnings of cooperative artisans

(*a*) 1950, 1955–59—Cooperative artisans reportedly earned a wage equal to two-thirds that of industrial workers. U.S. Bureau of the Census, *Producers' Cooperatives in the Soviet Union*, by Frederick A. Leedy, International Population Reports Series P–95, No. 71, Washington, D.C., p. 14. The average annual number of artisans reported in *N. kh. 1964*, p. 545. The average annual industrial earnings are estimated as follows: 1950, 1955—D. N. Karpukhin, *Sootnosheniye rosta proizvoditel'nosti truda i zarabotnoy platy*, Moscow, 1963, p. 53. 1956–57—*Ibid*, p. 108. 1958—*N. kh., 1964*, p. 555. 1959—interpolated based, reported earnings for 1958 and 1960, *N. kh., 1964*, p. 555.

(*b*) 1960–65—Producers' cooperatives were converted into state enterprises in 1960, and members were classified as wage and salary workers.

4. Collective farm wage payments

(*a*) 1950, 1955–61—Estimated by Constance Krueger (unpublished) and are derived for each year as a residual, the difference between total money outlay and the sum of expenditures for obligatory payments to the state, repayment of long-term loans, deductions from income, production expenses, and administrative-economic expenditures.

(*b*) 1962–63—V. G. Venzher, *Ispolzovaniye zakona stoimosti v kolkhoznom proizvodstve*, Moscow, 1965, p. 283.

(*c*) 1964—Estimated based on the relationship of wage payments to total revenues of preceding years.

(*d*) 1965—*Pravda*, Feb. 3, 1966.

5. Net household income from sale of farm products

(*a*) 1950, 1955–64—Estimated by Constance Krueger (unpublished) based on total private sales as reported *N. kh. 1964*, p. 657; *N. kh. 1963*, p. 546; *N. kh. 1962*, p. 540; *N. kh. 1959*, p. 708.

6. Profits distributed to coop members

Sum of profits distributed by consumer cooperatives and producers' cooperatives:

(*a*) 1950, 1955–58—Estimates based on reported gross profits of consumer and producers' cooperatives minus reported income taxes and the reported share of net profits distributed to members.

(*b*) 1959–65—Projected at same level after 1958 (with allowance for abolition of producers' cooperatives in 1960).

7. Military pay and allowances

(*a*) 1950, 1955—1956 estimate adjusted for changes in the size of the armed forces.

(*b*) 1956–58—Nancy Nimitz, *Soviet National Income and Product, 1956–58*, RM–3112–PR. The Rand Corp., Santa Monica, Calif., 1962, p. 2 (hereafter referred to as SNIP 1956–58, or other years).

(*c*) 1959–62—*SNIP, 1958–62*, p. 7.

(*d*) 1963–65—Projected at same level after 1962.

8. Transfer payments

(*a*) Pensions and grants:

Includes state social insurance payments, state social assistance payments benefits to mothers, minus expenditures on education, health, and physical culture.

(1) 1950, 1958, 1960, 1963–64—*N. kh. 1964*, p. 773.

(2) 1955–56—*N. kh. 1958*, p. 900.

(3) 1957-*Gosudarstvennyy byudzhet SSSR*, Moscow, 1962, p. 23.

(4) 1959, 1961—*N. kh. 1961*, p. 761.

(5) 1962—*N. kh. 1963*, p. 654.

(6) 1965—Projected increase plus 1.4 billion rubles distributed to collective farm members.

(*b*) Stipends to students:
(1) 1950, 1950–57—*Raskhody na sotsial'no-kul'turnyye meropriyatiya po gosudarstvennomu byudzhetu SSSR*, Moscow, 1958, p. 46.
(2) 1958–65—1957 base projected on the basis of the number of full-time students in higher and secondary-specialized educational institutions as reported in *N. kh. 1964*, p. 678.

(*c*) Loan service:
Includes interest from state loans and savings deposits plus principal retirement of state loans.
(1) 1950, 1955–56—*N. kh. 1958*, p. 900.
(2) 1957—"Gosudarstvennyy byudzhet SSSR," Moscow, 1962, p. 9.
(3) 1958–59—*N. kh. 1959*, p. 801.
(4) 1960, 1963—*N. kh., 1964*, p. 770.
(5) 1961—*N. kh. 1961*, p. 761.
(6) 1962—*N. kh. 1963*, p. 654.
(7) 1965—Projected at 1964 level.

(*d*) Insurance payments less premiums:
(1) 1950, 1955–58—N. Laptev (ed.) *Finansy i sotsialisticheskoye stroitel'stvo*, Moscow, 1957, pp. 355–56.
(2) 1959–60—Projected at same level after 1958.

(*e*) Net borrowing:
Long term loans to the population. Difference between loans outstanding at the end of the given year and loans outstanding at the end of the previous year.
(1) 1950, 1955–58—*Vestnik statistiki*, No. 2, 1960, pp. 89–92.
(2) 1959–62—*N. kh. 1962*, p. 639.
(3) 1963—*N. kh. 1963*, p. 658.
(4) 1964—*N. kh. 1964*, p. 774.

10. Direct taxes on the population
(*a*) 1950, 1955–56, 1958—*N. kh. 1958*, p. 899.
(*b*) 1957—Estimated.
(*c*) 1959–62—*N. kh. 1962*, p. 635.
(*d*) 1963–64—*N. kh. 1964*, p. 770.
(*e*) 1965—*Finansy SSSR*, No. 1, 1966, p. 6.

11. Local taxes, fees, fines, passports, etc.
Estimates derived using methodology described in *SNIP 1956–58*, op. cit., pp. 110–11, and based on data in:
(*a*) 1950—*N. kh. 1964*, p. 770.
(*b*) 1955–58—*SNIP 1956–58*, op. cit., p. 110.
(*c*) 1959–64—*N. kh. 1964*, p. 770; *N. kh. 1963*, p. 654.
(*d*) 1965—Projected at 1964 level.

12. State loans
(*a*) 1950, 1958, 1960, 1963–64—*N. kh. 1964*, p. 770.
(*b*) 1955—*N. kh. 1960*, p. 844.
(*c*) 1956—*N. kh. 1959*, p. 800.
(*d*) 1959, 1961–62—*N. kh. 1962*, p. 635.

14. Population
Mid-year population estimates from U.S. Department of Commerce, *Projections of the Population of the USSR, By Age and Sex: 1964–1985*, Washington, D.C., 1964, p. 35.

16. Retail price index
Derived by combining the reported state retail price index with reported collective farm market price index using 1955 share weights of 91.3 for state retail prices and 8.7 for collective farm prices. *Sovetskaya torgovlya*, Moscow, 1964, pp. 39, 266.

TABLE 12.—*U.S.S.R.: Average annual money earnings per wage and salary worker, by sector, 1958–65*

[Rubles]

	1958	1959	1960	1961	1962	1963	1964	1965
Average for all sectors [1]	934	948	961	1,000	1,034	1,051	1,081	1,144
Industry [2]	1,045	(3)	1,096	1,112	(3)	1,181	1,206	1,236
Construction [1]	1,040	(3)	1,100	(3)	(3)	1,219	1,272	1,308
Agriculture [4]	637	(3)	647	699	790	805	847	883
Transportation [1]	988	(3)	1,040	(3)	(3)	1,192	1,226	1,266
Communications [1]	696	(3)	748	(3)	(3)	870	880	886
Trade, restaurants, material, technical supply [1]	697	(3)	703	(3)	(3)	774	788	907
Housing, communal economy [1]	666	(3)	691	(3)	(3)	751	774	871
Health [1]	707	(3)	707	(3)	(3)	744	784	944
Education [1]	833	(3)	839	(3)	(3)	904	942	1,122
Science [1]	1,271	(3)	1,250	(3)	(3)	1,316	1,344	1,387
Credit and insurance [1]	865	(3)	844	(3)	(3)	937	948	1,030
Administration [1]	1,010	(3)	1,027	(3)	(3)	1,123	1,150	1,256

[1] 1958–64—N.kh. 1964, p. 555, "1965—SSSR v tsifrakh v 1965 godu," Moscow, 1966, pp. 126–7.

[2] 1958, 1960, 1963–64, N. kh. 1964, p. 555; 1961, D. N. Karpukhin, "Sootnosheniye rosta proizvoditel'nosti truda i zarabotnoy platy," Moscow, 1963, p. 123; 1965—tsifrakh, 1965, op. cit., p. 126.

[3] Not available.

[4] 1958, 1960, 1963–64—N.kh. 1964, p. 555; 1961–62, "Planovoye khozyaystvo," No. 11, 1963, p. 48; 1965—tsifrakh, 1965, op. cit., p. 126.

HOUSING CONDITIONS AND URBAN DEVELOPMENT IN THE U.S.S.R.

BY

TIMOTHY SOSNOVY

CONTENTS

HOUSING CONDITIONS AND URBAN DEVELOPMENT IN THE U.S.S.R.

Preliminary Remarks

The complex of questions pertaining to Soviet urban living conditions may be examined and interpreted in terms of any one of its several dimensions. In the present paper, the conditions of city life in the U.S.S.R. will be examined primarily from the socioeconomic point of view.

The paper's main objective will be to undertake a characterization of the Soviet city in its present setting, i.e., to show the extent and the nature of the changes that have occurred in the Soviet city since the prerevolutionary period as a result of the policy of forced industrialization initiated in the U.S.S.R. in the late 1920's. Against this background, the paper will try to develop an analysis of the socioeconomic factors that combine to form the process of urbanization in the Soviet Union and of the effects of urbanization on the living conditions of the population of the country.

A few words about the sources of this paper are in order. During the 19 and early 20 centuries, the government agencies of prerevolutionary Russia published several major works on Russian cities.[1] In addition, numerous monographs and articles dealing with various specific topics relating to cities were published. Furthermore, the problems associated with city life and municipal facilities were explored in dozens of special periodicals, usually monthlies, published by the local authorities of the individual cities.

The situation in regard to sources describing and illuminating the municipal economy and city life in general has deteriorated drastically during the Soviet era. In the late 1920's, severe restrictions were placed by Soviet authorities on the publication of statistical data and informative material of all kinds. The body of officially suppressed information expanded steadily under this policy and by mid-1956 all aspects of economic, political, cultural, and social life in the cities of the U.S.S.R. were completely shrouded in secrecy.

Beginning in 1956, the publication of the official statistical yearbook, named The National Economy of the U.S.S.R., was resumed. It contained some fragmentary data related to Soviet cities: the number of cities, size of the urban population; a list of major cities (30); the volume of new housing construction; and total dwelling space in the Soviet cities. However, the new annual statistical abstracts contained no information on the municipal economy or the public utilities provided by the cities. To this day, these voluminous annual publications do not present any firm figure on the urban economy and the engineering facilities of Soviet cities; their physical plant, or type

[1] For example, "Goroda Rossii v 1904 godu," St. Petersburg, 1906; "Goroda Rossii v 1910 godu," St. Petersburg, 1914.

of construction. Any inquiry into the subject of Soviet urban conditions is, therefore, attended by a number of difficulties.

In an effort to overcome these difficulties, the author has resorted to use of a wide variety of scattered sources available in print: census data on the urban population; publications of the Central Statistical Administration; legislative documents of the central party and Government agencies; the proceedings of specialized congresses, conferences, and professional meetings; individual monographs pertaining to some aspect of Soviet cities; articles in general and in professional periodicals; newspaper articles and dispatches; etc. The exploitation of this wide variety of materials has made it possible, if not to overcome completely, at least to circumvent to a considerable extent the obstacles encountered in the course of studying the current situation in the Soviet cities in general and the municipal economy in particular.

I. Urban Housing in Russia Before the Revolution

Prior to the end of the 18th century, housing in Russian cities consisted almost entirely of single-story wooden structures with wood or straw roofs. Use of stone and brick—principally in churches, Kremlin walls, palaces, monasteries, and Government building—began in the late 15th century with the enactment of a decree on "matters of masonry" that was intended to promote masonry construction in the capital and in other large cities. This decree was concerned primarily with the construction of Government buildings.[2]

The characteristics of the housing fund of the cities of prerevolutionary Russia as a whole are given in table 1.

Table 1.—*Residential buildings*[1] *in Russian cities in 1910, by type of material in walls and roofs*

	Number of buildings	Percent of total
Total number of residential buildings	2,483,486	100.0
Buildings with walls of—		
Masonry	564,512	22.7
Wood	1,372,023	55.2
Combination of materials	156,590	6.3
Other and unclassified materials	390,354	15.8
Buildings roofed with—		
Metal	723,189	29.1
Wood	555,450	22.4
Tar paper	55,275	2.2
Tile	186,913	7.6
Straw	534,735	21.5
Other and unclassified	427,923	17.2

[1] A building was defined as a separate structure under a single roof. Firewalls (attached wings) and architectural embellishments were considered as being under the same roof as the main building.

Source: Statisticheskiy ezhegodnik Rossii 1915 g. Petrograd 1916 sec. 8 pp. 1-3

Thus, only 22.7 percent of the housing fund in the cities of prerevolutionary Russia was composed of masonry buildings, while 55.2 percent consisted of wooden houses. Moreover, 43.9 percent of the houses were roofed with straw or wood—highly inflammable materials. At the beginning of the 20th century, 50 percent of the houses in

[2] N. I. Fal'kovskiy, "Moskva v istorii tekhniki", Moscow, 1950, p. 491.

Moscow were made of wood, 33 percent were made of masonry, and the remaining 17 percent were a combination of masonry and wood.[3]

On the whole, the predominant type of dwelling in the cities of prerevolutionary Russia was the single-story house for one family, completely lacking in utilities, and differing but little from rural huts in respect to design and conditions of sanitation and hygiene. There also were many private homes of the mansion type and buildings with several apartments of different size, comfortably appointed and designed for individual families of various sizes. Although no overall data exist on the amount of dwelling space per capita available to the total urban population (24,700,000) of prerevolutionary Russia, for the period 1912–1914 it may be estimated at 7 square meters.

The time periods during which basic municipal facilities were introduced in Russian cities are shown in table 2.

TABLE 2.—*Number of cities with basic municipal facilities in prerevolutionary Russia. (Within boundaries in effect prior to Sept. 17, 1939)*

Municipal facility	Introduction of facilities (number of cities)						
	Before 1870	1870-79	1880-89	1890-1900	1900-09	1910-17	Total in 1917
Water system	15	22	33	41	56	48	115
Sewage system	.....	1	3	4	5	10	23
Electric power station	.....	.....	2	25	105	140	272
Streetcar system	.....	.....	.....	12	11	12	35
Power laundries	.....	.....	.....	.....	.....	9	9
Incinerator plants	.....	.....	.....	.....	.....	2	2

Source: B. B. Veselovskiy, "Kurs ekonomiki i organizatsii gorodskogo khozyaistva", 3d ed., Moscow, 1931, p. 91.

On the eve of World War I, many Russian cities were still largely administrative or administrative-commercial-handicraft centers serving a limited surrounding area inhabited by an agricultural population. According to the 1897 census, 9.36 percent of the urban population of prerevolutionary Russia was engaged in agriculture. This proportion was as high as 20 percent in the Caucasus and Siberia and as low as 3.71 percent in the western provinces.[4]

II. Recent Record of Soviet City Planning

The seizure of power by the Communist Party in the end of 1917 was followed by sweeping changes in the political and economic structure of the country, and in the manner and style of the development of urban life. Forced industrialization brought in its wake the rapid urbanization of the country. The number of towns grew at a rapid rate. During the 12 years between the 1926 and 1939 censuses, the population of the U.S.S.R. increased from 147 million to 170.6 million, or by 16 percent, while the urban population increased during the same period from 26.3 million to 56.1 million, or by 112.5 percent. The rural population declined during the same period from 120.7 million

[3] Verner, I.A. (ed.) "Sovremennoye khozyaistvo goroda Moskvy," Moscow, 1913, p. 18.
[4] "Protsentnoye raspredeleniye nalichnogo naseleniya Imperii oboyego pola po gruppam zanyatiy, pokazannym pri perepisi glavnym, kak dostavlyayushcheye glavneyshiye sredstva sushchestvovaniya," Issue 8, St. Petersburg, 1905, pp. 4–5.

to 114.5 million. The proportion of urbanization increased, during the same period of time, from 17.9 to 32.9 percent.[5]

The growth of cities and urban types of settlements in the U.S.S.R. during the last 38 years is shown in table 8.

TABLE 8.—*Population of cities and urban settlements in 1926, 1939, 1959, and 1965*

NUMBER OF CITIES AND URBAN-TYPE SETTLEMENTS

Range	December 1926		January 1939		January 1959		January 1965	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 20,000	1,699	88.3	2,259	81.8	3,841	83.1	4,277	82.4
20,000 to 50,000	135	7.0	316	11.4	474	10.3	545	10.5
50,000 to 100,000	60	3.1	96	3.6	156	3.4	184	3.5
100,000 to 500,000	28	1.4	78	2.8	123	2.7	158	3.0
Over 500,000	3	0.2	11	0.4	25	0.5	29	0.6
Total	1,925	100.0	2,762	100.0	[1] 4,619	100.0	5,193	100.0

POPULATION OF CITIES AND URBAN SETTLEMENTS (IN MILLIONS)

Under 20,000	8.7	33.1	15.2	25.2	25.6	25.6	29.3	24.1
20,000 to 50,000	4.0	15.2	9.6	15.9	14.8	14.8	16.7	13.7
50,000 to 100,000	4.1	15.6	7.1	11.7	11.0	11.0	12.8	10.6
100,000 to 500,000	5.4	20.5	15.7	26.0	24.4	24.4	31.9	26.2
Over 500,000	4.1	15.6	12.8	21.2	24.2	24.2	31.0	25.4
Total	26.3	100.0	[2] 60.4	100.0	100.0	100.0	121.7	100.0

[1] In the middle of the year.
[2] In new boundaries.

Source: Narodnoye khozyaistvo SSSR v 1964 godu. Statisticheskiy ezhegodnik, Moscow, 1965, p. 32.

The rapid growth of the city population, further stimulated by the policy of forced collectivizatism, helped to bring the problems of the Soviet urban conditions into sharp focus by forcing the Soviet Government to cope with the relocation of millions of workers who poured into the cities en masse from the rural areas of the nation. The problem of modernizing existing cities and building new cities became a matter of extreme urgency.

At the same time, the question of limiting the growth of cities also had to be faced. As far back as 1931 the plenary session of the Central Committee approved a resolution prohibiting the building of new enterprises in the two principal cities of Moscow and Leningrad, to become effective in 1932.[6] In 1939, the 18th Party Congress emphasized the need "to extend this resolution to include Kiev, Khar'kov, Rostov-on-the-Don, Gor'kiy, and Sverdlovsk," where the building of new enterprises was to be prohibited in the future.[7]

The prohibition of the building of new industrial plants in these cities was designed to limit population growth to the natural increase on the part of the existing population. It is quite obvious, however, that in at least five of the seven cities a large proportion of the population growth continued to be accounted for by migration from other areas.

[5] Narodnoye khozyaistvo S.S.S.R. v 1956 godu." Statisticheskiy ezhegodnik. Moscow, 1957, p. 17.
[6] "KPSS v rezolyutsiykh i resheniyakh s'ezdov, konferentsiy i plenumov TsK," pt. III, 7th ed., Moscow, 1954, p. 128.
[7] "XVIII s'ezd Vsesoyuznoy Kommunisticheskoy Partii," Stenograficheskiy otchet, Moscow, 1939, p. 660.

Population growth in these cities is shown in table 4.

TABLE 4.—*Population growth of 7 Soviet cities following approval of resolution to prohibit the building of new enterprises*

Cities	Population (in thousands)			Increase over 1931 and 1939	
	Year prohibition was announced		Jan. 1, 1965, estimate	Number	Percent
	1931	1939			
Moscow	2,800	.....	6,443	3,643	130.1
Leningrad	2,228	.....	3,641	1,413	63.4
Kiev	.....	847	1,348	501	59.4
Khar'kov	.....	833	1,070	237	28.4
Rostov-on-the-Don	.....	510	720	210	41.2
Gor'kiy	.....	644	1,085	441	68.5
Sverdlovsk	.....	423	919	496	117.2

Source: L. M. Kaganovich, "Za sotsialisticheskuyu rekonstruktsiyu Moskvy i gorodov SSSR," Moscow Leningrad, 1931, p. 69; "Narodnoye khozyaistvo SSSR v 1964 godu, Statisticheskiy Ezhegodnik," Moscow, 1964, pp. 22–31.

During the past three decades the Soviet Government has attached great importance to the problem of limiting the growth of large cities. Ideally, in the Soviet view, the growth of cities should be limited to what was considered to be their optimum size, that is, not more than 250,000 inhabitants. However, the Soviet Union has not been successful in coping with this problem. In practice, the large cities have continued to grow, while the medium-size cities have developed far more slowly.

At present the number of large cities, i.e., the cities with a population of 100,000 and over, has increased conspicuously; namely from 89 in 1939, to 187 at the beginning of 1965. Of this group, the number of cities with a population of 500,000 and over, has grown from 11 to 20. In the beginning of the sixties, only the city of Leningrad has spelled out—in its new general plan—some concrete measures for the territorial limitation of city growth and for the dispersion of its population.[8]

Also, in the process of reconstructing some of the larger cities, population increases at a much greater rate than planned have taken place, as shown in table 5.

TABLE 5.—*City population as planned for 1975 and as reported for 1965*

Cities	Planned population for 1975	Actual population in the beginning of 1965
Gor'kiy	840,000	1,085,000
Tashkent	800,000	1,106,000
Novosibirsk	850,000	1,029,000
Kuibyshev	700,000	948,000
Minsk	480,000	717,000

Source: Ekonomika stroitel'stva, No. 3, 1960, p. 30; Narodnoye khozyaistvo SSSR v 1964 godu. Statisticheskiy Ezhegodnik, Moscow, 1965, pp. 22–31.

[8] Arkhitektura SSSR, No. 3, 1960, p. 24.

The general plan for the city of Baku, to cite one instance, had predetermined its population for the next 20 years at 800,000 to 850,000; in fact, however, its present population stands at 1,147,000.[9] A similar situation exists in various other cities. For example, the general plan for the city of Temir-Tau, prepared in 1956, projected its population at 150,000 but the new revised general plan, drawn up in 1962, raised this population figure to 280,000 to 300,000.[10]

Similar situations have occured in connection with the construction of new cities. In 1949, when construction work was started on the site of the city of Angarsk, the plans called for a population of 80,000. More recently, however, plans have been revised to a point where the city will eventually accommodate 200,000 inhabitants.[11]

The construction of Novaya Kakhovka, planned for a population of 25,000, was completed in 1960. However, after the building work was completed it was decided to establish a number of industrial enterprises in the town in order to take advantage of the proximity of the Kakhovka hydroelectric power station. As a result, the projected population of the city was revised markedly upward to 100,000.[12]

As a result of the recurrent miscalculation in city planning, particularly with respect to overall area and number of inhabitants, important and expensive corrections have had to be introduced with respect to, among others, the size of cities and their street network, the capacity of its cultural establishments, and its public utilities (water systems, sewers, gas lines, etc.).

The wholesale demolition of existing houses, in connection with large scale new housing construction as well as the general reconstruction programs of the cities, also seem to be at odds with the official plan. For example the following amounts of living space were reported to have been demolished in the city Voronezh:

1958—20,000 square meters living space.
1959—34,000 square meters living space.
1960—40,000 square meters living space.
1961—65,000 square meters living space.

The same situation had been reported from time to time in the case of many other cities, such as Novosibirsk, Kostroma, Maykop, and Melitopol.[13] In the city of Kuibyshev whole residential areas were reportedly demolished. In the course of a period of 4 years (1957–60) 1 metalurgical enterprise in this city on the Volga destroyed 9 blocks or 180 houses.[14] In the RSFSR, the demolition of houses ordered, in connection with the reconstruction of several cities, increased by 50 percent between 1960 and 1963.[15]

The general program related to Soviet city planning is regularly adjudged by the official press to be unsatisfactory. Out of 1,700 cities at the beginning of 1961 nearly one-half of them did not have an ap-

[9] Arkhitektura SSSR, No. 2, 1961, p. 31.
[10] Zhilishchnoye stroitel'stvo, No. 7, 1963, p. 22.
[11] Gradostroitel'stvo, "Trudy VI sessii Akademii stroitel'stva i arkhitektury SSSR po voprosam gradostroitel'stva," Moscow, 1961, p. 520.
[12] Stroitel'stvo v SSSR, 1917–1957, "Trudy III sessii Akademii stroitel'stva i arkhitektury SSSR posvyashchennyye 40 godovshchine velikoy oktyabrs'koy sotsialisticheskoy revolutsii," Moscow, 1958, pp. 212–218; Ekonomika stroitel'stva, No. 8, 1960, p. 30.
[13] Pravda, Apr. 10, 1961, p. 2.
[14] Izvestiya, Mar. 17, 1961, p. 4.
[15] Ekonomicheskaya Gazeta, June 23, 1964, p. 38.

proved general plan.[16] Nor is the situation improving visibly. It is true that during 1965 as many as 236 general plans were developed or revised for large, medium, and small cities. The fact remains, however, that in the forthcoming 5-year period it will be necessary to revise the general plans compiled over the course of the past 20 years (1940–60) for not less than a thousand cities. In addition, the development of new plans for 260 medium-size cities and small towns is required.[17]

The main reason why so many previously approved general plans for cities need to be redrawn or revised is obvious: Soviet urban planning agencies are poorly organized and continue, moreover, to work with a complete lack of regional planning data and programs, which are the keystone for urban development. It is rather self-evident that regional planning designs are necessary for the correct arrangement of the regional complex, including industrial enterprises, transportation, power and public utilities and communication facilities. Such plans have been developed in a number of republics for economic, industrial and rural regions. However, in the meantime many of them have become obsolete and as a result, now require fundamental revisions.

The process of regional and urban planning inevitably is rather complicated. So much minute current statistical material needs to be gathered, so many separate organizations must be coordinated in the course of preparation of a general plan of the city, that often such a plan becomes obsolete by the time of its approval. As a rule, a great deal of time is needed to coordinate all the established requirements. For example, the general plan for Volgograd was approved only in 1962, i.e., 17 years after the end of the Second World War.[18]

One difficult problem facing Soviet city planning is the apparent concentration of an overwhelming number of the city populations in the oblast' [province] centers, as shown in table 6.

TABLE 6.—*Percent of population of some large cities to the population of oblast' in 1959*

Cities	In percent to all urban population	In percent to all oblast' population
Leningrad	84	73
Omsk	81	35
Kiev	71	40
Tashkent	70	40
Novosibirsk	68	38
Khar'kov	60	37

Source: N.V Baranov, Sovremennoye gradostroitel'stvo: Glavnyye problemy. Moscow, 1962, p. 42.

The boundaries of such cities undergoing reconstruction, as Gor'kiy, Kuibyshev, Khar'kov, Tashkent, Novosibirsk, are steadily expanding. In some cases the metropolitan areas undergoing reconstruction extend from 20 to 30, even 40 to 50, kilometers and the labor force in

[16] Pravda, May 19, 1961, p. 2.
[17] Pravda, Oct. 20, 1965, p. 3. Some large cities, like Kazan', Frunze, Noril'sk, Tomsk, etc., do not have approved plans, Stroitel'naya Gazeta, Oct. 29, 1965, p. 2.
[18] Arkhitektura SSSR, No. 7, 1961, p. 7; Ekonomicheskaya Gazeta, June 23, 1965, p. 38.

these areas spends a great deal of time traveling to and from work. The city of Volgograd, for example, extends over 70 kilometers, and has a population of 700,000 (end of 1964).

Half of the population of the city of Kopeysk (80,000) is scattered in the worker settlements from north to south for a distance of 35 to 40 kilometers.[19] It should be noted that the areas used for industrial enterprises in most Soviet cities are almost twice as large per person than in the cities of the United States.[20]

The residential areas in the large cities, like Gor'kiy, Novosibirsk, Kuibyshev, Chelyabinsk, and others, average 45 square meters per person, or twice as high as the officially prescribed norm.[21] This is due to the fact that a high percentage of residential areas, as compared to total built up areas, are occupied by small dwelling units. For example: Orenburg, 88 percent; Tashkent, 85 percent; Omsk, 83 percent; Penza, 82 percent; Novisibirsk, 80 percent; Tula, 80 percent; Kaluga, 80 percent; Ufa, 77 percent; Arkhangel'sk, 75 percent; Vladimir, 70 percent; Kuibyshev, 67 percent; Gor'kiy, 57 percent.[22]

The fourth congress of Soviet architects, held at the end of 1965, featured an important and serious discussion of the quality of Soviet architecture. The theme of the congress may be expressed in the following official commentary published on that occasion about the state of the art in Soviet city planning: "Many shortcomings still exist in the design of general plans. Monotonous architecture in our cities is not only a result of a frequent lack of creative approach to the application of standard type plans but also a consequence of the stereotype practices that have become established in the development of the general plans." [23]

The first secretary of the Union of Architects also wrote in this connection: "We should frankly say that the level of quality of Soviet architecture today is unsatisfactory. Many houses and buildings of the mass type (designed) to improve living conditions are imperfect in their functional, design, and esthetical standards. Quality of mass building, as far as the many new construction materials employed and the equipment installed inside the buildings, in the majority of cases, is inadmissably low." [24]

Nevertheless, on more formal occasions Soviet authors continue to stress that "thanks to the absence of private ownership of land and means of production, Soviet urban construction is developing under the favorable conditions of a planned economy. This creates unlimited possibilities for the improvement of planning and building in populated areas in order that Soviet cities may be transformed into the best cities in the world." [25]

III. Housing Conditions in Urban Centers of the U.S.S.R.

As was noted before, the policy of forced industrialization based as it was on the compulsory collectivization of agriculture, brought about

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[19] Arkhitektura SSSR, No. 1, 1962, p. 28.
[20] Voprosy ekonomiki, No. 7, 1960, p. 54.
[21] Ekonomika stroitel'stva, No. 3, 1960, p. 33.
[22] Trudy VI sessii, op. cit., p. 493.
[23] Pravda, Oct. 20, 1965, p. 3.
[24] Arkhitektura SSSR, No. 9, 1965, p. 1.
[25] V. I. Svetlichnyy, "Zhilishchnoye stroitel'stvo v SSSR," Moscow, 1960, p. 28.

a mass movement of millions of peasants from the rural areas into the cities. At the same time, the scale of new housing construction by the public authorities failed to keep up with the rate of growth in urban population, due to the concentration of capital investment on the heavy branches of industry required for the support of the military potential of the U.S.S.R. As a consequence, the country witnessed a steady decline in living space per capita.[26] The amount of living space available per inhabitant decreased from 5.85 square meters in 1926 to 4.34 square meters in 1940.[27] The tendency for living space to decline per capita came to an end sometime during the fourth 5-year plan (1946–50); since then there has been a perceptible, though very gradual, rise in average living space available per urban resident in the Soviet Union. However, housing conditions of the city population have continued to be inadequate, and by the end of 1958 total urban dwelling facilities provided only 5.40 square meters of living space per inhabitant.

In order to improve the housing situation the Soviet Government undertook a program of building 660 million square meters of floorspace during the 7-year plan covering the period 1959–65.[28] The degree of fulfillment of this plan may be seen in table 7.

TABLE 7.—*7-year plan goals and actual fulfillment (millions of square meters floorspace)*

	1959	1960	1961	1962	1963	1964	1965	Total
Planned goal	81,736	101,636	96,236	94,636	94,686	94,986	96,084	660,000
Actual fulfillment	80,700	82,800	80,200	80,500	79,300	75,100	78,000	556,600
Percent	98.7	81.4	83.3	85.1	83.7	79.1	81.2	84.3
Including:								
Public sector	53,500	55,800	56,600	59,800	61,900	58,900	61,200	407,700
Percent	66.3	67.4	70.6	74.3	78.1	78.4	78.5	73.2
Private sector	27,200	27,000	23,600	20,700	17,400	16,200	16,800	148,900
Percent	33.7	32.6	29.4	25.7	21.9	21.6	21.5	26.8

Source: D. L. Broner, "Sovremennyye problemy shilishchnogo khozyaistva (Opyt ekonomiko-statisticheskogo analiza)," Moscow, 1961, p. 99; "Narodnoye khozyaistvo SSSR v 1964 godu, Statisticheskiy ezhegodnik," Moscow, 1965, p. 604; Pravda, Feb. 3, 1966, p. 2.

As indicated in the above figures, only 84.3 percent of the amount of new housing planned for the 7-year plan was in fact completed. According to the target figures for 1959–65 individual builders should have built 260 million square meters floorspace or nearly 40 percent over and above the Government program. In fact, private construction added only 148.9 million square meters floorspace or only 57.2 percent of its planned assignment.

Private construction is not favored in the Soviet Union today. Frequent delays and supply difficulties invariably beset individuals wishing to build. For these reasons, the role of private construction in the total building program has declined sharply. In 1965, indi-

[26] The "living space" (zhilaia ploshchad') of an apartment includes: the living rooms and bedrooms. "Nonliving space" (nezhilaia ploshchad') takes in the kitchens, entrance halls, bathrooms, corridors, pantries, and other service areas, even if they are used for living purposes. Living space and nonliving space together make up the total floor space (obshchaya ploshchad') of a dwelling.

[27] "Current Economic Indicators for the U.S.S.R.", materials prepared for the Joint Economic Committee, Congress of the United States, June 1965, Washington, D.C., p. 146.

[28] Houses to be constructed in cities, worker settlements, technical repair stations, state farms (Sovkhozes) and lumbering settlements.

vidual builders completed only 16.8 million square meters of floor-space as compared to 27.2 million square meters in 1959. Housebuilding cooperatives, another source of construction added 1.8 million square meters of floor space in 1963, 4.8 million square meters in 1964, and 6.0 million square meters in 1965.[29]

The reconstruction of cities often results in the destruction of private housing. For example, in the cities of the R.S.F.S.R., over 30,000 square meters of living space, or more than 3,000 privately owned houses, which were in good condition were demolished in 1963.[30]

The quality of Soviet housing, which can be termed at best haphazard, shoddy, and incredibly poorly maintained, remains the most vulnerable point. This has been a perennial problem. In 1927 a report on housing construction by a special commission of the U.S.S.R. Council of People's Commissars severely critized the quality of new construction: "The quality of our new housing is extremely low * * * Not infrequently, a newly built house requires very serious repairs in a year's time and capital repairs after 2 or 3 years. Numerous examples of construction in the Donets Basin, the Urals, the Northern Caucasus, Baku and in the industrial regions (Moscow, Ivanovovoznesensk, Gor'kiy, Sormovo) confirm this sad reality.[31] Since then, countless regulations, resolutions, decrees, directives, circulars, and the like, have been introduced in an attempt to improve the quality. In spite of this, housing construction in the Soviet Union today, on the whole, suffers from a number of glaring defects.

Some typical examples: in Azerbaijan S.S.R. the state commission for architectural-construction control published the results of its revision of some completed houses: "the width of the rooms at the entrance is 3 meters, and on the opposite side, the width is 20 centimeters more; the height in one corner is 3.50 meters, on the opposite side, 3.48 meters; the threshhold is 10 centimeters higher than the floor; the width of the passage in the kitchen is 20 centimeters narrower than the plans called for—defects and departure from working designs and technical specifications are so substantial, that they cannot be corrected."[32] Recently occupied houses are sometimes already in need of capital repairs, and the new occupants are evicted because rain leaks through rotten shingles, and comes through the walls as a result of improperly constructed wall joints.[33]

A special term, "hidden spoilage," is used in Soviet practice. For example, when a commission inspects the floors of a new house, they are found to be in order. Later, however, the new occupants find that the floors begin to warp, as a result of excessive humidity, often 18–20 percent instead of the 7 percent permitted by standards.

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[29] "Narodnoye khozyaistvo SSSR v 1964 godu," Statisticheskiy ezhegodnik, Moscow, 1965, p. 609; Pravda, Feb. 3, 1966, p. 2. Plan for construction by housebuilding cooperatives was established: for 1964, 4.8, and for 1965, 7.2 million square meters floorspace. Pravda, Dec. 8, 1965, p. 3.

[30] Ekonomicheskaya Gazeta, June 23, 1965, p. 38. For the U.S.S.R. as a whole, in the same year, the record showed the existence of nearly 10 million meters of living space in ramshackle condition, but only 1,845,000 square meters of the type of housing were demolished.

[31] V. Schmidt, "Rabochiy klass S.S.S.R. i zhilishchnyy vopros," Moscow, 1929, p. 75.

[32] Stroitel'naya Gazeta, Mar. 12, 1963, p. 4.

[33] Pravda, Jan. 15, 1965, p. 4.

Some indication of the circumstances under which housing construction organizations are working can be seen from table 8.

TABLE 8.—*Characteristics of working conditions of building organizations in the Kazakh S.S.R., in 1963, and 1964*

	1963	1964
Stoppage of unit's finance	106	104
Stoppage of construction work	115	80
Administrative punishment of engineer and other technical workers	78	89
Cases concerning bad workers delivered to prosecutor's office	31	92
Decreased account books for defects committed by contract organization (thousands of rubles)	753.9	965.4
Quality of constructed houses, in percent:		
Excellent	1.4	1.3
Good	57.6	50.0
Satisfactorily	41.0	48.7
Unwarranted construction of units in cities and urban settlements	135	183
Unwarranted putting into operation of units of civil purpose	404	460

Source: Zhilishchnoye stroitel'stvo, No. 11, 1965, p. 30.

Soviet officials are particularly concerned with the inefficiencies and substandard quality of large panel construction. The reason for designing large panel apartments was to use efficiently the large, plain, structural elements that form the walls, partitions, ceilings, and so on, which are prepared at a factory (including trimming their surfaces) and then assembled at the construction site by derricks of one type or another. Such large panel construction using prefabricated components is characterized by a high degree of industrialization and should offer many possibilities for economies.

During the past 4 years only 19.8 million square meters of living space of the large panel type were constructed. This amount totaled only 41 percent of the established plan. Many of the specialized enterprises which are engaged in the manufacture and preparation of large panel building parts, produce parts of completely unsatisfactory quality, with a low degree of factory readiness. As a result, many apartment buildings are constructed and operated with numerous defects.[34]

In some cases the situation is evidently even worse. For example, during 1961–63, 42 five-floor apartment houses were constructed in Kiev, with a total floor space of 104,000 square meters. In view of the low quality of the structural materials used, progressive cracks began to appear in the external wall panels, and further construction of these buildings had to be suspended.[35]

Undoubtedly, the Soviet Government has been making a determined effort toward overcoming the persistent housing shortage. The fact remains however, that Soviet investment in the officially favored sectors of the economy, at the expense of housing, has not undergone any major change in recent years. As a result, housing conditions for the Soviet population has improved but slightly, as may be seen from table 9.

[34] Stroitel'naya Gazeta. Dec. 5, 1964. p. 2.
[35] Ekonomika stroitel'stva, No. 3, 1965, p. 4.

TABLE 9.—*Urban population growth and living space per capita in the U.S.S.R., 1959–65*

Year	Urban population at end of year (million persons)	Urban housing at end of year		Index per capita living space	Per capita living space as percent of health norm of 9 square meters
		Total living space (million square meters)	Per capita living space (square meters)		
1958	[1] 100.0	540.8	5.40	100.0	60.0
1959	103.8	582.4	5.61	103.8	62.3
1960	108.3	622.7	5.75	106.4	63.9
1961	111.9	661.0	5.91	109.4	65.7
1962	115.1	698.1	6.06	112.2	67.3
1963	118.6	734.5	6.19	114.6	68.8
1964	121.7	768.3	6.31	116.9	70.1
1965	125.3	804.0	6.42	118.8	71.3

[1] As of Jan. 15, 1959. The author has used official Soviet sources for the purpose of estimating the living space and population figures during the period 1958–65.

Since 1957, Soviet authorities have predicted that the housing conditions of the urban population of the country would improve considerably by the end of 1965 and that by 1970 the housing shortage would be entirely overcome. Once more, this has turned out to be an over-optimistic forecast. In fact, the Soviet city inhabitant in 1965 had at his disposal, on the average, only 71.3 percent of the 9 square meters living space accepted as the health norm by the authorities of the U.S.S.R. some four decades earlier.

The reason for this cheerless situation is not entirely related to the nonfulfillment of the 7-year plan in housing. The latter, is will be recalled, provided for the construction of 660 million square meters of floor space; of this, only 556.6 million square meters were in fact completed, or 103.4 million square meters less than scheduled. However, had the Soviet Government fulfilled the entire amount called for in the plan, it would have raised per-capita living space in the cities to only 6.95 square meters, a figure that would still fall far short of the established health standard.

In other words, the present acute housing shortage in the U.S.S.R. needs to be regarded as the inescapable consequence of a conscious policy, originated several decades ago, of devoting no more than a minor proportion of the national income to investment in the housing sector. It is fair to conclude, moreover, that the Soviet Government cannot soon attain a notable improvement of the housing conditions of the population so long as the present building tempo is maintained. Even the more modest goal of reaching the health norm of 9 square meters per capita living space does not seem to be in sight under the present building program.

One way of evaluating present housing conditions is by way of the generally recognized criteria applied to apartments, that is by the number of occupants per room, as shown in table 10.

TABLE 10.—*Density of occupancy per room in urban communities of the U.S.S.R. in 1923, 1960–63, and 1965*

Year	Persons per room	Year	Persons per room
1923	2.60	1962	2.59
1960	2.78	1963	2.55
1961	2.72	1965	2.33

NOTE.—In the United States in new houses constructed in 1965 (1,540,000 units), the per capita living space was 32.9 square meters (354 square feet), and the average density of occupancy per room, including kitchen, was 0.63 persons. The author wishes to thank M. E. Everett Ashley, director of program evaluation and statistics, Department of Housing and Urban Development, for the information.

Source: The Housing Problem in the Soviet Union, by Timothy Sosnovy, New York, 1954, p. 276. For 1960–63, and 1965 our latest estimate.

In regard to the above figures, it may be noted that under standards in effect in most West European countries and in the United States, occupancy by more than 1.5 persons per room is regarded as excessive.[36]

In the interest of perspective, it should be recalled that the first all-union population census of 1926 was the last census that published information on housing in the Soviet Union. This census showed that the majority of families at that time occupied one-room apartments. It further revealed that: 23.5 percent enjoyed private kitchen facilities used solely for this purpose; 36.5 percent used a kitchen in common with others; 22.3 percent were without kitchens; 11.1 percent used the kitchen as dwelling space; and for 6.6 percent of the families the manner in which the kitchen was used was unknown.

At present, as far as the new small-sized apartments built for one family occupancy are concerned, the housing situation of the occupants has changed perceptibly for the better. Still, our calculations show that nearly one-half of the total apartments belonging to the state today still function as communal apartments, whose inhabitants continue to share living space, kitchen, and other facilities.

Barracks and hostels are another form of communal-type apartments. However, there are no data concerning their number or dwelling area. Fragmentary data show, however, that in the important industrial city of Sverdlovsk nearly 10 percent of all living space constructed during 1958–60 was of the barracks or hostel type.[37] In the Ukraine, over 1,500,000 young workers of both sexes were reported to be living in special barracks or hostels in 1965.[38]

Technically, competent observers have reported that the small-sized apartments, which began to be built in 1959, are generally uncomfortable due to the poorly-designed floor space. They include rooms whose only access is through other rooms, combined toilet rooms and

[36] The dimensions of rooms do not differ significantly between countries. The proportion of overcrowded apartments in a number of countries was as follows: United States—with kitchen included as habitable room—1.5 percent (1940); Norway—0.3 percent (1946); Sweden—4.1 percent (1945); Switzerland—1.2 percent (1941); France—9.4 percent (1946). See Statistical Yearbook 1951, United Nations, 1952, pp. 536–537.

[37] Zhilishchnoye stroitel'stvo, No. 1, 1961, p. 13.

[38] "And they do not change bedclothes, there is no hot water, and not enough wardrobe hangers." Robitnycha Gazeta, Feb. 9, 1965, p. 1.

bathrooms, and narrow entrances. Living space in these apartments constitutes 70–75 percent of total space instead of the generally accepted ratio of 65 percent. The one positive feature to their credit is their comparatively low cost.[39]

The absence of built-in equipment of all types (kitchen cabinets, closets, etc.) represents another inconvenient aspect of these apartments. The refrigerator barely fits into the kitchen, and its capacity is uncommonly small. Also, it is quite impossible to install the washing machine in either the bathroom or the kitchen, since there is no provision for it in either. These apartments are also reported to be especially inconvenient for families owning skis, tents, bicycles, and other sporting equipment.[40]

The furniture required for these apartments also presents the new occupant with a number of problems, largely because more than 15 ministries and various departments are involved in the design and production of furnishings for these new apartments, and their efforts remain uncoordinated to date, thereby adding to the hardships faced by the occupants of these newly built dwelling units.

One indicator of the acute housing needs of the Soviet population is the frequent occupation of apartments in unfinished buildings with the permission of the administration. Today, this is a generally accepted practice. All too often, however, these buildings are left by the contractors with flagrant defects and a low quality of finishing work.[41]

Often, too, houses declared to be ready for occupancy cannot in fact begin to accept tenants. In a recent account from Moscow, a 14-story building was completely finished, but could not be occupied, because the elevator had not been installed.[42] Soviet press accounts also report from time to time that in order to obtain living space people tend to resort to various types of subterfuge and outright fraud. They arrange for fictitious separations of married couples in court, or make fraudulent claims concerning expected births, etc.[43*]

It is quite clear that the fund of urban housing fund at the disposal of the state has become an instrument of policy. The Soviet citizen has become as completely dependent upon the state for his allocation of housing as he is with respect to education, employment, clothing, and food, which he can obtain only from the state and in the amount prescribed by the state authorities. The bulk of the housing fund in the cities and industrial settlements is owned by the state, while the direct operation of these facilities is entrusted to the local state institutions and state-owned industrial enterprises who have the right to grant to the citizen the housing space he requires or to withhold it from him in accordance with their own priorities.

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[39] Pravda, Feb. 23, 1966, p. 3.
[40] Izvestiya, Oct. 21, 1965, p. 4.
[41] Zhilishchnoye stroitel'stvo, No. 11, 1965, p. 30. It is worthy of note that even in Moscow it is only in the new [eighth] 5-year plan (1966–70) that firm plans have been made "to liquidate completely living space in basement, semibasement and barracks." (Gorodskoe khoziaistvo Moskvy.) No. 8, 1965, p. 15.
[42] Pravda, Apr. 28, 1965, p. 4.
[43] Pravda, Dec. 19, 1965, p. 6.
*Footnote 44 omitted before printing.

IV. Economic Status of Soviet Housing Sector

In the cities and industrial settlements of the U.S.S.R. housing space totaled 1,237,000 square meters at the end of 1965. Of this, 805 million square meters, or 65.1 percent, belonged to the state, and the remaining 432 million square meters, or 34.9 percent, belonged to individuals.

According to the housing census of January 1, 1960, 32 percent of the entire state housing space was administered by the local soviets while the remaining 68 percent was administered by departments of the regional economic councils (sovnarkhozy), ministries, enterprises, and other organizations, as is shown in table 11.

Table 11.—*Distribution of state floor space at the end of 1960, between local Soviets and other organizations*

	Total floor space (million square meters)	Distribution (percent)	
		Sovnarkhoses ministries and departments	Local soviets
S.S.S.R.	563	68.0	32.0
R.S.F.S.R.	222	67.6	32.4
Moscow	38.8	42.8	57.2
Sverdlovsk	4.7	84.7	15.3
Magnitogorsk	(1)	98.5	1.5
Chirchik	.367	92.4	7.6

[1] Not determined.

Source: B. M. Kolotilkin Dolgovechnost' zhilykh zdaniy, Moscow, 1965, p. 22.

As shown above, housing administered by departmental agencies constituted 84.7 percent of state housing in Sverdlovsk, 98.5 percent in Magnitogorsk, and 92.4 percent in Chirchik. The number of organizations involved in housing administration in various cities is usually large. For example, in Chirchik housing was administered by 16 different organizations; in Magnitogorsk, 60; and in Moscow by more than 280 organizations.

Not only houses but other municipal services, such as utilities, belonged not to local soviets but to other organizations, most frequently industrial enterprises. In many cities the regional economic council administers the water and sewer systems, gaslines, heating systems, tramways, and other facilities.

In comparison with other countries the housing of the U.S.S.R. is very young, almost two-thirds of it being less than 25 years old. Unfortunately, there are no separate data concerning the age of the state and private housing funds. The age structure of housing in cities and workers settlements is shown in table 12.

TABLE 12.—*Time of construction of floor space in cities and workers settlements of the U.S.S.R. as of Jan. 1, 1964*

Time of construction of housing fund	Floor space (million square meters)	Percent
To 1914	180	15.9
1914-40	241	21.3
1941-63	709	62.8
Total	1,130	100.0

Source: B. M. Kolotilkin, "Dolgovechnost' zhilykh zdaniy," Moscow, 1965, p. 219.

Records showing subtractions from the fund of housing space in the U.S.S.R. and the reasons for it are of comparatively recent origin, and the data are incomplete and unsystematic. The three most important reasons given for the loss of housing space are:

1. The loss of houses as a result of physical wear and tear;
2. Reconstruction of residential areas of cities; and
3. The loss of houses due to natural calamities.

In 1961, the fund of housing space in cities and workers settlements was decreased by 4,180,000 square meters of living space, which constituted 0.63 percent of the entire state and individual space, and 11.4 percent of all living space constructed in 1961. Of this total loss, 3,490,000 square meters of living space, or 83.5 percent, was in the public sector, and 690,000 square meters of living space, or 16.5 percent, in private sector. These losses were nearly 0.9 percent of public housing space and 0.3 percent of individual. For the R.S.F.S.R. the figures were 0.8 percent and 0.5 percent, respectively.

The basic reasons for the loss in 1961 were:

(*a*) The reconstruction of residential areas (1,400,000 square meters or 0.21 percent of total housing space demolished); and

(*b*) The delapidation of houses and natural calamities (2,780,000 square meters of living space or 0.42 percent of all housing space).

In 1964 the housing fund of the U.S.S.R. lost 9,470,000 square meters of floorspace, which was 0.8 percent of the total at the end of 1964 (1,182,000 square meters) and 16.5 percent of total housing construction for that year (57.5 million square meters of floorspace).[45] As a rule, reconstruction results in a larger decrease in the housing allocated to the local Soviets, than it does to departmental housing. There is a simple explanation for this. In the residential areas of the cities, especially in the centers of cities, the density of buildings with a high percentage of amortization is much higher, and amortized houses are the first to be reconstructed. It should be noted, that the annual loss in housing space caused by the reconstruction of residential areas is twice as high as that in other European countries.[46]

Communist countries have always boasted of the low rents paid by workers, in an effort to offset other negative features of their economy, such as low wages, high prices, and scarcities of goods. However, low

[45] "Narodnoye khozyaistvo SSSR—1964, statisticheskiy ezdegodnik," Moscow, 1965, p. 611.
[46] B. M. Kolotilkin, "Dolgovechnost' zhilykh zdaniy," Moscow, 1965, p. 222.

rents mean only that there is a smaller direct contribution by tenants to the total expenditures for maintaining housing, as is shown in table 13.

TABLE 13.—*Incomes and expenditures per square meter living space for state housing fund in 1962 (excluding living space in hostels provided with cots)*

Income and expenditures	Total housing fund		Enterprises, organizations, ministries, departments and sovnarkhozes		Local soviets	
	Ruble	Percent	Ruble	Percent	Ruble	Percent
All income	2.22	54.4	2.01	47.2	2.62	70.0
Including:						
1. Rent	1.51	68.0	1.52	75.6	1.49	56.9
2. Rent from uninhabited space	.40	18.0	.22	11.0	.75	28.6
3. Share in the expenditures of leaseholder	.20	9.0	.15	7.5	.29	11.1
4. Other income	.11	5.0	.12	5.9	.09	3.4
All expenditures	4.08	100.0	4.26	100.0	3.74	100.0
Including:						
1. Management	.28	6.9	.32	7.5	.23	6.2
2. Service personnel	.41	10.1	.36	8.5	.49	13.1
3. Economic expenditures of house manager's office	.46	11.3	.52	12.2	.33	8.8
4. Current repairs	.80	19.6	.82	19.3	.75	20.0
5. Deductions	1.61	39.4	2.03	47.6	.83	22.2
6. State subsidies for capital repair and modernization	.38	9.3	.....	.....	1.06	28.9
7. Other expenditures	.14	3.4	.21	4.9	.03	.8

Source: B. M. Kolotilkin, "Dolgovechnost' zhilykh dozdanlymov," Moscow, 1965, pp. 102–103.

On the whole, rents meet only 54.4 percent of operational expenses, local soviets, 70 percent, and departments and organizations, 47.2 percent.

The total expenditures for maintaining the housing fund in 1962 can be broken down in the following manner: Management expenses—6.9 percent, expenses for current repair—19.6 percent, for capital repair and modernization—48.7 percent, and other expenses—3.4 percent. The basic reason for such high expenses for repairs is the low quality of housing construction.

All department administrations spent 12.2 percent more for maintenance of 1 meter of living space than the municipal housing administrations. Housing administration is a secondary matter for departments which seldom have trained personnel for this purpose. In fact, the maintenance cost of houses by departments is even higher than the figures indicate because the operating losses are counted as overhead of the industrial enterprises and other organizations.

Maintenance and repair of state-owned buildings in the U.S.S.R. consumed 1.9 billion rubles in 1962, or nearly 38 percent of the entire investment in new housing construction by the state and cooperatives. In 1965 it will increase to 40 percent. These figures do not include expenses for heating, water supply, electrical equipment, and other public utilities. In most European countries, on the other hand, an-

nual expenses for maintaining housing, including capital repairs, is 1–1.5 percent of the current cost of the houses. In the U.S.S.R. this figure is nearly 2 percent.[47] The reason for high cost in the U.S.S.R. is that the management and operation of housing is poorly organized. There is no center for coordination of work in the field of housing; i.e., policy, investment, management, repairs, operation, taxation, supply, etc. For example, in one of the Moscow city districts 16 taxes for rent and for heating exist. In Moscow, accounts for rent, electricity, gas, telephone, and water are made separately. For rent accounts alone there are 350 offices with 3–4 persons in each.[48]

V. Public Utilities and Personal Services

According to Soviet planning authorities, investment in the basic parts of an urban or suburban development should be in the following proportions:

Housing	50–55
Public facilities (including public sports buildings)	24–25
Municipal facilities, including transportation, utilities, and site preparation	[49] 21–25

Construction of these basic components should be completed simultaneously, but often the public and municipal facilities are completed long after the residential areas have been settled. Higher priority is given to fulfillment of the housing plan than to public utilities and other conveniences, and needed resources for construction of the latter often are not available. To satisfy the need for services in such circumstances a special trip to the central part of the city is necessary. As an illustration, Pavlovo Field and Selective Station are two new residential areas being built on the outskirts of Khar'kov to house approximately half a million inhabitants. Housing construction in several areas is almost finished, but, long after these areas have been occupied, the inhabitants will be without schools, playgrounds, shops, and service establishments.[50]

It is often said that these establishments will be constructed "afterwards," but "afterwards" may be many months and even years later.[51] Also, housing construction often begins without preliminary site preparation or the provision of facilities which are an integral part of construction such as paved streets, sewer and water systems, etc. Hence, construction of communal enterprises for different purposes is lagging far behind housing construction, and the percentage of the population living in houses with conveniences is comparatively low, as can be seen from table 14.

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[47] Arkitektura SSSR, No. 12, 1964, p. 38.
[48] Ekonomicheskaya Gazeta, Jan. 6, 1965, p. 29.
[49] A. E. Stramentov, "Vvedeniye v gorodskoye stroitel'stvo," Moscow, 1963, p. 166.
[50] Izvestiya, June 5, 1965, p. 3.
[51] Pravda, Jan. 23, 1966, p. 3.

TABLE 14.—*Urban population provided with municipal utilities: 1927, 1939, and 1956 (millions of persons and percent). For 1961, the percent of floor space with municipal utilities in public sector only*[1]

1927

Type of municipal utilities	Urban population	With municipal utilities	In percent	Including population of private homes		
				Population	With municipal utilities	In percent
Electric lighting	26.3	10.7	40.7	13.8	2.9	21.0
Running water	26.3	6.8	25.9	13.8	.9	6.5
Plumbing	26.3	4.6	17.5	13.8	.4	2.9
Central heating	26.3	(2)	(2)	13.8	(2)	(2)
Gas	26.3	----	----	13.8	----	----
Bath	26.3	(2)	(2)	13.8	(2)	(2)
Hot water	26.3	----	----	13.8	----	----

1939

Electric lighting	56.1	47.6	84.8	20.5	14.2	69.2
Running water	56.1	21.7	38.7	20.5	.2	1.0
Plumbing	56.1	15.8	28.1	20.5	.2	1.0
Central heating	56.1	6.2	11.1	20.5	----	----
Gas	56.1	(2)	(2)	20.5	----	----
Bath	56.1	7.2	7.5	20.5	----	----
Hot water	56.1	.4	.7	20.5	----	----

Type of municipal utilities	1956						1961
	Urban population	With municipal utilities	In percent	Including population of private homes			Percent of floor space provided with municipal utilities in public sector
				Population	With municipal utilities	In percent	
Electric lighting	87.0	77.9	89.3	28.3	19.6	69.2	100.0
Running water	87.0	29.6	34.0	28.3	.3	1.0	57.3
Plumbing	87.0	27.3	31.4	28.3	.3	.3	57.3
Control heating	87.0	19.5	22.4	28.3	.1	.3	44.7
Gas	87.0	13.6	15.6	28.3	.1	.3	29.0
Bath	87.0	7.7	8.9	28.3	.1	.3	30.6
Hot water	87.0	1.9	2.2	28.3	.1	.3	(2)

[1] (1) Per capita living space is assumed to be the same for persons living in state in private homes for the beginning of 1927, 1939, 1956, and 1961. (2) The correlation between the state and private housing fund for the beginning of 1939 is accepted as also applicable to the beginning of 1941. (3) The level of municipal utilities in the housing fund belonging to local Soviets of the Russian Soviet Federated Soviet Republic at the beginning of 1939 are assumed for all state housing funds at the beginning of 1939. (4) The level of municipal utilities of private housing fund for the beginning of 1939 are assumed to apply to the beginning of 1956.

[2] No data.

Sources: Vsesoyuznaya perepis' naseleniya 1926 goda (The All-Union population census of 1926), Moscow 1929, vol. LIII, pp. 90–91, 330–331, 440–441; Veselovskiy B.B. Kurs ekonomiki i organizatsii gorodskogo khozyaistva (Course in the economics and organization of the urban economy), 3d revised and enlarged edition, Moscow, 1951, p. 160; Broner, D. L. Sovremennyye problemy zhilishchnogo khozyaistva, Opyt ekonomiko–statisticheskogo analiza (Contemporary problems in housing service, experiment in economic and statistical analysis), Moscow, 1961, p. 263; Zhilishchnoye Stroitel'stvo (Housing construction), No. 12, 1963, p. 11; In the United States, of 58.3 million apartments (urban and rural) had: running water 93.1 percent, linked up with the sewage system 90 percent, gas 94 percent, electric lighting 100 percent, either bath or shower 81.2 percent, central heating 67 percent, hot water 87.4 percent.

More recent data concerning the Soviet communal economy are not available, but at present the situation is probably slightly improved. At the beginning of 1965, gas was supplied to 8.5 million apartments in 1,860 villages and cities, inhabited by 49 million persons.[52] Probably these figures include some part of the rural population so that the number of city inhabitants with gas installation in their apartments is slightly smaller. The situation is no better for water and sewage systems since data show that the length of the water system is less than one-half the length of the city streets, and the length of the sewage system is less than one-half the length of the water system.[53]

Gross inefficiency exists in the field of urban transportation. In a large city such as Novosibirsk almost half of the 650 buses, 395 streetcars, 177 trolleys, and 713 taxis, are not operating because they are in poor repair, or lack spare parts or drivers.[54] It is interesting that in some cities with a total street length of 1,200 or more kilometers, only 300 kilometers could be used by the city's transportation system. A special survey, made by the Institute of Economics shows that each person using communal transport in the city of Novosibizsk lost 246 hours in a year waiting for public transport.[55]

The availability of services in the U.S.S.R., is shown in table 15.

TABLE 15.—*Everyday repair and other services in the U.S.S.R. in 1964*

Type of service	Number of establishments per 10,000 persons	Rubles per person, per year
Services of all types including	4.22	4.65
Repair and personal making of shoes	1.33	.62
Repair and personal sewing of clothes	1.40	2.32
Repair of radios, TV-sets, vacuum cleaners, washing machines, refrigerators, and other appliances of such types	.84	.74
Furniture repair	.13	.18
Chemical cleaning and dyeing	.04	.18
Repair, personal making and knitting wear	.07	.19

Source: "Narodnoye khozyaistvo SSSR v 1964 godu, statisticheskiy ezhegodnik," Moscow, 1965, pp. 7, 594.

Each clothes repair shop in the U.S.S.R. serves 10 times more people than in the United States. At present, for each 1,000 of population in the U.S.S.R., only 16 persons are working in trade establishments as compared to 76 in the United States. For each 1,000 persons there are only 0.11 persons working in laundries in the U.S.S.R., while there are 1.7 in the United States. In the large city of Novosibirsk, whose drycleaning establishment has a very small capacity, a long line of people forms in front of the reception center early in the morning because the daily capacity of the drycleaning plant does not exceed more than 20–25 pieces. The manager of the enterprise has said that, as a result, each inhabitant of the city may have one piece drycleaned every 7–8 years. Each person in the city now spends, on an average, 31 kopeks per year for drycleaning.[56] The new 5-year plan (1966–70) calls for a fivefold expansion of this type establishment which would mean that the expenditure per person in a year for drycleaning would rise to only 1 ruble 55 kopeks.

[52] Gazovaya promyshlennost', No. 11, 1965, pp. 1–3.
[53] Planovoye khozyaistvo, No. 2, 1966, p. 36.
[54] Izvestiya, Apr. 18, 1965, p. 2.
[55] Izvestiya, Apr. 18, 1965, p. 2.
[56] Ekonomicheskaya Gazeta, No. 18, 1964, p. 17.

In the Soviet Union there are no supermarkets. Therefore, different products must be bought in different shops, often located in different parts of the city (bread, milk, meat, potatoes, and so on). In 1964 the proportion of packaged goods was very low: for example, macaroni foods 7.3 percent, sugar 6.6 percent, meat 1.8 percent, butter 1.1 percent. It is significant that the cost of packaging goods in the factory is five times cheaper than in the store.[57]

The inefficiency with which Soviet services are organized makes it necessary for a Soviet citizen to spend 70 percent of his free time taking care of his daily needs, such as shopping, cooking, laundering, repair of clothes, and waiting for buses.[58]

VI. Conclusion

Soviet urban development has failed to solve many important problems such as limiting the growth of the cities, the transportation problem, the lack of municipal facilities, and the absence of many ordinary services which are taken for granted in other parts of the world. But above all, the housing shortage has not been eliminated.

There is no other country where you can read statements like this everday: "It is known that our country occupies the leading place in the world in the scope and tempo of housing construction." This statement is correct. But, it is also true that among industrial nations there is none with housing conditions so bad as those of the U.S.S.R. The 20-year plan, as the party's 1961 program has been termed, promised that giant steps would be taken toward full communism but this plan calls for no more than achieving the level of urban facilities presently available in the West. It is true that when 15 square meters of living space per capita is provided, each member of the family would have a separate room. But when will this occur? For the 7 years from 1958 to 1965, per capita housing in the Soviet Union has increased by only one square meter of living space, or 18.8 percent, and now stands at only 6.42 square meters per inhabitant.

The average size of the apartments added was 27.4 square meters of living space (42.2 square meters of floor space), which allowed about 4.72 persons to each apartment.[59] Thus, even some of the new apartments are now occupied by more than one family, and the average living space per person in the new apartments is only 5.8 square meters (8.95 square meters of floor space).

The urban residents of the Soviet Union are at present exchanging their old dwelling places involving the use of communal household facilities for the privacy and convenience afforded by the newly built diminutive apartments. Any further rise in their housing accommodations to a standard providing for privacy, convenience, as well as adequate space will, however, have to await a substantial modification in the pattern of capital investment in the economy that will take account more responsively than in the past of the normal needs and aspirations of the individual citizen.

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[57] Ekonomicheskaya Gazeta, No. 46, 1965, p. 38.

[58] Pravda, Jan. 28, 1966, p. 3.

[59] During the past 7-year plan (1959–65), 361,700,000 square meters of living space in 13,175,000 apartments was constructed, and the number of persons receiving space was 62,200,000.
"Narodnoye khozyaistvo SSSR v 1964 godu, Statisticheskiy ezhegodnik," Moscow, 1965, pp. 20, 606. The number of apartments constructed in 1965 and the number of persons receiving the new apartments are assumed to be the same as in 1964.

ECONOMIC REFORM IN THE SOVIET CONSUMER INDUSTRIES

BY

IMOGENE ERRO

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ECONOMIC REFORM IN THE SOVIET CONSUMER INDUSTRIES

I. INTRODUCTION

As the availability of clothing, shoes, and other consumer items has increased in the U.S.S.R. in recent years, Soviet planners have found it increasingly difficult to satisfy the consumer, who for the first time in Soviet history has found it possible to be more selective in his purchases. The traditional centralized management of production had worked reasonably well in the U.S.S.R. when queues and shortages guaranteed that a shoddy suit or a shapeless dress would be sold. Once above a threadbare existence, however, the Soviet consumer was quick to demand increased quality, wider variety, and greater attention to style.

Since the late 1950's the consumer industries and the trade network in the U.S.S.R. have not been able efficiently to produce and sell the larger quantities of goods that have been made available. Large amounts of the goods actually produced either were not sold at all, or were sold only after long delays and sharp reductions in price. Because customers were unwilling to buy textiles, clothing, and footwear that were shoddy, poorly designed, or unattractive, inventories of these products have grown nearly twice as fast as total retail sales since 1958.[1] The volume of total retail sales did not keep pace with the rise in personal incomes during this period.[2]

When price reductions and the introduction of installment credit proved unsuccessful, Soviet officials decided to tackle the problem of inventory accumulation and buyer resistance on a broader front by introducing changes in management and control at the plant level designed to make producers more responsive to consumer demand. Accordingly, in mid-1964, experiments were begun in two clothing plants to test the effectiveness of two innovations—basing production plans on direct contracts with retail stores and establishing profitability (the ratio of profit to production cost) as the main criterion for measuring plant performance and rewarding managers. The profitability principle had already been proposed in 1962 by Ye. G. Liberman, who argued that economic efficiency could be raised considerably by its use, coupled with the granting of greater freedom of action to enterprise managers.[3]

In January 1965, 6 months after the initial experiments began at the 2 clothing plants, Soviet planners expanded the experiment to include more than 400 enterprises in light industry and a few plants in the food industry. While these experiments were still in process, the Soviet leadership announced plans for a much broader reform of plan-

[1] Narodnoye khozyaystvo SSSR v 1964 godu, pp. 630, 638, 639.
[2] Pravda, July 31, 1965.
[3] Pravda, Sept. 9, 1962.

ning and management that ultimately would encompass all of Soviet industry.

This report traces the evolution of the recent reforms in the consumer industries, describes the problems and the initial results, analyzes the role of the consumer industries in shaping the industrywide reforms, and evaluates the prospects for achievement of the major objectives of the reforms—increased efficiency of enterprises and greater satisfaction of consumers.

II. Experiments at Bol'shevichka and Mayak

In mid-1964 an experiment in decentralized control of enterprise operations was begun in two large clothing plants—the Bol'shevichka plant in Moscow and the Mayak plant in Gor'kiy.[4] Major features of the new system were: (1) The establishment of profitability as the main indicator for evaluating the success of the enterprise and for rewarding its managers;* and (2) the use of direct contracts between producers and retailers as the basis for planning and scheduling production. Central control was maintained over prices and major capital investments, and the overall targets for sales and profitability were established centrally. Otherwise, plant managers were free to make decisions without consulting higher authorities; for example, they could set the requirements for materials and labor and fix the size and distribution of the wage fund. Plant managers also arranged contractual agreements with retailers for models and designs, assortments, delivery dates, and the details of transfer and storage. Fines could be imposed for failure to honor terms of the contracts. Bonuses for managerial and other salaried employees were based on the level of profitability and were paid out of profit accumulations, provided that the sales plan was fulfilled. Although wage rates for production workers were based on scales set centrally for the clothing industry, management was encouraged to experiment with bonus schemes designed to improve quality.[5]

Even though the basic prices for clothing were those of the established price lists, enterprise managers and trade officials were given considerable freedom to raise prices to cover the additional costs resulting from improvements in quality and changes in style and assortment. The freedom to make such price adjustments thus was a key provision of the experiments; otherwise the enterprises would have incurred losses, since they were not permitted to adjust profit margins.

The two plants concentrated on introducing new styles, improving workmanship, and reorganizing production lines so as to operate more efficiently. Both Bol'shevichka, which produces some 600,000 men's suits annually, and Mayak, which produces various kinds of women's and children's clothing, made extensive changes in plant operation and management. New design departments were set up, retail outlets tested consumer acceptability of new suits, coats, and dresses, and

[4] Pravda, May 17, 1964.

*The profitability indicator is defined as the ratio of profit to the cost of production and in this report, profitability refers to such a ratio. In contrast, under Liberman's formula and that used in the general reforms adopted in October 1965, profitability is defined as the ratio of profits to total investment—fixed plus working capital.

[5] Sotsialisticheskiy trud, No. 4, 1965, pp. 26–30.

many old lines of goods were discontinued. Special accounting and sales procedures were established to handle contracts with suppliers of raw materials and with retail stores. In order to respond to the demand for broader assortments, mass production was replaced by smaller production runs. Quality control was tightened so as to eliminate many defects normally tolerated under the old system. By delivering direct to retail stores the two pilot plants completely bypassed the wholesale network to which they formerly delivered all finished goods.

During the first few months of the experiment the two plants began to have difficulty with the new economic incentives, which linked managerial bonuses directly to the profitability rate achieved by the enterprise. Because the profit margins were fixed and varied greatly among the various models of clothing, wide fluctuations in profitability occurred as a result of shifts in product assortment in response to changes in customer requirements. As a result, managers sometimes were penalized rather than rewarded for their efforts. To overcome this difficulty, in early 1965 the sales plan rather than the profitability plan was made the basis on which bonuses for management were paid, with the proviso that the profit plan also be fulfilled.[6] By the end of a full year's operation this problem apparently had been worked out. Indeed, the managers of Bol'shevichka and Mayak attributed much of the success of the experiment to the effectiveness of the new bonus system which, they maintained, not only promoted better product designs, a broader assortment of goods, and a general up-grading of quality, but also stimulated the enterprise to fulfill the plans.[7]

Results by mid-1965 showed that key indicators—output, profit, and profitability—at both the firms were above their pre-test levels. During the first half of 1965 Bol'shevichka increased its output in physical units by 6.8 percent compared with the first half of 1964, even though the volume of sales in terms of value was lower. The drop in sales resulted from a decline of 12 percent in the average price per suit, because consumers preferred to buy the new medium priced suits, rather than the high priced suits previously produced. Even so, the firm reported a profitability rate of 8.5 percent, compared with 5.5 percent in the first half of the previous year. The higher rate of profitability suggests that increases in some inequitably low profit margins were occasionally allowed under the experiments, despite official statements that there would be no tampering with profit margins.

After initial declines in the early months of the test, output and profits at Mayak recovered former levels, and in 1965 the plant exceeded the very high profitability rate (18 percent) that was planned. The firm concentrated on the development of new models of high quality, and as a result 300 of the 500 models produced at Mayak during 1965 were new. Nylon raincoats and winter coats of dacron and wool blends, both in great demand, were produced at considerably higher levels than the firm had anticipated. The commodity turnover rate reportedly increased by three times, and the normally extensive returns of defective merchandise from stores were almost eliminated.[8]

[6] Sotsialisticheskiy trud, No. 7, 1965, p. 78.
[7] Ekonomicheskaya gazeta, No. 43, October 1965, p. 16.
[8] Ekonomicheskaya gazeta, No. 45, November 1965, pp. 20–21.

The increased demand for goods produced by Mayak made necessary some expansion of its capacity, and construction of an additional plant is now in the planning stage.

In spite of the difficulties the two firms encountered in adjusting to the new economic indicators, Soviet officials obviously considered the Bol'shevichka and Mayak experiments successful. After only 6 months of the experiment, plant managers and planning officials alike seemed to be convinced that the new system provided a means by which goods could be produced more efficiently in response to changes in consumer demand. At both plants the product improved markedly and sold readily. Besides the difficulties with bonus arrangements, however, other problems arose, indicating that the road ahead would not be smooth. Officials of the sovnarkhozes never become reconciled to the increased independence of the two plants. Suppliers in some instances failed to deliver on schedule, making difficult the completion of the plants' contracts. Bol'shevichka and Mayak were able to circumvent many of the minor problems, because the experiments were carried out under a considerably higher priority than normally accorded the consumer industries. The pilot plants operated successfully under the new system, but in retrospect it is difficult to see how, under the conditions of the experiment, they could have failed. Whether the problems that became apparent would be soluble under a widespread extension of the new system in the consumer industries was still an open question.

III. Experiments During 1965

A. EXPANSION OF THE TEST

In January 1965 the Soviet Government, satisfied with the results at Bol'shevichka and Mayak, decided to broaden the experiments to include about 400 enterprises of light industry and its suppliers.* [9] About one-fourth of all clothing plants and a slightly larger share of footwear plants were scheduled to take part in the broadened experiment in the third quarter of 1965. To prepare for this large conversion, nearly one-fifth of the textile mills (40 percent of the capacity of the industry because of the inclusion of many large mills) and nearly one-third of the leather plants were to begin to shift to the new system in the second quarter.[10] Plans for broadening the experiment were carried out on schedule. By the end of 1965 almost all of the 400 enterprises reportedly had made the changeover.[11] In addition, two confectionery plants, a meat processing plant, and a milk products plant began working under the new system in October 1965.[12]

Although a few significant changes were made, the plants brought into the experiment during 1965 worked under essentially the same set

*Including all clothing and footwear plants and associations in Moscow, Leningrad, Kiev, Odessa, Khar'kov, Minsk, L'vov, Vil'nyus, Tallin, and a number in Kazakhstan, Moldavia, and the republics of central Asia and the Transcaucasus. In the Ukraine, a separate experiment involved two light industry plants, three plants in the machinery and metalworking branch, and several coal mines, but these experiments, testing a variety of planning procedures besides those being tested in the consumer sectors, were never carried to completion.

[9] Ekonomicheskaya gazeta, No. 3, January 1965, pp. 33–34.
[10] Ekonomicheskaya gazeta, No. 45, November 1965, p. 21.
[11] Sotsialisticheskaya trud, No. 12, 1965, p. 30.
[12] Ekonomicheskaya gazeta, No. 25, June 1965, p. 32.

of planning procedures that had been tested at Bol'shevichka and Mayak. The first and most significant change, previously described, was that made in the system of bonus payments to plant managers. This change was accomplished by a decree adopted early in 1965 by the state committee on labor and wages, under which bonuses for managerial employees of the firms transferred to the new system of planning were made to depend on fulfilling the sales plan (rather than the plan for profitability) under the single condition that the plan for profits was fulfilled.[13] In a further move to insure success of the new system, a special fund was established at the sovnarkhoz level to compensate enterprises for losses in profits resulting from changes in the product mix in those cases where inconsistencies in the fixed profit caused the loss. The second significant change was that under the extension the producing firms contracted with wholsalers and associations of retailers (torgs), as well as with individual retail stores. Bol'shevichka and Mayak had dealt directly only with the retail stores.

Other changes restricted some of the managerial freedoms that characterized the first test. During the initial test, enterprise managers and retailers cooperated in the setting of higher prices, but in the 1965 extensions price increases necessitated by improvements in quality or design required approval by the sovnarkhoz. Also, certain geographical restrictions were imposed in the letting of contracts. Whereas Bol'shevichka and Mayak had been free to make contracts with stores or supplier plants in any part of the country, firms included in the 1965 tests could not negotiate contracts with plants outside their republics or oblasts.[14]

B. ENTERPRISE PERFORMANCE

The ease with which plants were able to transfer over to the new system was quite uneven and apparently depended primarily on the previous efficiency of enterprise operations and on the initiative of managers and their ability to get things done without detailed guidance from above. In Kiev, for example, the "Ukraina" Sewing Association made the change to production on the basis of contracts with a simultaneous increase in output, whereas several clothing plants in Leningrad, such as the Volodarskiy factory, experienced a decline in production and profits and failed to meet contractual obligations.[15]

In general, enterprises changing over to the new system encountered three major problems: (1) Failure to receive deliveries of materials according to contracts; (2) irrational differences in fixed profit margins which affected profits and bonuses; and (3) higher operating costs brought about by changes in product mix and in the scale of operation.

Problems of materials supply, which had been serious even during the tests at Bol'shevichka and Mayak, continued under the extension and occurred mainly because plants working under the new system had goals (the earning of profit) that conflicted with those of

[13] Sotsialisticheskiy trud, No. 7, 1965, pp. 76–83.
[14] Pravda, Oct. 1, 1965, and Kommunist, No. 2, January 1965, p. 35.
[15] Pravda, Oct. 1, 1965.

enterprises still operating under the old rules. The extension of the experiment to suppliers of textiles, leather, and other raw materials eased the immediate problem of material supplies to the final goods producers, but, a similar problem quickly arose for the supplier plants. Producers of textiles, for example, found it difficult or impossible to honor delivery contracts for fabrics when the producers of fibers, dyes, and other essential materials were still under the old system. The Minister of Light Industry, N. N. Tarasov, on behalf of the plants experimenting with direct contracts, complained particularly, that the chemical industry failed to supply the textile industry with good quality fibers, dyes, and special materials.[16] As a result, clothing firms often were forced to contract with buyers for products for which the required textile materials were available, rather than for the goods that consumers wanted. Difficulties in obtaining supplies also made necessary the carrying of unusually large inventories of fabrics and other materials in order to insure delivery of finished goods on schedule. Thus, in attempting to solve the problem of surplus inventories of clothing, producers were forced to carry above-normal inventories of raw materials.[17]

Other problems at the enterprise level related to the uneven profit margins for various products allowed by the established price lists, a situation that made for large differences in the profitability of making these products. The variations in profit margins stem from the fact that the setting of prices and the fixing of profit and turnover tax* have long been used as administrative tools to control overall production and consumption. Present prices and profit margins are the result of a multiplicity of historical decisions of planners made from considerations of policy in response to conditions that no longer exist. Profit margins on children's clothing, for example reflect past decisions of the regime to keep retail prices low as a matter of social policy, whereas profit margins for women's stylish and expensive clothing reflect a desire to discourage demand for such luxury items.

Plants working under the new system found that efficiency of operation was closely related to the size of contracts. Most large enterprises producing consumer goods are geared to mass production of a particular range of products, whereas contracts based on customer demand often comprised differentiated assortments and small lots to which plants could not readily adapt or the production of which raised production costs intolerably.

Bol'shevichka and Mayak, as well as many of the enterprises that changed over in 1965, found it necessary to establish a lower limit on the size of contracts in order to operate efficiently. At Mayak, for example, the average cost per unit for one item of clothing was found to be less than 1 ruble in lots of 2,000 and more than 3 rubles in lots of 500 items, the cost increasing even more sharply as orders fell below 500 items. The Mayak plant established a minimum size of

[16] Komsomolskaya pravda, Jan. 5, 1966.
[17] Ekonomicheskaya gazeta, No. 24, June 1965, p. 35.
*For sewn clothing the turnover tax is paid by the manufacturer on the fabric and thus is included as a production cost, not as a tax. On most other consumer goods the turnover tax is added in at the wholesale level and becomes a part of the wholesale price.

lots of 500 items; Bol'shevichka limited its orders to a minimum of 400 suits.[18]

C. INDUSTRYWIDE PROBLEMS

The disruption of traditional lines of authority that were a consequence of the use of direct contracts and the greater independence of plant managers resulted in many difficulties. First of all, direct contracting between plants and retailers seriously threatened the authority of the wholesale trade organizations, whose place in the new system was never clearly defined during the test period. Even though planners may have recognized that the wholesale network had a vital role to play in general, they failed to prepare the wholesale trade system for the changes in operations that necessarily would follow from the direct contracting features of the experiments. Plants transferring to the new system in 1965 were persistent in exercising their right to contract directly with retail stores or supplier plants rather than with trade or supply organizations. To complicate the matter further, trade officials themselves do not agree on the functions that the wholesalers should have under the reforms. The Minister of Internal Trade, A. Struyev, for example, while acknowledging that certain large producers should contract independently with retailers, contends that wholesale trade organizations should control the bulk of the contracting by acting as intermediary between producers and buyers. The trade organization, in his view, should realign its operations so as to concentrate on identifying consumer preferences, placing orders with producers, and assuring timely deliveries of assortments on order to all but the very large retail stores.[19]

Other trade officials envision a more limited role for the wholesale organizations. According to this view, producers would establish permanent ties with nearby retail organizations or individual stores and the work of the wholesale network would be limited to coordinating orders between small producers and stores, handling interregional shipments, distributing imported goods, and furnishing storage facilities as needed.[20]

Another major obstacle to smooth operations encountered in the test period was the widespread opposition of regional sovnarkhoz officials, who refused to recognize the special status of the experimental plants and continued to issue orders, instruction, and plans as usual. In many instances the complete independence of enterprises envisioned under the test procedures did not exist at all, because the old regulations were strongly enforced.[21] For example, the experimenting firms could not levy fines for failure to honor contracts, as allowed by test procedures, because the offices of arbitration under sovnarkhoz control refused to recognize the validity of these procedures.

In some cases sovnarkhoz officials continued to intervene in the affairs of the experimenting enterprises by placing "urgent" local orders and by assigning quotas for delivery to the trade network. During 1965, for example, sovnarkhoz officials directed the Bol'shevichka firm to sell to the Moscow wholesale organization 10,000 suits of stipulated

[18] Sovetskaya torgovlya, Aug. 26, 1965.
[19] Izvestiya, Nov. 12, 1965.
[20] Pravda, Nov. 17, 1965.
[21] Ekonomicheskaya gazeta, No. 24, June 1965, pp. 35–36.

fabrics and styles, completely ignoring the right of the enterprise to contract independently with retail stores. Sovnarkhoz officials continued to issue plans for monthly production, cost reduction, labor inputs and the like. Sovnarkhoz interference at the Mayak firm was even more troublesome. At one point, the manager at Mayak, under threat of administrative punishment, was even ordered to void the plant's contracts made under the test rules and to begin production according to orders from the sovnarkhoz; this was in effect a demand to revert to the former status.[22] In other cases sovnarkhoz officials resorted to the use of the "preemptive order" to obstruct deliveries under contract. At the Glukhovo Cotton Combine in the Moscow area, for example, where production was planned on the basis of direct contracts with retailers, the sovnarkhoz demanded that the direct contracts be canceled and that deliveries be made to the central storage base. The Republic Ministry of Trade then canceled this directive of the sovnarkhoz and ordered the combine to sign a contract for delivery of its total output to the Ministry.[23]

Other problems of enterprises in the test stage concerned the kinds of reports the plants had to submit to higher authorities. The guidelines for the test required that clothing and footwear plants evaluate their success on the basis of total sales and profitability, yet local officials pressed for the reporting of indicators according to normal industry practice. In many cases plants were required to submit both sets of reports in order to satisfy the conflicting demands made upon them.[24]

IV. The Kosygin Reforms and the Consumer Sector

While the testing of reforms and the conversion of the 400 enterprises of light industry proceeded as scheduled in 1965, Soviet officials were making even more widespread changes affecting the control and management of all of industry. Clearly, these changes were shaped by the results of the experimentation in the consumer industries. A major reform, announced by Premier Kosygin in a speech before the central committee of the Communist Party of the U.S.S.R. and adopted by the Supreme Soviet early in October 1965, eliminates many of the traditional indicators and controls that burdened enterprise management and elevates the importance of the "economic levers" of profit and bonuses. Kosygin also recommended direct contracting among enterprises, emphasized the values of sales rather than of gross output as the primary indicator of enterprise performance, and proposed that an interest charge be levied on invested capital. As a countermeasure to relaxation of control at the plant level, the reform included an element of stronger centralization. The sovnarkhozes established by Khrushchev in 1957 to direct industry on a regional basis were abolished and replaced by new national ministries.[25] *

[22] Ibid.
[23] Pravda, Feb. 2, 1966.
[24] Ekonomicheskaya gazeta, No. 24, June 1965, pp. 35–36.
[25] Pravda, Sept. 28, 1965.
*The two most important ministries in the consumer goods sector are the Ministry of Light Industry and the Ministry of the Food Industry.

The consumer industries will be the first to make full scale conversion to the new system. The conversion of light industry by major branches is to begin in the fourth quarter of 1966, when new wholesale prices also will become effective.[26] The conversion of all of the light and food industries is to be completed in 1967. In preparation for the conversion of entire branches during 1967–68 large numbers of individual plants are changing over to the new system during 1966. During the first quarter of 1966, 43 plants in various industries transferred to the new system, including in light industry besides Bol'shevichka, two woolen and one cotton textile plants, and two knitwear plants located mainly in the Moscow area. Also converted were plants of the food, meat, and dairy industries as well as heavy industrial plants producing chemicals, metals, and building materials.[27] In the second quarter 180 to 200 plants are scheduled for conversion, and in the third quarter a changeover is planned for several entire branches of consumer industry, the most important of which are sugar, tea, liquor, and tobacco.[28]

A first official step in implementing the reform in October 1965 was the issuance of a statute on the operation of the industrial enterprise that codifies the new freedoms and responsibilities granted to enterprise management.[29] In this statute, managers of consumer goods plants are made specifically responsible for planning the details of product assortments, for contracting with suppliers for materials and with the trade network or stores for deliveries, and for making numerous other decisions affecting plant efficiency. Managers of consumer goods plants are explicitly instructed to base output plans on direct contracts with the trade network, whereas plants in other industries are merely encouraged to expand the use of direct contracts.

In a further move to implement the reform, general methodological instructions were issued in February 1966 to all branches of industry for use as a guide in the conversion of plants to the new system.[30] In subsequent weeks, further instructions were promulgated setting forth specific guidelines for working out the details of the bonus system and the establishment of the enterprise fund for investment called for under the reform.

Under the reforms the Government still will establish the main parameters within which the plants will operate. Specifically, the ministries will establish for each plant, including those in the consumer industries: (1) the volume of sales, (2) the financial indicators (profit and profitability,* and payments into the budget), (3) capital investment financed from the budget, (4) new technology and new products, (5) allocations of certain scarce materials and equipment, and (6) the size of the wage fund. Enterprise managers are to plan the remaining indices, including the size and composition of the labor force, the cost of production and the productivity of labor. Although the ministry will fix the assortment plan in the case of the most im-

[26] Pravda, Feb. 2, 1966.
[27] Ekonomicheskaya gazeta, No. 7, Feb. 1966, p. 4.
[28] Izvestiya, Mar. 20, 1966.
[29] Ekonomicheskaya gazeta, No. 42, October 1965, pp. 25–29.
[30] Ekonomicheskaya gazeta, No. 6, February 1966, pp. 31–35.
*Profit in percent of fixed plus working capital.

portant products, details such as amounts, sizes, colors, variations of style and terms of delivery will be decided at the plant level. Plant managers will sell on contract to retail stores or trade organizations and buy materials on contract directly from suppliers.

The bonus system for the consumer industries under the Kosygin reforms is essentially the same as that approved by the state committee on labor and wages in 1965 and already in use in the experimenting plants.[31] Under it plant management may earn bonuses of 25 to 40 percent of basic salary rates for fulfillment of the sales plan (providing the profit plan is met) with extra bonuses for each percentage of overfulfillment of sales, the total not to exceed 50 percent of the basic salary. Production workers may receive bonuses according to rules worked out by enterprise management within centrally prescribed limits of wage and bonus scales.

Although it is still too early to judge the entire program for reform in the consumer industries, the new system does apparently shift more of the day-to-day responsibility for production away from the central apparatus to the individual plants. Strong central controls will continue to be maintained by the ministries, however, particularly those controls that relate to finance. Only to a limited extent will the freedoms given to plant managers at Bol'shevichka and Mayak be accorded to other consumer goods plants coming under the reform program. Managers no longer will be able to initiate price changes, for example, or to determine the size of the wage fund, or to experiment freely with the bonus system.

V. Prospects

In the relatively short space of a year and a half the Soviet leadership has moved from a cautious introduction of economic reforms in two experimental plants to a broad program of reform that will ultimately affect all of Soviet industry. The rapid extension of the reforms, first to 400 enterprises, then to all of industry is a recognition on the part of the post-Khrushchev leadership that the methods of managing industry—heavy as well as light—were in need of drastic overhauling. The tempo of extending and implementing the reforms testifies to an acute recognition that the old way of doing business had become terribly inefficient. On the other hand, it is apparent that the Soviet leadership is still approaching the problem of reform with considerable caution. The reforms are initially being pushed in the traditionally low priority consumer industries so that if major disruptions in production occur they will have little effect on the high priority sectors that produce machinery and military goods.

On the whole the new system appears to offer reasonable solutions to some of the most pressing problems relating to consumer goods production. However, the spirit of decentralization that characterized the Bol'shevichka and Mayak experiments has been considerably dampened under the Kosygin reforms. Furthermore, past experience has shown that Soviet bureaucracy has a tendency to envelop reform movements in a web that stifles initiative and to substitute one complicated control system for another. Once the new system has

[31] Ibid.

been introduced to all of the consumer industries, its success in large part will be determined by such factors as (1) the ability of management to handle new responsibilities, (2) the extent of cooperation at the various levels of authority, and (3) the effectiveness of the new wholesale prices. Greater freedom for managers demands resourcefulness not required under the old arrangements. The extent to which managers learn to operate under these new and untried conditions and to function independently as decision makers, even to the limited degree permitted under the new rules, may prove to be a major determinant in the success of the enterprise and of the industry as a whole.

Much also will depend on the willingness of officials at all levels to cooperate in making the new system work. In light of the conflicts between plants and administrative officials during the experiments, the prospects for a smooth transition are far from bright. Signs of foot-dragging already are to be seen in the banking and financial organizations, which fear a loss of profit revenues to the state budget. The state bank has already been charged with failure to support the reforms by its reluctance to provide adequate short-term credits to enterprises.[32]

The success of the new system also will depend to an important extent on the effectiveness of the revision of wholesale prices. Presumably the new prices will still be based on average costs and will not reflect the influence of demand, nor will they be flexible. Whether the new prices will allow profit margins appropriate to the purposes of the reforms remains to be seen. Because enterprises now are judged on profit as well as on sales, the new prices with their adjusted profit margins will be a critical factor under the new rules, which require that profits be sufficient to cover capital charges, payment of managerial bonuses, and additions to various enterprise funds. The achievement of such a profit level may well be difficult for high-cost plants (those that operate at costs above the average), whereas extremely high levels of profits may be possible for other plants that operate more efficiently. Profit incentives, however, may encourage innovation and the modernization of plant that is urgently needed in many branches of the consumer industries.

It is to be emphasized that the new Soviet reforms in no way introduce a "free market" into the consumer goods sector. Under the new system, the Soviet consumer will have a better opportunity to vote for a dacron suit over an all wool one or show an equal preference for blue and tan raincoats, but Soviet planners have not relinquished control over the share of resources that go to the consumer. Plants may compete for contracts on the basis of quality, style, or promptness of delivery, but managers cannot make independent decisions in important matters pertaining to finance or the kinds of goods to produce.

That the Soviet leadership is finally attempting to make more compatible the wants of the consumer and the motivations of the producer reflects past blindness more than it does present foresight. The former practice of basing economic incentives first on gross value of output and more recently on reductions in the cost of production merely encouraged plant management to produce high-priced goods regardless

[32] Ekonomicheskaya gazeta, No. 18, May 1966.

of their saleability or to reduce costs at the expense of quality. The introduction of strong incentives to achieve a better meshing of the desires of consumers and the goals of producers will help to prevent further wasteful accumulations of surplus consumer items. The hope of Soviet planners is that by paying more attention to what consumers want the resources allocated to consumption in the future can be used more efficiently.

SECTION 5. TRANSPORTATION

THE SOVIET TRANSPORT SECTOR

BY

HOLLAND HUNTER

CONTENTS

THE SOVIET TRANSPORT SECTOR*

I. Summary and Conclusions

The Soviet transport sector is moving out of a period during which a unique approach has proved peculiarly effective, and entering a period when a series of problems and opportunities are confronting policy-makers. Issues familiar in the West are now being faced in a new context. The authorities have for some time followed a set of transport policies that met their needs well. Now, however, changes in the economy's structure, in public demands, in technology, and in the party's sense of priorities—all appear to call for fresh approaches. While drastic overnight changes are unlikely, some basic shifts may well be made during the next 5 years.

INDUSTRIAL STRENGTH THROUGH TRANSPORT STRINGENCY

For almost 40 years the Soviet regime has met the high priority needs of heavy industry through depending on the railroads to carry industrial freight, and through concentrating rail traffic on the trunk-lines that connect major industrial centers. Modernization of railroad equipment and operating methods has also played a major role, especially in the last decade. Industrial and military strength has thus been built, using in part the resources that might otherwise have gone into expansion of transport capacity.

NEW TRANSPORT FOR A REVISED ECONOMY?

Four factors are changing this situation. The increased number and geographic spread of factories are diversifying transport demand. The proposed greater attention to agriculture will bring with it a more scattered regional demand for traffic capacity. Higher priority for consumer goods will similarly bring with it a more decentralized demand for shipments from scattered consumers and producers. Finally, new technological developments offer attractive opportunities to lower real transport costs in a number of ways. Analysis of these influences suggests that the Soviet transport sector will be under substantial pressure to change during the next few years. In addition, the recent record suggests implications both for the developed economies of the West and for underdeveloped economies. They are set forth in the following discussion.

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II. Recent Performance of the Transport Sector

OVERALL TRENDS

For the last 16 years, the Soviet transport sector has carried out—successfully in the eyes of the authorities—its basic responsibility, which is to meet the economy's demands for freight traffic. Though the railroad network is sparse by Western standards, it meets the needs of heavy industry. The very modest development of highways and farm-to-market trucking has hindered the development of Soviet agriculture, but until recently agriculture had low priority. The prewar policy of restricting the expansion of transport capacity has remained in force, yielding large dividends for the regime. Transport has not been an obvious bottleneck impeding industrial growth, nor is there any present sign that it will be permitted to become one.

The success of prewar Soviet transport policy is crudely measured by Soviet survival and victory in World War II. Perhaps the policy was carried too far; some reallocation of resources from heavy industry to transport at various times during the 1928–40 period might well have led to a net gain in 1940 output, though estimating the scale of such a hypothetically desirable shift is a task not yet attempted.[1] My present guess is that the basic correctness of Soviet policy would be confirmed. But has the continuation of this short-rations policy since World War II been similarly sensible?

As long as the regime continued its stress on heavy industry and national defense, the transport-squeezing policy seemed effective, especially since the railroads proved to have unexploited capacity for intensive operations. However, factors like the greater weight given other sectors in recent years, the altered demands and opportunities presented by contemporary technology, and the more sophisticated needs of Soviet industry, have combined to increase the opportunity costs of clinging to the old strategy. On the other hand, railroad gains in reducing real costs for mass freight movements have acted to offset these rising opportunity costs and thus to permit continuation of the old approach.

In summary form, it appears that the growth of Soviet GNP over the last 16 years has been associated, in fact, with a more-than-proportionate growth in freight traffic. The rough data set forth in table 1 and chart 1 indicate that, while Soviet GNP has risen from a 1950 index of 100 to a 1965 index of 247, aggregate domestic freight traffic has risen from an index of 100 to 348 over the same period. The GNP index is derived from independent western estimates. The freight traffic aggregate is a physical one, unweighted by values. A least-squares straight line fitted to the logs suggests that a 10 percent rise in GNP during this period was associated with a 14.1 percent rise in total domestic freight traffic, and that changes in the GNP series were very closely paralleled by changes in freight ton-kilometers. Similar comparisons between the volume of freight traffic and the official Soviet series for national income indicate that their growth

[1] See Holland Hunter, "Soviet Transportation Policy" (Harvard, 1957), pp. 276–278. "In 1947, a Soviet writer pointed out that the iron and steel devoted in World War II to the construction of Soviet tanks would have been sufficient for 60,000 kilometers of railroad line." (P. 277.)

rates were very nearly identical over this period. A 10-percent rise in official national income was associated with a 9.8-percent rise in freight traffic. Moreover, annual changes in freight traffic paralleled the official series even more closely than they did the western-estimated GNP series.

TABLE 1.—*Indexes of Soviet GNP, national income, and domestic freight traffic, by year, 1950–65*

	Gross national product	National income	Freight traffic
1950	100	100	100
1951	109	112	113
1952	119	125	124
1953	125	136	133
1954	130	153	144
1955	144	171	163
1956	152	191	180
1957	161	203	203
1958	174	229	220
1959	183	246	242
1960	192	265	257
1961	204	283	270
1962	214	299	285
1963	220	311	304
1964	237	339	326
1965	247	359	348

Sources: The GNP index links together Abram Bergson's annual estimates for 1950–55, at ruble factor cost of 1937, from his "Real National Income of Soviet Russia Since 1928" (1961), p. 303, and for 1958 (in Bergson and Kuznets, eds., "Economic Trends in the Soviet Union," (1963), p. 36) with Stanley Cohn's estimates for annual percent increases, 1958–65, in the present volume. 1956 is interpolated as a geometric mean. The national income index is the official Soviet series, from TsSU, "Narodnoe khoziaistvo SSSR v 1958 godu," p. 95 for 1950–57. (Henceforth, this annual volume is cited as Narkhoz plus the year of the volume used.) The remaining Soviet figures come from Narkhoz 1964, p. 575, for 1958–64, and from Pravda, Feb. 3, 1966, p. 2, for 1965. The traffic index is derived from column 6 of table 4 below.

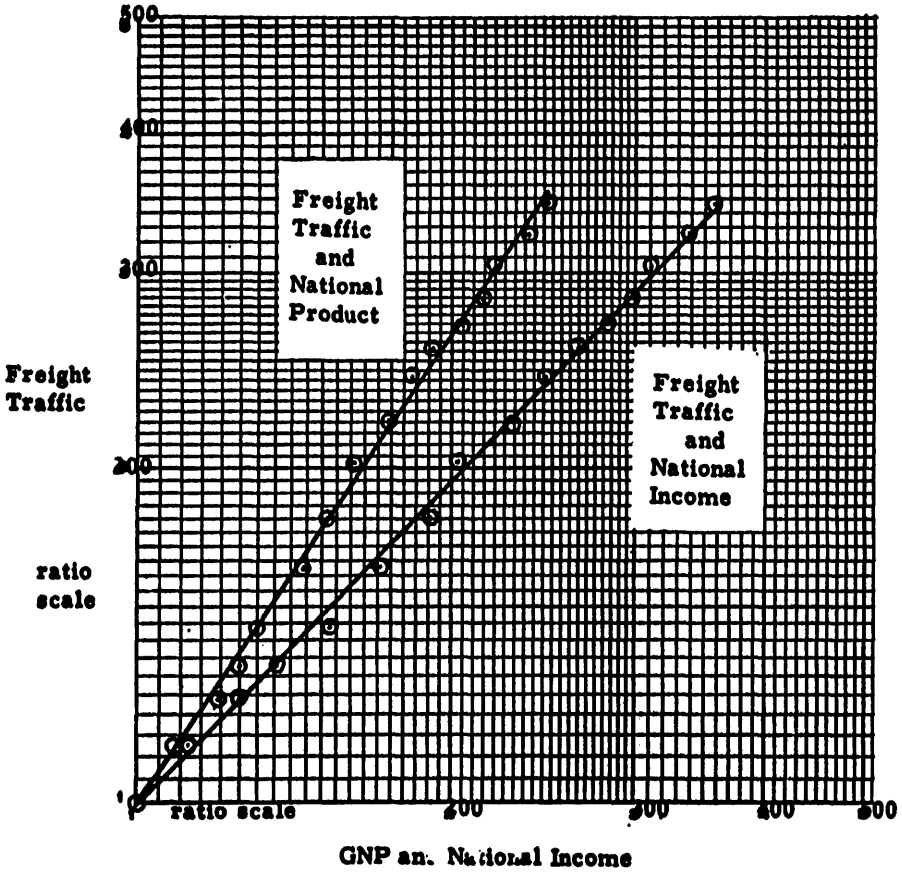
Whether one accepts the official Soviet national income series as a measure of output growth or prefers the Bergson-Cohn estimates for GNP, it is clear that domestic freight traffic in the Soviet economy has had to grow more, in relation to output, than has been necessary in the U.S. economy, where each 10 percent growth in real GNP has generated something like a 6-percent rise in aggregate freight traffic over the 1947–63 period.[2]

American freight traffic, measured in ton-miles, has for many decades grown less rapidly than total U.S. output, whereas Soviet stress on primary production, Soviet geography, and Soviet technological backwardness, have jointly led to more-than-proportionate expansion of freight ton-kilometers as Soviet output has grown. Measured in value terms, U.S. freight traffic since World War II has grown somewhat less rapidly than real U.S. output, whereas here, too, Soviet experience is less fortunate; transport output valued in rubles has grown annually at an average rate of 11.6 percent, 1950 through 1963 (freight and passenger service combined), while Bergson-Cohn GNP was rising at an average annual rate of 6.3 percent.[3]

[2] The computation for the United States is from an unpublished paper by Robert K. Wismer. For a 1929–56 computation, see Holland Hunter, "Resources, Transportation, and Economic Development," in Joseph J. Spengler, ed., "Natural Resources and Economic Growth" (Washington, D.C.: "Resources for the Future," 1961), especially pp. 135–138.

[3] See Transportation Association of America, "Transportation Facts and Trends" (2d edition, April 1965), pp. 2–5; and Norman M. Kaplan, "Soviet Transport and Communications: Output Indexes, 1928–62," Rand RM4264–PR–supplement (November 1965), p. 8.

CHART 1. Relation of Aggregate Domestic Freight Traffic to Gross National Product and to National Income, USSR, by Year, 1950-1965, in Indexes with 1950-100.



Source: See TABLE 1.

The Soviet transport sector meets the demand for passenger transportation mainly through supplying, in public carriers, the commutation and long-distance transport needed by the economy. Table 2 shows that total Soviet intercity passenger traffic has grown almost threefold from 1950 through 1964. On a per capita basis, it has more than doubled. Most passenger traffic is still handled by the railroads, but their share has fallen from 91 percent in 1950 to 69 percent in 1964, and the absolute level of railroad intercity passenger traffic seems to have reached a peak. Intercity traffic by bus has grown rapidly; its share has risen from 2 percent to 14 percent over this period. River and sea carriers, by contrast, have seen their share of passenger traffic fall from 5 percent to less than 3 percent, and here, too, the volume appears to have leveled off. Intercity air passenger traffic has grown very rapidly from 1.2 billion passenger-kilometers in 1950 to almost 31 billion in 1964. Aircraft now account for a larger volume of intercity passenger-kilometers than buses do. It will be noted that intercity movement by passenger automobile is not covered here; the Soviet statistical handbook does not yet include estimates of its level, which in any case is modest. Passenger travel in trucks is likewise excluded, as is all urban passenger movement. As we shall see, the passenger

automobile revolution has not yet struck the U.S.S.R. In general, the transport system has managed to supply a slowly growing population with its travel requirements, though Soviet citizens enjoy a far smaller annual volume of travel than prevails in Western Europe or North America. The public services provided are, however, usually fairly efficient, up to date and comfortable. It is clear that the authorities have not so far found it necessary to increase markedly the allocation of resources to this sphere, even though complaints about inadequate service and stock appear not infrequently in Soviet newspapers and journals.

TABLE 2.—*Intercity passenger traffic, U.S.S.R., by carrier, selected years, 1950–64, in billions of passenger-kilometers, total and per capita*

	Railroad	Autobus	Water	Air	Total	Population (millions)	Passenger kilometers per capita
1950	66.8	1.4	3.9	1.2	73.3	178.5	411
1955	109.1	5.5	5.1	2.8	122.5	194.4	630
1960	130.1	17.6	5.6	12.1	165.4	212.3	779
1961	134.3	19.3	5.7	16.4	175.7	216.1	813
1962	145.2	23.2	5.9	20.3	194.6	219.8	885
1963	145.2	26.8	6.1	25.3	203.4	223.1	912
1964	144.9	29.3	6.0	30.9	211.1	226.2	933

Sources: Derived, by subtracting intracity rail and bus traffic, from absolute data in Narkhoz '60, pp. 538, 567; Narkhoz '62, pp. 385, 414; and Narkhoz '64, pp. 7, 433, 437, 493.

Urban passenger traffic in the U.S.S.R., measured by the number of passengers carried, has grown more than 3.6 times over the period 1950–64. Though the urban population has grown by 71 percent, annual trips per urban resident have more than doubled. In 1950, streetcars carried 59 percent of the urban passengers; by 1964, their share had fallen to 26 percent. The shift was to autobuses, whose share rose from 12 to 50 percent during these years. Trolley buses held their own, while the share of rail commutation traffic fell from 11 to 6 percent and subways (though they came into operation in Leningrad and Kiev along with Moscow) saw their nationwide share of urban passengers carried fall from 7 to 5 percent. These Soviet data, which appear in table 3, exclude urban movement in taxis and passenger automobiles, as well as movement by motorcycle, bicycle, and on foot.

TABLE 3.—*Urban passenger traffic, U.S.S.R., by carrier, selected years, 1950–64 (in millions of passengers carried), total and per urban resident*

	Autobus	Tramway	Trolleybus	Commutation railroad	Subway	Five-carrier total	Urban population	Annual trips per urbanite
1950	1,001	5,157	945	955	629	8,687	69.4	125
1955	4,294	6,367	1,856	1,392	937	14,848	86.3	172
1960	10,634	7,827	3,041	1,713	1,148	24,363	103.8	235
1961	11,113	7,780	3,139	1,726	1,233	24,991	106.3	231
1962	12,634	7,937	3,353	1,791	1,301	27,016	111.9	241
1963	14,360	7,990	3,580	1,891	1,441	29,262	115.1	254
1964	15,982	8,221	3,947	2,001	1,569	31,720	118.5	268

Sources: The 1950, 1960, 1963, and 1964 data come from Narkhoz '64, pp. 7, 437, 493, and 499. The 1955 data are from Narkhoz '60, pp. 538, 565, and 573. Figures for 1961 and 1962 are from Narkhoz '62, pp. 385, 415, and 421.

RAILROAD SUCCESSES

The data of table 4 show that Soviet railroads continue to dominate the freight transport picture. They still account for 80 percent of total freight traffic, and their share has not fallen as rapidly as the planners have desired, since the other carriers have lagged behind in their efforts to grow. Long freezing periods hamper internal waterways and coastal maritime communications, whose share of total traffic has fallen from 10 percent to 8 percent over the 1950–65 period.[4] Government policy has held down the growth of intercity trucking. Trucks have raised their share of total freight traffic from 3 percent to 6 percent since 1950, though it should be noted that the great bulk of this traffic is shorthaul pickup and delivery work around industrial centers, at construction projects, or in agriculture; its average length of haul is less than 10 miles. The rapid growth of oil pipeline traffic has now made oil pipelines the second largest domestic carriers, accounting for just over 6 percent of the total traffic. Construction of new oil pipelines is being retarded, however, by competition from gas pipelines for both labor and large-diameter pipe.

TABLE D.—*5-carrier ton-kilometers, U.S.S.R., by year, 1950–65, in billions of metric ton-kilometers*

	Railroad	River	Domestic sea	All trucks	Oil pipeline	Total
1950	602.3	46.2	23.4	20.1	4.9	696.9
1951	677.3	51.8	26.6	24.1	5.5	785.3
1952	741.3	58.2	30.0	27.6	6.4	863.5
1953	798.0	59.3	32.4	31.4	7.6	928.7
1954	856.8	62.8	34.5	37.5	10.2	1,001.8
1955	970.9	67.7	38.5	42.5	14.7	1,134.3
1956	1,079.1	70.5	37.6	48.5	20.5	1,256.2
1957	1,212.8	76.4	36.2	61.7	26.6	1,413.7
1958	1,302.0	85.5	35.0	76.8	33.8	1,533.1
1959	1,429.5	93.6	37.1	87.6	41.6	1,689.4
1960	1,504.3	99.6	38.5	98.5	51.2	1,792.1
1961	1,566.6	106.0	40.4	105.7	60.0	1,878.7
1962	1,646.3	109.9	42.2	111.9	74.5	1,984.8
1963	1,749.4	114.5	45.4	119.7	90.9	2,119.9
1964	1,854.1	124.5	49.9	132.1	112.1	2,272.7
1965	1,948.0	133.9	52.1	142.7	146.6	2,423.3

Sources: Except for the estimates in column 3 for domestic sea traffic, these are official Soviet data from TsSU, Transport i sviaz SSSR (1957), various issues of Narkhoz, and SSSR v tsifrakh v 1965 godu (1966), p. 97. The 1965 rail figure is the one used by the head of the Railroad Ministry's planning division in Zhel. Trans., 1966, No. 4, p. 1.

The domestic sea traffic series rests on percent-share figures for 1950, 1955, 1958, and 1960, given by Minister V. G. Bakaev in vol. II of Transport SSSR (1961) p. 28, and applied to data for total traffic from the sources listed above, together with a statement in Morskoi Flot, 1965, No. 10, p. 2, that foreign traffic had risen 4.7 fold since 1958. For intervening years, tons-originated data plus length-of-haul estimates interpolated between the benchmark years led to ton-kilometer estimates for both foreign and domestic traffic. Bakaev, op. cit., p. 25, gives annual domestic tons-originated data for 1956–60; 1950 and 1955 percent-share figures appear in N. K. Bogdanov, Gruzovye perevozki i tarify (1963), p. 13; Morskoi Flot, 1966, No. 2, p. 2, says foreign tons-originated in 1965 rose 3.6 fold over 1958 while the report for 1965 says total tons-originated rose 9 percent over 1964, thus suggesting a 1964 domestic tons-originated figure.

In order to handle the growing traffic, Soviet railroads have been permitted to add to their capital plant and equipment on a substantial scale in recent years. New lines have been built, locomotives

[4] There has been ample publicity concerning Soviet atom-powered icebreakers operating out of northern ports, but their work has not appreciably influenced the overall level of domestic shipping.

and cars have been modernized, double-tracking has been extended, modern signaling has been installed, and yard facilities have been updated. The labor force, however, has grown very little. As table 5 shows, the railroad capital stock has grown about 2.5-fold since 1950, while the operating labor force has grown by only a little more than 12 percent. Moreover, improved technology has meant that these input increases could generate far more than proportionate increases in freight traffic carried. Output per locomotive, per freight car, and per kilometer of track has grown impressively. Soviet equipment use factors now run well above Western European or North American levels. There is much here to admire, from a railroad operating point of view. Adjustments to make Soviet use factors comparable with those employed in the United States would require discounts of as much as 20 percent, since idle equipment is not considered to be part of the Soviet active stock, but Soviet operating results are nevertheless impressive.[5] Planned targets for 1970 indicate, moreover, Soviet intentions to intensify still further their use of railroad plant and equipment.

TABLE 5.—*Soviet railroad capital, labor, and use factors, by year 1951–64*

	Productive fixed assets (billions of 1961 rubles)	Operating labor force (thousands of persons)	Freight ton-kilometers per route kilometer (millions)	Car-kilometers per active car-day
1951	13,390	1,764.6	5.77	159.0
1952	14,470	1,866.5	6.27	165.2
1953	15,430	1,900.7	6.69	171.8
1954	16,430	1,968.3	7.13	173.3
1955	17,540	1,960.0	8.06	188.2
1956	18,680	1,980.4	8.94	191.2
1957	19,940	1,995.4	10.02	206.4
1958	21,600	1,997.5	10.67	216.5
1959	23,650	1,993.7	11.57	222.5
1960	25,871	2,011.1	12.02	227.0
1961	26,961	1,986.7	12.41	225.2
1962	28,210	1,972.5	12.74	228.0
1963	30,192	1,973.1	13.65	233.8
1964	31,125	1,979.8	14.37	245.3
1965	32,084	(1)	15.00	(1)

[1] Not available.

Sources: The 1960–63 asset data appear in V. N. Shvetsov, "Statistika truda na zheleznodorozhnom transporte" (1965), p. 73. The 1953–59 asset estimates are derived from a series for "combined traffic per ruble of fixed assets," given by E. V. Larionova in Zhel. Trans., 1964, No. 9, p. 43, for 1953–63. Her 1960 and 1961 implied data are close to Shvetsov's absolute figures; his 1962 and 1963 data are more recent than hers. The 1951 and 1952 estimates are chained into the series using percent increases implied by a "combined traffic per ruble of fixed assets" series given by V. V. Rusakova in Zhel. Trans., 1960, No. 1, p. 60. The 1965 estimate is derived from 1960 and 1965 "combined traffic per ruble of fixed assets" figures given by F. P. Muliukov in Zhel. Trans., 1966, No. 4, p. 4, chained in to the Shvetsov series after adjustment for coverage. The 1964 estimate is a geometric mean between 1963 and 1965. Combined traffic (unweighted sum of ton-kilometers and passenger-kilometers) data and labor force data for 1950–64 appear in Shvetsov, op. cit., p. 44. Col. 4 is the ratio of col. 1 in table 4 to col. 1 in table 8. Col. 5 is assembled from Narkhoz 1964, p. 439; Narkhoz 1962, p. 386; Narkhoz 1958, p. 555; and TsSU, Transport i sviaz' SSSR, (1957), p. 48.

[5] V. I. Dmitriev noted, for example, in his 1958 book, "Voprosi ekonomiki vagonnogo parka," p. 26, that the 1954 Soviet figure for car-miles per car-day of 173 kilometers would be 142 kilometers if U.S. coverage of the working fleet were employed. Still, the American average at that time was 70 kilometers.

TABLE 6.—*Active freight locomotives, U.S.S.R., railroads, by type, 1951–64, in number of units and share of net operating freight ton-kilometers*

	Steam		Electric		Diesel-electric	
	Number	Percent of traffic	Number	Percent of traffic	Number	Percent of traffic
1951	11,100	93.8	300	3.5	330	2.7
1952	11,860	92.7	390	4.3	370	3.0
1953	12,110	91.8	440	4.7	390	3.5
1954	12,140	90.2	520	5.9	450	3.9
1955	11,390	85.9	610	8.4	510	5.7
1956	11,640	82.9	740	10.2	590	6.9
1957	11,860	79.5	890	12.7	680	8.3
1958	11,290	73.6	1,040	15.1	880	11.3
1959	10,720	66.5	1,250	18.2	1,120	15.3
1960	9,430	56.8	1,480	21.8	1,520	21.4
1961	8,420	48.2	1,730	24.8	1,840	27.0
1962	7,150	38.2	2,080	30.2	2,420	31.6
1963	6,050	29.3	2,460	33.8	2,890	36.9
1964	4,760	21.1	2,710	36.6	3,380	42.3

Sources: The estimates for locomotive numbers are derived from published Soviet data for each traction type covering annual net operating ton-kilometers, average daily gross ton-kilometers per active locomotive, and average net and gross weight per freight train. Annual ton-kilometers, divided by (365 times net train weight) equals daily principal locomotive-kilometers. Daily gross ton-kilometers per locomotive divided by gross train weight equals daily principal kilometers per locomotive. The published series for locomotive-kilometers per locomotive-day covers all work, not just principal locomotive-kilometers, which accounts for the systematic excess of the published series over this computed series. Daily principal locomotive-kilometers divided by daily principal kilometers per locomotive equals the annual average number of locomotives, of each type, in active freight service.

It should be noted that the total locomotive stock, including those not in active freight service and those in passenger service, is more than twice as large as the series estimated here.

The data for percent shares of traffic are from Razvitie zhel. trans. v semiletii; sbornik statei (1960), p. 27 (for 1951 and 1958); from Narkhoz 1964, p. 439 (for 1950, 1960, 1963 and 1964); from Narkhoz 1963, p. 380 (for 1962); from Narkhoz 1962, p. 385 (for 1952, and 1959–61); from Narkhoz 1960, p. 538 (for 1955) and from Narkhoz 1959, p. 496 (for 1956–57). 1953 and 1954 shares were derived from absolute published data in Zhel. Trans.

The key to these Soviet railroad successes lies in a combination of heavy freight traffic demand and a switch from steam locomotives to electric and diesel-electric traction. Table 6 records a rapid transformation of Soviet motive power in the years since Stalin died, following a decade or so after the American revolution in motive power. Soviet railroad electrification has been on the agenda ever since the 1920's, but only in the last decade has it come to fruition. Growing availability of petroleum, together with the American example, has led to an even more rapid expansion of diesel-electric motive power. As a result, in 1965 some 85 percent of the freight traffic was pulled by these two highly efficient forms of motive power.

Soviet railroads are very profitable. Since 1949, their costs per ton-mile and passenger-mile have steadily decreased, permitting a series of reductions in freight rates, in spite of which railroad net income has steadily grown. The railroads have made substantial contributions to the state budget, over and above what was necessary to finance the growth of railroad plant and equipment. Table 7 shows how Soviet railroads have shifted since 1950 from being a net recipient to being a net contributor to the central budget. They have contributed, not only to the growth of high priority sectors of

the economy, but also to the growth of rival carriers. Western railway officials, who have complained for years of a similar government policy, even in the absence of large railroad earnings, might feel a certain bleak sense of recognition in contemplating this "Communist" practice.

TABLE 7.—*Soviet railroad payments into, and receipts from, the state budget selected years, 1940–62, in millions of rubles.*

	1940	1950	1955	1960	1962
Railroad profits paid to U.S.S.R. budget	301	388	1,629	2,394	2,817
Budget grants to the railroads	449	1,011	942	824	730
Balance of rail contribution	−148	−623	687	1,570	2,087

Source: I. V. Ivliev, Finansy i finansirovanie zhel. transporta (1963), p. 21.

III. Policy and Problems in Freight Transport

RESTRAINED GROWTH OF TRANSPORT CAPACITY

As the need for transport capacity has grown, State capital has been supplied, but not on a lavish scale. The railroad network has grown slowly, even less rapidly than plans intended. Government policy has concentrated on other parts of the economy; added transport capacity has been made available only to the minimum necessary extent. This policy stands in marked contrast to American and Russian policy prior to the First World War, when thousands of miles of rail line were laid down with the hope that they would stimulate industrial and agricultural growth. In the 19th century, transport was considered a prime mover; in Soviet practice, it has been a handmaiden of industrial growth.

The three summary series of table 8 show that the Soviet railroad network has grown slowly, by some 11 percent since 1950, while the networks of paved roads and petroleum pipelines, both extremely small in 1950, have grown roughly five times in the last 16 years. The railroad figures exclude second tracks, nonministry spur tracks, and industrial sidings, but properly measure the restricted national total compared to American and European railroad systems. The paved road series includes only those covered with cement or asphalt, and excludes the gravel and dirt roads which prevail over most of the U.S.S.R. The pipeline series seems to cover only trunk lines for crude and refined petroleum, excluding natural gas lines and short gathering lines. Brezhnev's speech at the 23d Party Congress refers to oil and gas trunk lines whose total length already exceeds 70,000 kilometers.[6] The modest length of all three systems, for so large a territory and so large a gross volume of economic activity, is striking.

[6] See Pravda, Mar. 30, 1966, p. 1, translated in the Current Digest of the Soviet Press, Apr. 13, 1966, vol. XVIII, No. 12, p. 15. The latter publication is henceforth cited as the CDSP, with the appropriate issue.

TABLE 8.—*Length of rail, road, and pipeline network, U.S.S.R., by year, 1951–65, annual averages in thousands of kilometers*

	Railroad 1st main track	Paved roads	Oil pipelines
1951	117.3	20.6	5.7
1952	118.2	23.9	6.1
1953	119.3	28.1	6.7
1954	120.1	32.8	7.6
1955	120.5	38.2	9.3
1956	120.7	44.1	11.0
1957	121.0	49.6	12.4
1958	122.0	55.3	13.8
1959	123.6	62.6	15.6
1960	125.1	72.4	17.0
1961	126.2	82.0	18.9
1962	127.2	92.2	21.1
1963	128.2	102.5	22.8
1964	129.0	113.1	25.4
1965	129.9	(1)	(1)

[1] Not available.

Sources: Derived as arithmetic means between successive yearend figures in TsSU, Transport i sviaz' SSSR (1957), pp. 28, 195, 210; Narkhoz '60, pp. 535, 552–53; and Narkhoz '64, pp. 435, 481, 483.

The systematic Soviet policy that underlies this record, especially in relation to intercity highways, differs markedly from American policy. Much of the early stimulus for roadbuilding in the United States came from farmers seeking links with the market, and one of the phrases used to generate support for the Highway Act of 1916 was "Get the Farmer Out of the Mud." In addition, town and city residents were eager to improve driving conditions for their passenger cars. Thus the American public has willingly financed highway construction on a substantial scale since World War I. Even though trucks may now pay their full share of highway construction costs, the share is not 100 percent. In the U.S.S.R., the network of developed intercity highways is still rudimentary. The difficult issue of road versus rail freight has thus so far been solved in the U.S.S.R. through suppression of intercity trucking and failure to develop a highway system.

Soviet policy to date has stressed the movement of heavy industrial raw materials, and only secondarily the movement of consumer goods. With these priorities, the Soviet solution may well make sense. Speed of delivery has not been crucial. Shippers and receivers have been required to conform to railroad operating requirements. The slender stock of freight cars has been successfully stretched to handle the traffic. Though railroad results under this policy have been impressive, the U.S.S.R. may now be leaving the era in which this approach is effective. The recent resolution by the U.S.S.R. Council of Ministers demanding that the major ministries of heavy industry stop delaying the unloading of freight cars may well be a straw in the wind.[7]

PROBLEMS OF MODAL COORDINATION

In the Soviet planned economy, coordination of the work of major transport modes has faced no barriers from the "competitive chaos" that has long been criticized by Soviet theorists describing Western

[7] See the story in Izvestiya, Mar. 13, 1966, translated in the CDSP, Apr. 6, 1966, vol. XVIII, No. 11, p. 29.

market economies. Nevertheless the Soviet record shows conclusively that coordination is hindered by both technical and administrative problems which are not automatically solved through state ownership of all major carriers. Technical problems arise because joint use of two or more carriers requires transshipment which may be costly. Administrative problems arise because separate state-owned organizations face difficulties in coordinating their work. Several examples will illustrate these problems.

Soviet railroads have long sought to shift short-haul traffic around major industrial centers to highway trucks. Railroad hauls of 10 or 25 or 50 miles involve real costs substantially above those of trucks for many commodities. Thirty years of campaigning have nevertheless not succeeded in off-loading this short-haul traffic from the railroads to any conclusive degree. Even in 1965, about one-fifth of Soviet railroad freight tons-originated moved for distance of less than 100 kilometers (63 miles).

The services provided by local trucking have suffered for more than a decade from a Soviet campaign to centralize local truck operations under district common-carrier managements. It has seemed to Soviet planners that a limited stock of trucks could be used more effectively when operated out of centralized pools than when shipping and receiving organizations had their own trucks. Continuous use of trucks has seemed more important than prompt availability for users. Available Soviet data do not permit detailed analysis, but one can suspect that shippers and receivers experiencing delays in obtaining trucks have borne costs that more than offset the economies recorded by centralized district trucking organizations.

Door-to-door shipments using both trucks and railroads are greatly facilitated by the use of containers or (in the United States) trailer-on-flat-car equipment. In the U.S.S.R., the latter does not yet exist, and the development of containers is still at an early stage. The use of containers has been stressed in recent years, but the modest absolute level of such shipments reflects the small size of the consumer-goods sector of the Soviet economy. With the shift in emphasis now evident in the new Soviet 5-year plan, rapid growth of container shipments can no doubt be anticipated. Western technological breakthroughs are likely to point the way to increasing effectiveness.

Another major deficiency in Soviet modal coordination is visible in the Soviet countryside, where traditional Russian "roadlessness" still hampers agriculture to a major extent. It is usually hard to get Soviet field crops and livestock to the nearest railroad station. It is expensive to get agricultural machinery, tractor fuel, and fertilizer from railroad stations to Soviet collective and state farms. The typical link between Soviet farms and the railroad network is still a dirt road, impassable because of mud in the spring and fall, and high-cost throughout the year. Resources withheld from road building for 40 years have facilitated the growth of Soviet heavy industry, but the price paid by Soviet agriculture has not been negligible. The new 5-year plan gives major attention to the agricultural sector, but surprisingly fails to mention rural roads at all. There is not enough room in the announced national roadbuilding target figure for any substantial rural road program, though Western experience shows that such a program would be a highly productive investment.

The extremely rapid growth of Soviet petroleum production in the last 15 years has outdistanced the growth of a pipeline network to carry crude and refined products. As a result, Soviet railroads have been forced to carry a huge volume of tankcar shipments. Soviet technicians recognize the advantages that pipelines have over railroads for mass movements of petroleum, but the emphasis on natural gas, which has taken most of the large-diameter pipe, and the geographically scattered demands for oil products have inhibited the development of oil pipelines until very recently. Publicity surrounding the construction of a major trunk pipeline from the Volga Valley westward into Eastern Europe, and eastward across lower Siberia with an eventual terminus on the Pacific, should not disguise the fact that Soviet pipeline development lags far behind the level reached in North America and Western Europe. As the Soviet economy completes its gradual shift from coal to oil and natural gas, one may expect the U.S.S.R. to catch up in this respect, with consequent reductions in real transport costs.

Railroads, trucks, ships and barges, and pipelines are all operated by separate organizations in the U.S.S.R. responsible to separate authorities and responsive to their own internal pressures. The paper work involved in joint shipments is more complicated than when a shipment moves by a single mode. Transshipment delays are often serious. Total charges on joint shipments sometimes exceed those by rail alone. Use of water carriers is seasonally interrupted. For all these objective reasons, State-owned transport organizations have not found it easy to bring into being the "unified transport system" that Soviet ideologists believe in.

IV. Policies and Problems in Passenger Transport

BEGINNING OF THE SOVIET AUTOMOBILE AGE

The U.S.S.R. is just entering the age of the passenger automobile. From a total stock of 7,500 cars in 1928,[8] the number of Soviet passenger automobiles has grown to roughly 1 million units at the beginning of 1966. For a country of 233 million people, this is a very small stock of passenger cars. The ratio of total population to total automobile registrations in the United States is now less than 3 to 1 (about 2.7 to 1, to be precise). In West Germany, France, and the United Kingdom, the ratio is about 6 to 1; in Italy, about 9 to 1; and in Japan, about 14 to 1. In the U.S.S.R., however, it is more than 200 to 1. Even this limited stock of Soviet passenger automobiles is mainly in the hands of state organizations rather than private Soviet citizens. High officials have the use of a company car as a perquisite of their position. Municipal rent-a-car fleets in major cities make cars available for private use under approved conditions. Something like a fifth of the existing stock is out of service, awaiting repairs. Thus there are approximately 500 people for every car in unrestricted private use in the U.S.S.R.

In this respect, therefore, the difference between automobile availability in Soviet and American societies is not on the order of 1 to 10,

[8] See "Tsentral'noe Upravlenie Mestnogo Transporta," Avtotransport SSSR (1929), p. 8.

but something under 1 to 100. It requires a drastic wrench of the understanding to appreciate the contrast. I can vouch for the fact that a casual Western visitor to the U.S.S.R. is unlikely to appreciate the magnitude of this disparity. In Moscow and other cities on the Intourist circuit, one rides in cars and sees lots of cars on the streets. Somehow their relative scarcity is not made vivid, though one does notice that they are outnumbered by trucks. Presumably in the vast stretches of the hinterland, and in smaller cities and towns seldom visited by westerners, the paucity of passenger automobiles would be more apparent.

The present nationwide stock of about 1 million passenger automobiles is not growing rapidly, as the estimates of table 9 make clear. Annual production is around 200,000 units, of which some 40,000 are exported, primarily to East European countries. Taking account of normal depreciation, net additions to the national stocks are currently in the neighborhood of 75,000 units a year. Compared with what is going on in Western Europe and Japan, to say nothing of North America, this is an exceedingly modest level of growth. The U.S.S.R., as the second industrial power of the world, has obviously been pursuing a radically restrictive policy toward the passenger automobile.

TABLE 9.—*Production and estimated stocks of passenger automobiles, U.S.S.R., by year, 1950–64, in thousands of physical units*

	Production	Estimated total stock	
		15-year depreciation	10-year depreciation
1950	65	208	185
1951	54	245	213
1952	60	284	243
1953	77	337	283
1954	95	410	334
1955	108	474	386
1956	96	516	425
1957	114	565	466
1958	122	618	509
1959	125	662	532
1960	130	703	565
1961	149	757	593
1962	166	815	619
1963	173	874	644
1964	185	935	658

Sources: The production data are from TsSU, Promyshlennost SSSR (1964), p. 278. The stock estimates reflect assumed 15- and 10-year useful lives applied to annual production figures since 1945, plus imports less exports since 1955, plus an assumed 1945 stock of 100,000 units. The 1940 stock was somewhere between 81,000 (assuming a 10-year life) and 103,000 (assuming a 15-year life) and wartime losses may have been offset by acquisitions in Eastern Europe. I. Prokhorov, in Planovoe Khoziastvo, 1939, No. 10, p. 73, gives the number of passenger automobiles in the U.S.S.R. at the end of 1938 as 125,000.

The slender stock of passenger automobiles is supported by an equally underdeveloped supporting base of paved roads, filling stations, and garages. The main streets of cities are paved, but even in Moscow the back streets can be very hard to navigate. Major interregional highways are mainly paved, though year-round maintenance in so northern a territory presents many problems. A Pravda story in the fall of 1963 indicated that the total number of filling stations for the entire country was around 1,500 or 1,600.[9] Servicing and repair facilities are even more scarce.

[9] CDSP, vol. XV, No. 36, p. 24.

The rare possessor of a private automobile therefore faces many frustrations. Garages work under plans which makes them reluctant to take on minor servicing jobs, since major overhauls and replacements contribute more effectively to plan fulfillment. Complaints indicate that spare parts are frequently not available. Filling stations sometimes do not have supplies of gasoline, or observe limited hours of business. All of this reflects the low priority assigned by the authorities to the private passenger automobile in the Soviet economy. For example, 6 years ago in Frunze, a regional capital of 250,000 people, there were 1,400 individual cars and 1,500 motorcycles, but only a single filling station. Car owners obtained gasoline illegally from truck drivers or through other devious channels.[10] A few years earlier, in a novel celebrating postwar progress, part of the story involved a happy vacation trip on the newly paved highway from Moscow south all the way to the Crimea. Dramatic tension was provided intermittently as the vacationers faced a recurring crisis. It was not whether the next motel would have an empty room, with or without swimming pool, but whether the filling station said to be in the next city would have any gas. Gas is gratefully purchased in the U.S.S.R., even without trading stamps.

Illegal transactions in gas led the authorities in July 1965 to initiate a system under which gas was sold only for "trading stamps" (i.e., special coupons), issued for cash at government offices. New coupons were to be issued only if the mileage shown on the purchaser's car mileage indicator was consistent with his previous records and gas purchases. The scheme was designed to thwart illegal gas purchases, from truck drivers mainly, but a March 1966, Moscow news story indicated that attempts to enforce it had led to much redtape and confusion. The drive had been criticized from the very start as being unworkable, and the final blow came from the police official charged with enforcing the regulations: he suggested that a better approach would be to provide filling stations wherever car owners need them, keep the stations open night and day, and control truck gasoline supplies more carefully.[11]

This episode illustrates the pressures that come into play when 233 million people live in a largely industrial society that makes use of only about 1 million passenger cars, of which less than half are in individual ownership. Most passenger transportation is, as we have seen, by public conveyance. There are only about 75,000 taxis. Roughly half of the noncommercial passenger cars are owned by Government organizations and assigned to leading officials. The remainder have been acquired, at very high prices, by patient citizens with ample cash, willing to keep their names on waiting lists and to undergo the paperwork required to demonstrate eligibility, obtain a driver's license, etc.

Another illustration is provided by what we may call the Krasnoyarsk incident. In this provincial district of Siberia, some enterprising municipal authorities decided in the spring of 1960 to develop

[10] Ibid., vol. XII, No. 16, pp. 24–25.
[11] See P. Korlagin, "A Strange Order," Izvestia, July 6, 1965, p. 4; Col. L. Kusnetsov, "Are Coupons Necessary?" Vechernaia Moskva, Mar. 10, 1966, p. 2; and the Washington Post, Mar. 11, 1966, p. A 17.

rent-a-car services in the major cities of their territory. They did not simply purchase new automobiles. Instead, they sought to round up the passenger cars currently owned by various factories, offices, trusts, and other Government institutions. "It was decided, on the basis of a territory executive committee decree, to set up centralized common-carrier units in place of the small separate garages of individual offices, factories, and trusts. The intention was to assemble all the cars from the latter and to operate them from two new garages, one holding 150, the other 130 cars. The savings would be substantial. The Moskvich or Volga car that once stood idle in front of a director's office would be able to serve both its former individual owner and also several additional persons entitled to the use of a car in the performance of their duties." [12]

The officials of these organizations reacted with both imagination and initiative. As soon as the order was issued, requests came in to exempt cars as "special vehicles." "On the streets of Krasnoyarsk, Abakan, Norilsk, and other cities, dozens of passenger cars have started to appear with the most diverse emblems and signs, from the blue cross of the veterinary service to a neatly painted line reading 'Culinary Products Delivery.' There were 'mobile emergency repair cars,' 'operational-emergency-technical cars,' and still other special purpose cars." [13] After 3 months, 107 cars had been turned in, but 166 had obtained exemptions.

What does the "Krasnoyarsk incident" show? Clearly Government officials find that the cars assigned to them are convenient and useful for both official and personal trips. They are reluctant to turn them in to a municipal pool. The centralized fleet would perhaps make more continuous use of each car, cutting costs, spreading overhead, and eliminating waste and duplication. But the officials who have tasted the delights of a personal car are reluctant to give their cars up.

PROBLEMS WITH PRIVATELY OPERATED PASSENGER CARS

Another important phenomenon arises under Soviet conditions, reflecting the chronic shortages of various consumer goods and services that have plagued the Soviet economy for many years. The cars that are personally owned by individual Soviet citizens are sometimes used to produce what the regime calls unearned income. We have it on the authority of the Minister of Internal Affairs of the principal Soviet Republic that, where the state fails to provide adequate supplies of consumer goods and services, private citizens tend to move in to fill the vacuum.[14] An enterprising individual can use his car, for example, to bring fresh fruit or vegetables to cities where, at uncontrolled prices in farmers' markets or at street-corner stands, they command a substantial premium over their cost in producing areas. By the canons of Adam Smith, this function of relieving shortages and reducing price discrepancies is an honorable contribution to the

[12] Sovetskaia Rossiia, Apr. 3, 1960, p. 3. Translated in the CDSP, vol. XII, No. 14, pp. 24–25.
[13] Ibid.
[14] V. I. Tikunov in Izvestiya, Apr. 13, 1962, p. 3. Translated in CDSP, vol. XIV, No. 15, p. 23.

general welfare. In the U.S.S.R., however, such activities are considered antisocial, and those who engage in them are termed "parasites," getting unearned income from their capitalist activities. Privately owned automobiles figure prominently in the lurid accounts of the evil doings of such "speculators" when they are brought to trial under the campaign that has now been going on for 6 years.

Even more modest means of transportation can offend the authorities. In May 1962, Izvestia reported the case of a 47-year-old schoolteacher, in a country district near the Caspian Sea, who gave up schoolteaching in favor of growing vegetables and fruit. Over 7 years he built himself a brick house, and planted a large vegetable garden, 32 fruit trees, 236 grape plants, and 1,600 tomato plants. He bought a motor and installed a watering system. He built a hothouse. He bought a motorboat to carry the vegetables to a nearby city and beyond. His neighbors "expressed indignation and asked that the machinations of the swindler be looked into. Finally, criminal action was instituted against the inveterate money-chaser. The court decided to exile Stepanov from the province, and to confiscate the house, the hothouse, and the motorboat." [15]

PROBLEMS WITH A RENT-A-CAR APPROACH

The visit of N. S. Khrushchev to the United States in 1959 convinced him that the U.S.S.R. should find a solution to the passenger automobile problem that would avoid what struck him as irrational in America. He therefore sponsored an experiment which has since developed in major Soviet cities, though without striking success. Municipal rent-a-car fleets are now available for Soviet citizens who want a car for vacation trips in the summer or for other approved uses. In practice, however, several difficulties have developed. Perhaps most important, Soviet legal authorities appear to feel that accidents will be minimized if insurance against personal liability is not made available. The renter of a Soviet car is liable for injury to persons, damage to the automobile, and any other losses resulting from an accident. Under these conditions, understandably, citizens have been reluctant to rent a car. In addition, the would-be renter must have a driver's license—hard to qualify for—and sometimes must get certification from his employer as to his eligibility. These barriers, together with all the headaches involved in obtaining gas and repairs, provide a sufficient explanation for the modest growth in the use of municipal rent-a-car fleets.[16]

NATURE OF CURRENT NEEDS

The post-Khrushchevian leadership is clearly concerned about the problem of dealing with passenger automobiles, and even more concerned with improving the truck situation. On March 19, 1965, A. N.

[15] Izvestiya, May 26, 1962, p. 4. Translated in CDSP, vol. XIV, No. 21, p. 23.

[16] For an informative discussion of these problems, see Donald D. Barry, "Russians and Their Cars," Survey, October 1965, No. 57, pp. 98–110; and Zigurds L. Zile, "Law and the Distribution of Consumer Goods in the Soviet Union," The University of Illinois Law Forum," spring 1964, pp. 257–261. The general automobile situation is well reviewed in an article by Donald D. Barry and Carole Barner Barry, "Happiness Is Driving Your Own Moskvich," in the New York Times Sunday magazine, Apr. 10, 1966, pp. 16 ff.

Kosygin, in a major report to planning officials, criticizing a number of Khrushchev's "subjective" policies, cited his attempt to take away the cars assigned to officials for business use. On November 30, 1965, the top leadership of the Government attended an exhibition of trucks and automobiles in Moscow and used the occasion to stress the need for improved models and larger production.

Inspection of table 10 below may explain this growing concern. The U.S.S.R. does not release data on the total stock of trucks and passenger automobiles, but does present figures for production, exports, and imports. The estimates in tables 9 and 10 use these Soviet figures, together with assumed useful lives, to estimate the national stock on hand year by year up to the present. If one assumes a 15-year life, not implausible by Western standards, the total truck stock would appear to have been growing slowly up to the present. But if one were to use a 10-year useful life, the shocking implication would be that recent levels of production have been inadequate for maintaining the total stock, which in consequence would be showing some tendency to decrease. In 1963, depreciation rates were revised to be more realistic than those long in force, and the new suggested rates for trucks involved a 5-year useful life for the small ones that dominate the fleet, running up to a 10-year life for a few specialized trucks. If such rates were to be applied in practice, the inadequacy of current annual truck production levels would be even more marked.

TABLE 10.—*Production and estimated stock of trucks, U.S.S.R., by year, 1950–64*

[In thousands of physical units]

	Production	Estimated stock		Stock-in agriculture
		15-year depreciation	10-year depreciation	
1950	294	1,639	1,314	283
1951	230	1,636	1,345	.....
1952	243	1,732	1,368	.....
1953	271	1,839	1,393	424
1954	301	1,958	1,422	.....
1955	328	2,092	1,495	544
1956	356	2,244	1,675	631
1957	370	2,378	1,837	660
1958	351	2,477	1,952	700
1959	362	2,535	2,016	729
1960	362	2,582	2,056	778
1961	382	2,695	2,086	796
1962	382	2,786	2,077	875
1963	382	2,849	2,031	922
1964	386	2,921	1,951	954

Sources: The production data for 1950–63 are from TsSU, Promyshlennost' SSSR (1964), p. 278, excluding buses. The 1964 estimate applies the truck-plus-bus increase over 1963 (Narkhoz '64, p. 186) to trucks.

Column 2 reflects an assumed 15-year useful life applied to annual production figures since 1945, plus imports less exports since 1955, plus an assumed 1945 stock of 1 million units. This 1945 estimate in turn reflects an estimate for 1940 of 726,000 (assuming a 10-year useful life) or 824,000 (assuming a 15-year useful life), and awareness of large lend-lease shipments of trucks combined with seizures in Eastern Europe, though the number surviving in working order is a matter for conjecture. I. Prokhorov, in Planovoe Khozliastvo, 1939, no. 10, p. 73, gives the number of trucks in the U.S.S.R. at the end of 1938 as 635,000.

Column 3 reflects an assumed 10-year useful life applied to annual production, plus imports less exports since 1955, plus an assumed 1945 stock of 1,005,000 units.

The agricultural holdings of trucks are reported in Narkhoz '58, p. 487; Narkhoz '60, p. 485; Narkhoz '62, p. 324; Narkhoz '64, p. 380.

The new Soviet 5-year plan calls for expanded production of both trucks and passenger automobiles; annual output is to rise by 1970 to some 700,000 to 800,000 units of each. While such growth represents

a substantial gain over current levels, it appears likely to create more problems than it will solve. Needs that are already visible will not be met by this level of production, while the Government's new attitude seems likely to unleash many other demands for trucks and passenger cars.

Though the new plan indicates increased attention to passenger cars in the U.S.S.R., it seems unlikely that popular demand for automobiles will pull very much investment away from other uses in the next few years. Soviet citizens still have a great need for more adequate housing, which seems likely to have higher priority both in their eyes and in the scale of Government priorities. A new apartment, combined with adequate public transportation, is likely to have more appeal than a very expensive automobile, under Soviet conditions for car operation. Western observers who argue that expanded automobile production would be a powerful way of shoring up weakening aggregate demand and at the same time siphoning off excess public purchasing power seem to me to be thinking in Western, rather than Soviet terms.[17]

The long-delayed drive to develop agriculture is another claim on resources likely to outrank passenger automobiles, though it may well lay the groundwork for such demands in the future. Agricultural modernization should eventually bring with it extensive development of paved farm-to-market roads which initially will facilitate truck transport of agricultural inputs and outputs. Later, of course, a highway network will make it more feasible for citizens with passenger cars to make long trips, and this will increase the demand for passenger cars. Such a stage may well be reached in the 1970's.

If the U.S.S.R. enters the automobile age in earnest during the 1970's, there will be an enormous gap to be made up. The resources required to build a network of paved roads, to bring the Soviet passenger automobile stock up to, say, 50 million units, and to provide all the supply and repair facilities involved, will be huge. The late academician V. S. Nemchinov wrote in 1959 that "personal mobility is an important component of a high standard of living."[18] If this view comes to prevail in the Kremlin, the Soviet future will be decisively altered. The Western "irrationality" that Khrushchev feared may yet invade Soviet society. Recent stories from Western correspondents in Moscow are not encouraging. Moscow traffic is getting congested, even though there are at present only 71,000 private cars in the city,[19] and arrangements for systematic introduction of staggered opening and closing hours for Moscow government offices have recently been promulgated.[20] It is not obvious to me that the U.S.S.R. should welcome the attendant traffic jams, smog, injuries and fatalities, and landscape disfigurations which have confronted North America, Western Europe, and Japan. Perhaps the U.S.S.R. will develop a compromise solution that avoids the worst evils of the automobile age. As between an automobile-dominated and a State-dominated society, the disadvantages are perhaps arguable. All this, however, still lies in the future.

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[17] See dispatch in the New York Times, Dec. 3, 1965, p. 23.
[18] In Kommunist, 1959, No. 1, p. 87.
[19] New York Times, Apr. 24, 1966, sec. 1, p. 20.
[20] See Izvestiya, Mar. 6, 1966, p. 2. Translated in CDSP, Mar. 30, 1966, vol. XVII, No. 10, p. 28.

V. Implications for Highly Developed Economies

Soviet experience shows how, under special circumstances, the transport sector can contribute impressively to rapid industrial growth. In the framework of Soviet economic geography and Bolshevik economic policy, Soviet railroads have proved admirably fitted for carrying huge volumes of coal, iron ore, petroleum, timber, and the other basic raw materials needed by heavy industry, itself concentrated in a handful of major centers. Transport capacity expansion has been held down and the investment resources thereby released have been available for other uses. It must be recognized, however, that this Soviet solution has developed in response to distinctively Soviet purposes, and is unlikely to be relevant to the situation faced in other developed economies.

In a consumer-oriented economy, producing a widely diversified range of final goods and services, with a geographically decentralized pattern of industrial location, the Soviet transport approach would prove to be a substantial handicap. Where shipments on a relatively small scale must be moved promptly among a very large number of decentralized shipping and receiving points, the distinctive features of Soviet railroading cease to be advantageous.

Frugality in providing transport services limits the options open to shippers, receivers, and travelers. The carriers themselves are able to concentrate freight traffic on main routes, schedule traffic movements in ways that promote their internal efficiency, and confine themselves to the forms of service that permit high degrees of equipment utilization. This Soviet approach clearly lays costs on transport users, however, and in an economy where these costs are important, the Soviet approach is not likely to have great appeal. Public convenience is greatly facilitated by ample services; well-to-do economies can afford to provide ample transport services in pursuit of both convenience and efficiency.

Comparison of recent Soviet experience in intermodal cooperation with developments in the United States and Europe indicates that technology, not "state ownership," is proving to be the key to progress in this sphere. Containerization of freight shipments is now stimulating a rapid expansion of joint shipments involving two or more modes. Transshipment costs are reduced, delivery times are speeded up, pilferage and damage costs are lowered, and intermodal paperwork is facilitated through the use of containers. Though containers have been used in the U.S.S.R. since the middle 1930's on a small scale, recent developments in North America and Western Europe have now gone far beyond Soviet attainments.

Similarly, intermodal difficulties in keeping track of joint shipments, allocating traffic revenues, coordinating schedules, and otherwise arranging for prompt and flexible service reflect "departmental barriers" in the U.S.S.R., fully comparable to the difficulties caused by intermodal rivalry in a market economy. Here, too, technological progress in information processing, telecommunications, etc., have contributed effectively to intermodal cooperation in the West, to a greater extent than in the U.S.S.R. Current Soviet plans sug-

gest that the U.S.S.R. will rapidly catch up in the use of these devices, but there is not yet much evidence of fresh Soviet solutions in this field.

VI. IMPLICATIONS FOR LESS DEVELOPED COUNTRIES

Countries in early stages of economic development can learn from Soviet experience one lesson of fundamental importance: transport investment is a concomitant of, not a precondition for, economic development. Such countries need not accept the widespread American view, based on our own 19th century experience, that large-scale expensive transportation facilities must be laid down before agriculture and industry can begin to grow. Transport capacity can grow as the demand for it grows, rather than being provided in advance. Soviet experience demonstrates that the transport sector can be made to serve an industrial development program without itself becoming the largest single claimant for capital plant and equipment.[21]

Another lesson of Soviet experience, with potential application in many less developed countries, concerns the tremendous potential of railroads for carrying mass freight traffic. Western railroad difficulties in passenger service during recent years, and administrative problems on some railroad systems like that of Argentina, may have created a general impression that railroads are obsolete. Nothing could be further from the truth. Where water carriers or pipelines cannot serve, railroads have an unchallengeable ability to move mass freight over long distances at low cost. Perhaps sharp changes in elevation, as in eastern Colombia or western Uganda, are better traversed by highway than by railroad, but with mild gradients and adequate traffic, the railroad cost advantages are decisive.

A great many less developed countries are enabled by their economic geography to consider transport options that have not been very feasible in the U.S.S.R. The Soviet land mass lies so far to the north that its rivers and seas cannot provide year-round service. They are also unfavorably located for much of the economy's freight movement. Developing economies in Latin America, Africa, and Asia may well find that water carriers offers cheaper service than railroads for some of their impending traffic growth.

A less developed country whose national purposes are less focused on heavy industry and national defense than was true in the U.S.S.R. after 1928 is not likely to imitate Soviet transport experience. Where modernization of the agricultural sector has high priority, rural road building must receive far greater attention than it has in the U.S.S.R. Where light industry and consumer goods production are permitted vigorous expansion, widespread use of trucks for prompt door-to-door service is likely to spring up far more rapidly than has been permitted in the U.S.S.R. to date. If promising resources are being developed on a modest scale, as timber stands or small resource deposits or gravel pits, for example, are opened up, trucks using temporary roads may be substantially more economical than rail transport which will be left stranded after a few years.

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[21] See Holland Hunter, "Transport in Soviet and Chinese Development," Economic Development and Cultural Change, October 1965, pp. 71–84.

Finally, countries now making transport decisions for their economic development have available technological alternatives that were either unknown or unproven 40 years ago when basic Soviet transport decisions were made. Modern technology has developed in the direction of facilitating joint use of several transport modes, improving the flexibility, diversity, and capacity for decentralization of a growing economy. Thus, while less developed countries can learn from Soviet experience, the framework for their transport decisions is substantially broader than it was for the U.S.S.R. a generation ago.

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