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STUDY PAPER NO. 17

PRICES AND COSTS IN MANUFACTURING INDUSTRIES

BY

CHARLES L. SCHULTZE AND JOSEPH L. TRYON

MATERIALS PREPARED IN CONNECTION WITH THE

STUDY OF EMPLOYMENT, GROWTH, AND PRICE LEVELS

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PRICES AND COSTS IN MANUFACTURING INDUSTRIES

(By Charles L. Schultze and Joseph L. Tryon [1])

I. INTRODUCTION

This paper presents a study of the behavior of output and costs in manufacturing industries over the period 1947–58. The analytical method used is consistent with the national income framework of the Department of Commerce and the data presented may be readily related to the published national income data. Since the data are so constructed that prices may be resolved into their various cost components, they should prove valuable in the study of price fluctuations.

The statistical part of this study covers the 21 manufacturing industries of the Standard Industrial Classification Manual with ordnance and fabricated metals combined. [2] The analytical method, however, is a general one which may be applied to any industry groupings for which the necessary data are available. A broader study using the same basic methods and covering all major industries has been publicized recently. [3] In view of this fact, the presentation here of the general method will be brief. For a more detailed discussion of the method and its shortcomings, the reader is referred to that study.

By means of the method described below it is possible to show the following for any industry:

1. The part of gross national product contributed by the industry.
2. The part of any general price rise or fall which is contributed by the industry.
3. The behavior of labor, capital, and other costs per unit of output in the industry.
4. The relative growth of output per man-hour in the industry.

BASIC METHOD

Gross national product is the value of all goods and services produced in the economy, valued at market prices. As such it includes all costs entering into the final prices of the goods produced: labor cost, capital consumption, taxes, rent, interest, and profits. The inclusion of profits in the concept of "total costs" is a terminological convenience, adopted to avoid the repeated use of the awkward phrase, "total costs plus profits." This use of the term implies no judgment

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[1] The authors wish to acknowledge the invaluable assistance of Mr. Ahmad Al-Samarrie, who performed a large share of the computations for the study. Without his work, the study could not have been completed. Mr. John Degara also assisted in the statistical computations.
[2] For certain purposes satisfactory data for the petroleum and coal products industry were not available, and in these cases this industry was omitted from the analysis.
[3] Charles L. Schultze, "Prices, Costs, and Output for the Postwar Period: 1947–57," Committee for Economic Development (Washington, D.C., 1960).

with respect to the nature of profits as a cost. It is, nevertheless, a useful reminder that, in the long run, "normal" profits are a cost of production. Consistent with this treatment of profits, total cost will therefore equal the sum of the returns to factors of production, including capital consumption, plus taxes. Since the returns to the factors of production, including capital consumption allowances, are actually gross incomes, total cost will be equal to the sum of these gross incomes plus taxes. Thus total cost may be measured by summing gross incomes and taxes as well as by valuing output at market prices.

Within a given industry relations similar to those outlined above will hold. The gross product originating in the industry equals the value added in the industry and the value added is equal to the total costs originating in the industry.[4] The total costs originating in the industry are in turn the sum of the gross incomes to factors of production used in the industry, including capital consumption allowances, and taxes. Thus total costs originating within an industry may be measured by the sum of gross incomes and taxes originating there.

The relationships described will hold generally. However, in order to be consistent with the Department of Commerce national income accounts, gross income and taxes must be defined as they are by Commerce. Therefore in this study the gross income of any factor will equal its income including direct taxes on that income. The remaining taxes which must then be added to the gross incomes to obtain total cost originating in an industry will be the indirect business taxes levied on the industry.

In accordance with the treatment described in the previous paragraph, the measure of total cost originating in an industry is the sum of gross returns to factors of production utilized in the industry, including the taxes thereon, plus indirect business taxes. The classification of factors of production may be as fine as the available data will permit. For this study only the two very broadly defined factors, labor and property, were used. A finer breakdown is technically possible, but the available data do not warrant a finer classification. The returns to these factors are shown as three separate items: compensation of employees, capital consumption allowances, and net business income. Thus the total cost originating in an industry would be the sum of these three items plus indirect business taxes. For certain purposes the sum of capital consumption allowances and net business income is a useful figure. This sum we have labeled gross business income.

An explanation of the calculation of the four cost items is given in appendix A. It should be noted, however, that net business income has been calculated by subtracting compensation from net income originating in each industry. It therefore is the net income to all factors except labor, and includes such diverse elements as corporate profits, interest, and income of unincorporated business.

The sum of the four items which equal total cost is also equal to gross product measured by value added. This sum will therefore be referred to as gross product originating or GPO in any given industry.

The estimation of GPO for an industry is only the first step in determining the behavior of unit costs in the industry. Without relating

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[4] While there are certain technical statistical differences between "value added," as employed in census data, and "gross product originating," conceptually the two terms may be treated as identical.

total costs to physical output, nothing can be said about unit costs. If an industry produced only one product and this product were identical for all time periods, it would be a simple matter to divide total cost by total units produced, giving true unit costs. These unit costs could in turn be divided into labor costs, etc. Unfortunately such homogeneity of output does not usually exist even for an individual firm, much less for the aggregation of firms which we call an industry. Under these circumstances true unit costs cannot be calculated. However, an approximate index of unit costs may be constructed in the following fashion. For each year the total costs of output valued at current prices is divided by the total cost of output valued at constant base year prices. This ratio for each year has a simple and direct interpretation. It tells what a dollar's worth of output at base year prices cost in each year. Thus if 1947 is the base year, and the ratio for an industry is 1.42 in 1954, we may say that $1 worth of production in 1947 prices cost $1.42 in 1954, and therefore costs for this industry had risen 42 percent in the period 1947–54. Thus these ratios are unit costs where outputs of diverse products are made commensurable by expressing them as dollars of output at constant prices. Since this dollar's worth of output is not a physical unit, the ratios are only indexes of unit costs and not absolute unit costs. As is conventional with most indexes, the base in this study, 1947, is 100 rather than 1.00. This conversion to a base of 100 does not affect the interpretation suggested above. The index of unit costs in each industry reflect, however, not only changes in the unit costs of producing the various products of the industry, but also shifts within the industry between high and low unit cost products. Thus even if the unit costs of producing each individual product were to remain unchanged, a shift in the composition of output toward products with a higher than average unit cost could affect our unit cost index. We have been able to construct a unit cost index for all manufacturing which excludes the effects of changes in the distribution of output among the 20 industries. The unit cost indexes for each industry, however, still reflect the effects of changes in product mix within each industry.

The index described above is an index of all costs per unit of output in a given industry. It is a simple matter to divide this total cost per unit into its components. As noted above, the four components identified in this paper are compensation, capital consumption, net business income, and indirect taxes. Letting Y equal the total cost of output in current prices and Z equal the cost of output in constant prices, we have the following relationship:

$$\frac{Y}{Z} = \frac{L+C+B+I}{Z} = \frac{L}{Z} + \frac{C}{Z} + \frac{B}{Z} + \frac{I}{Z}$$

| Total cost per unit of output | = | Labor cost per unit of output | + | Capital consumption per unit of output | + | Net business income per unit of output | + | Indirect taxes per unit of output |

The four terms on the right side show the point contribution of each of the cost items to the index of total cost per unit of output. By examining the behavior of the points of the cost components over time, it is possible to see how much each has contributed to the rise or fall in unit total costs; whether there have been offsetting movements of the cost elements, etc.

A numerical example will demonstrate the use of the unit cost indexes.

Food and kindred products

[Billions of dollars]

	1947	1957
Compensation	4,282	7,085
Net business income	1,489	1,866
Capital consumption allowance	345	722
Indirect taxes	2,654	3,438
Gross product originating current prices	8,770	13,111
Gross product originating 1947 prices	8,770	10,419

	1947	1957	Point change	Percent change
Index of total unit costs	100.0	125.8	25.8	25.8
Compensation	48.8	68.0	19.2	39.3
Net business income	17.0	17.9	.9	5.3
Capital consumption allowance	3.9	6.9	3.0	76.9
Indirect taxes	30.3	33.0	2.7	8.9

In this example total unit costs rose 25.8 percent in the period 1947–57. The increase in unit compensation cost contributed 19.2 points of this rise, net business income 0.9 point, capital consumption 3 points, and indirect taxes 2.7 points. (All of these numbers can perhaps be better understood as simply the cost of producing, in 1957, an amount of output valued in 1947 at $1. Thus the total cost of producing that output rose to $1.258 in 1957; unit labor costs rose from 49 cents to 68 cents, etc.). The last column shows the percent change in each individual component rather than its contribution to the total unit cost change. These percent change figures show which of the individual components have changed relatively faster or slower than the total or other components.

The indexes for 19 manufacturing industries are given in table 5. The industries for which the data are presented are the two-digit manufacturing industries of the Standard Industrial Classification (SIC), except for petroleum and coal products, and with ordnance and fabricated metals combined. Table 3 shows the total unit cost indexes for each industry in the form of points which add up to a unit cost index for all manufacturing except petroleum and coal products. The points for each industry are simply its unit cost index weighted by its relative contribution to total output in the weight year, 1954. Thus food and kindred products points for 1958 are 14.53 which is equal to its 1958 unit cost index, 125.8, multiplied by its proportion of total manufacturing output (except petroleum and coal products) in 1954, 0.1155.

It should be noted that the indexes explained above are not ordinary price indexes for the goods produced by an industry. They are calculated from the value *added* in an industry, and are therefore indexes only of the costs *originating* in the industry. The cost of raw materials, fuel, and anything else purchased *outside* the industry are not reflected in these indexes for they are neither part of the returns to the factors used in the industry nor indirect taxes levied on the industry. Hence these indexes may move differently from a price index of the prices charged for goods produced by the industry.

The ordinary price index reflects the behavior of all costs and not just those originating within the industry in question. Conceptually the price (or total unit cost) which we have calculated is equal to the market price of the product minus the unit cost of raw materials and supplies purchased from other industries. In the discussion in the remainder of this paper, unless otherwise indicated, the term price will be used in this special sense of total unit cost of the product originating *within* a given industry.

The last type of information developed in this study is an index of output per man-hour in an industry. This productivity index is obtained by dividing the constant price output figure for each year by the total man-hours used to produce that output. The resulting series may then be shifted to a particular year as 100 in order to obtain the usual index with a base of 100.

DATA AND STATISTICAL METHODS USED

The techniques described above require that for each year the gross product originating in each industry be calculated both in current prices and base-year prices. The current price GPO estimates were made using the income and cost data published by the Department of Commerce adjusted in various ways. The details of these adjustments are given in appendixes A and B. The most important necessary adjustment is to modify the capital consumption allowances, net business income, and indirect taxes for the fact that they are estimated on the basis of company reports rather than establishment reports. The wage, salary and output estimates are based on establishment data and therefore need no adjustment.

The desirability of making an adjustment for the influence of the use of company reports is obvious. The reports of companies classified in a given industry may be seriously influenced by establishments which that company owns in other industries; further, a substantial share of the products of some industries are produced in establishments of companies classified in other industries.

Adjustments were possible in all industries except petroleum and coal products. In petroleum and coal products it proved to be impossible to remove the influence of the oil producing properties of the integrated refining companies, and this industry was therefore excluded from the analyses which required net business income, capital consumption or indirect taxes. Integrated companies with establishments outside manufacturing exist in other manufacturing industries, of course, but the problem is far more extreme in the petroleum products industries than in any other. Where the problem existed in other industries, either it was possible to make adjustments or the error was small enough to ignore.

No really satisfactory method is available for making the necessary adjustments to convert data based on company reports to an establishment basis. In this study conversion of company data into establishment data was accomplished principally by the use of cross-classification tables from the 1954 census. In these tables employment is cross-classified by industry according to both establishment and company industry classifications. The use of these data is explained in appendix B.

The use of the Census employment data for adjusting data reported on a company basis is based on two heroic assumptions. First, since the data are available only for 1954, it is assumed that the relative size of the necessary adjustments is the same for all years covered by the study. Second, it is assumed that for any given industry, the net business income per employee, capital consumption allowance per employee, and indirect business taxes per employee are the same for all employees who are classified in the industry on an establishment basis. The correctness of these assumptions is rather doubtful. Therefore, it seems that at best, the adjustments based on employment data are very crude and can only be assumed to be in the right direction. Substantial error from this source undoubtedly still affects the data of some industries. The importance of this problem varies considerably from industry to industry. In appendix B the magnitude of these adjustments is indicated for each industry.

The gross product originating valued in constant prices was obtained by multiplying an index of physical output for each industry by the value of the industry's output in the base year. This method provides a dollar value series which moves as physical output, i.e., without any price changes, and is therefore the constant price GPO desired.[5]

The procedure used to obtain the data used in this study, both those used to derive the unadjusted data and those used to adjust the data for the company-reporting problem, make it unwise to put too much faith in the significance of any one figure. It is the opinion of the authors that the general patterns which appear in the data are reliable, particularly the *relative* movements of the various series. Thus, although reference may be made to individual figures for individual industries, it should be kept in mind that no figure considered by itself can be considered reliable enough to sustain a firm conclusion, particularly where small changes or minor differences among various industries are concerned.

WARNINGS ON THE USE OF THE UNIT COST INDEXES

The data developed in this paper make it possible to trace the behavior of costs within a given industry. It is very important to note, however, that the mere possession of price and cost data does not permit us to infer the *causes* of changes in prices. There is far too much interdependence between costs and prices to permit this sort of direct inference. An example will show the danger of such inferences. It is clear that costs must rise even in the purest sort of "demand pull" inflation. The reason for this is that the increased demand cannot be sustained unless incomes rise, but incomes, i.e., labor and business income, are the basic costs which we have identified. The mere fact that unit labor costs in an industry have risen does not mean that they *caused* the price rise; we cannot say, from price and cost data alone, whether prices rose because unit labor costs rose, or unit labor costs rose because prices rose—or more likely, whether the final result grew out of a combination of both causal factors. Similarly, the fact that business incomes per unit in an

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[5] The output index required for this method is one based on value added weights. Value added weights are necessary in order to be consistent with the cost concepts which are based on value added. The Federal Reserve Board kindly furnished unpublished production indexes with 1954 value added weights based on the "Standard Industrial Classification Manual," 1954 edition.

industry have risen gives us no warrant to assert that prices were "pushed" up by monopolistic firms attempting to raise their profit margins. In sum, historical facts about prices and costs provide us with useful information with which to combine other information in an analysis of economic events. But such data, *in themselves,* provide no answers to the questions of why prices and costs behaved the way they did. As a consequence, a substantial part of the analysis which follows relates the price and cost data to other data on changes in output and expenditures in an attempt to provide some insights into the basic factors determining the movements of relative prices and costs.

Changes in the unit cost indexes may occur for a variety of reasons. Changes in the prices of factors of production are, of course, important ones. There are, however, several other sources of change in these indexes. The reader should keep in mind that some of the behavior of the cost indexes may be accounted for by reasons not investigated in this study.

One source of change that is independent of factor prices is a shift in demand between products *within* an industry.

A shift in demand between products within an industry means that the output product mix for the industry changes. Such a change may not be reflected in a change in total output, but it may very well lead to different requirements for labor and capital, and may also alter compensation, business income, and indirect taxes for the industry, all without changing price or total unit costs for any individual products. When there are internal shifts in demand, no set of weights— base year, weights, current year weights, or some combination of the two—will give a wholly satisfactory index of output because the effect of the output shift on the index will depend on the weighting system. This problem is more acute over long periods than short simply because demand patterns have more time to change, and the difference between current and base year weights will widen. How long a period may be before it is seriously affected by such demand shifts is impossible to say *a priori.* A discussion of the effects of certain known shifts in demand in the postwar period is presented in the section following this one.

A second source of change unrelated to factor price changes is change in productivity. If factor prices and proportions remain the same, but productivity increases, then unit costs will decrease. This source of unit cost change is discussed in the section "Wages, productivity, and unit labor costs."

Finally, any change in factor proportions may lead to a change in unit costs without changes in factor prices. It is, of course, true that changes in factor prices are likely to lead to changes in factor proportions. In such a situation unit cost changes will reflect the combined effect of the factor price changes and the shift in factor proportions. Technological changes may also lead to a change in factor proportions. For whatever reasons, there appears to have been a shift toward a greater proportion of capital, particularly machinery, in the period covered by this study. This fact is probably one factor in explaining the persistent rise in the share of total unit costs going to capital consumption over the period. Although changes in factor proportions undoubtedly had some effect on the unit costs,

this is one area of investigation which was not undertaken for this study.

The warnings raised above indicate that the data presented below must not be interpreted uncritically. Neither causal direction nor the exact nature of the unit cost changes may be deduced without analyzing the data very carefully and taking into account influences of the sort noted above. The data do, however, provide an excellent basis for such an analysis, and with due care, important insights may be made about the causes for price and cost changes in the economy.

II. The Pattern of Changes in Output, Prices, and Costs

OUTPUT

Essential to any interpretation of the price and cost data with which this study is primarily concerned is a knowledge of the behavior of output during the period under consideration. This first section will therefore be devoted to an analysis of output in manufacturing industries during the postwar period.

There are three major technical features of the data on manufacturing output which are of particular importance in an analysis of the industrial pattern of output changes. In the first place the classification of all industries into only 20 major groups inevitably means that some of these groups will contain individual industries which are quite heterogenous in nature. For example, the nonelectrical machinery industry includes establishments manufacturing such diverse products as agricultural equipment, construction machinery, air-conditioning units, refrigerators, and gas ranges. The total output of this industry, therefore, includes not only establishments whose primary output is some type of producers' equipment but also establishments which specialize in the production of consumer durable goods. There are many periods in which the demand for consumer durables moves in the opposite direction from the demand for producers goods. The overall output of the industry group in such periods will thus reflect the balancing of divergent forces.

A second problem of data interpretation arises from the fact that we are working with an *establishment* rather than a *commodity* classification. A manufacturing establishment is assigned to an industry on the basis of its principal product. All of the output (and all of the wages, employment, etc.) of the establishment is counted in this one industry. Thus an establishment whose principal product is, say, textile machinery is classified in the nonelectrical machinery group. All of the output of this establishment, including any of its secondary products, is included in the output of the nonelectrical machinery industry. In this case the statistics, which are designed to measure economic activity in each industry, simply reflect the diversity of output which characterizes American industry. Since our industry group classifications are quite wide, most of the secondary products of particular establishments will be products which belong in the major industry group. Consequently the problem of secondary products is not too troublesome. There appears to be one major exception, however—military output. Part of military output will be produced in in establishments which *specialize* in producing military equipment, and the remainder will be in establishments where military equipment

is normally a *secondary* output. Those establishments primarily producing military aircraft and missiles are included in the transportation equipment industry group, and those primarily producing other military equipment are classified in the ordnance industry, which is included in our fabricated metal products industry group. Because the establishments producing the remainder of military output are classified according to the primary, nonmilitary part of their output, exact data on the location of the remainder are not available. It is clear, however, that a large part of the expansion in military output between 1950 and 1953 was in establishments normally producing civilian goods. For example, there were automobile firms producing tanks, textile machinery plants turning out machineguns, and radio receiver establishments manufacturing signal equipment. It appears that the increases in military output after 1950, both in establishments specializing in military goods and in those normally producing primarily other goods, show up in our statistics mostly as increased output in the fabricated metal products, nonelectrical machinery, electrical machinery, and transportation equipment industries. Later, though again exact data are not available, the cutback in military production after 1953 appears to have been concentrated in items of equipment other than aircraft and missiles. As a consequence it is reflected in a reduction of "secondary" output in establishments normally producing civilian goods. Precisely because these products were secondary, it is difficult to trace, industry by industry, the specific impact of changes in the defense program. We do know, however, that the four industries most directly affected were those named above —fabricated metal products, nonelectrical machinery, electrical machinery, and transportation equipment, which includes automobiles.

Despite the substantial investment boom of 1955, 1956, and 1957, the total output of the nonelectrical machinery industry during those 3 years averaged less than it did in 1953—on an annual basis only in the single year 1956 did it exceed the 1953 level. This does not mean, however, that the output of machinery did not increase during this period.[6] Rather the rise in machinery output was offset by a decline in the output of military equipment produced by the machinery industries. Similarly the fabricated metal products industry group reached an output peak in 1953 which it did not reach again at any time during the 1955–58 period. The decline in output of the ordnance industry proper—which is included in this industry group— and the military output produced as a secondary product by other establishments in this industry group accounts for the failure of total output to reach the 1953 peak.

There is a third statistical characteristic of the data which must be taken into account in interpreting the relative rates of output growth among different industries. This is the bias introduced into the measurement of output by changes in the quality of products. The basic output measures were derived by deflating data on the value of shipments to remove the effects of price changes. Often, however, even the best price indexes cannot make sufficient allowances for quality change. What appears as a price change may really be an increase in cost reflecting improved quality. In general, the greater

[6] Indeed there was substantial excess demand for machinery and equipment during the period. See Thomas A. Wilson, "An Analysis of the Inflation in Machinery Prices," Study Paper No. 3, Joint Economic Committee, Nov. 6, 1959.

the proportion of complex "made to order" products in the total output of an industry, the harder it is to adjust for quality improvements in the price index; conversely the more the output of an industry is concentrated on standard "shelf" goods, the more likely is it that the price index will reflect the true picture of price changes in the industry. If all industries were alike in the proportion of "made to order" versus "shelf" goods, and if the quantity and rapidity of improvements were uniform through all industries, then the understatement of output gains which results from deflating value data with "imperfect" price indexes would be the same in all industries. Thus, while our measures of output might understate total output, the relative pattern of output changes among different industries would be faithfully depicted. The various manufacturing industries do not, however, exhibit such homogeneity in the nature of their output or the rapidity with which they change their products. It is much more likely, for example, that our data understate the rise in machinery output than that they understate the rise in lumber or textile output. While we shall proceed to analyze the relative rates of change in output, as shown by our data, it is well to remember the qualifications which must attach to any conclusions drawn from the analysis. Fortunately the very industries which have shown the largest gain in output are usually those in which the possibility of understating output is the greatest. An allowance for such understatement would simply strengthen the trends already observable in the data.

In most of our calculations we have excluded the petroleum and coal products industry because of the difficulty of estimating the profits, capital consumption allowance and indirect taxes of this industry on an establishment basis. However, the output and labor compensation data for the industry are collected and published on an establishment basis. Hence in the discussion of manufacturing output which follows, we have included the petroleum and coal products industry in the data. Only its price weight will be affected by the probable errors incorporated in our adjustment to an establishment basis, and this should not be, in itself, large enough to invalidate the measure of total manufacturing output. Similarly, in discussing unit labor costs, wage rates, and productivity we have included the petroleum and coal products industry in the discussion, since all of the relevant data do not involve a dubious conversion of company to establishment classification. However, in the discussion of relative prices, and the behavior of cost components relative to each other, we have excluded the petroleum and coal products industry, since in the estimation of "value added" prices, gross business income, and indirect taxes are subject to a wide margin of error arising out of classification problems. The analytic tables are appropriately footnoted to indicate any cases where the petroleum and coal products industry has been excluded from total figures for all manufacturing industries.

It is clear from an examination of the data that the rates of growth in output among various industries have been quite diverse during the postwar period. Table 1 indicates the contribution to the overall gain in manufacturing output made by each industry. In analyzing the postwar change in output pattern the period 1948 to 1956 was selected, rather than the full span, 1947 to 1958; 1947 was a year in which the distortions in output caused by the war and the postwar reconversion had not yet been eliminated. The output pattern in 1957

and 1958 was significantly affected by the recession; as a consequence the basic longer run trends in output are best understood after these years are eliminated.

For the period as a whole, the durable goods industries grew at a faster rate than nondurable. Accounting for 51 percent of output in 1948, the durable goods industries contributed 62 percent of the overall rise in output. Nondurable goods industries, which accounted for 49 percent of output in 1948 contributed only 38 percent of the rise in production. Indeed if we eliminate the chemical industry, the other nondurable goods industries contributed only 26 percent of the rise in manufacturing output.

A greater than average rise in durable goods output did not characterize the entire period. From 1948 to 1953 durable goods industries accounted for 72 percent of the total increase in manufacturing production; from 1953 to 1956, however, durables contributed only 37 percent of the output rise. The major factor behind this particular pattern of output behavior is, of course, the defense program. If we single out the industries most directly affected—fabricated metal products, non-electrical machinery, electrical machinery, transportation equipment, and instruments—we find that these five industries alone were responsible for 60 percent of the gain in total manufacturing production between 1948 and 1953. If we add chemicals, a strong growth industry, to the list, this group of industries accounts for 71 percent of the total rise in output. From 1953 to 1956, on the other hand, these five durable goods industries account for only 18 percent of the increase in manufacturing output. It was during this latter period that defense procurement was being reduced. Indeed, of the 18 percent contribution to output made by this group of industries, 13 percent came from the electrical machinery and instrument industries alone, which, because of their importance in missile procurement, were less subject to the impact of defense cuts.

The industries whose rates of growth were slower than average during the 1948–53 period were primary metals, lumber, furniture, stone, clay, and glass, miscellaneous manufacturing, textiles, apparel, rubber, leather, printing and publishing, food and beverage, and tobacco. Although accounting for 55 percent of total output in 1948, they contributed only 23 percent of the increase in output from 1948 to 1953. The slower than average rate of growth in these industries is in large part explained by two basic factors. First, a large number of them are heavily oriented to the consumer sector of the economy. During these 6 years, as the defense program took an increasing share of total output, consumer purchases accounted for a declining share. And, of course, the industries principally serving the consumer sector of the economy reflected this shift in the pattern of overall demand. Second, the other industries in the slowly expanding group are those whose output is only one stage removed from raw materials—they are the first step in the several stages of processing which eventually results in finished goods. One of the outstanding characteristics of economic growth has always been the growing amount of fabrication per unit of raw materials. In other words the output of finished products has risen faster than the output of raw or semifabricated materials. The growth of labor and capital inputs applied to the fabricating process has steadily risen in relation to the inputs applied at lower stages of production. As a consequence the output of the

raw or semifabricated material industries—like primary metals, lumber, leather, textiles, etc.—tends to grow at a slower rate than manufacturing output generally.

From 1953 to 1956 the rates of growth among various industries continued to exhibit substantial divergence, although less so than in the prior 6 years. Electrical machinery, instruments, and chemicals continued to rise at greater than average rates. All three are strong growth industries, and the former two have been particularly aided by the swift rise in missile procurement. Other industries whose rate of growth was significantly above average were stone, clay, and glass, furniture, paper, and printing and publishing. The output of two other large industries, petroleum and coal products and food and kindred products, rose at about average rates. On the other hand fabricated metal products, nonelectrical machinery, primary metals, lumber, textiles, apparel, and rubber, experienced less than average output gains.[7]

In summary, some of the major features of the shift in output patterns during the postwar period can be explained by two major factors: the increase and subsequent cutback in the demand for military hard goods and the continuation of the longrun trend toward greater fabrication per unit of materials input. Barring any major shifts in the proportion of output taken by defense, the years immediately ahead should probably witness a more even distribution of output increases between durable and nondurable goods. There is no reason to believe, however, that there will be any cessation of the long-term trend toward a more rapid increase in the output of finished goods industries relative to raw materials industries.

TABLE 1.—*Percent of total change in manufacturing output contributed by various industries*

	Relative importance, 1948	Percent of total change		
		1948–53	1953–56	1948–56
Total manufacturing		100.0	100.0	100.0
Durables:	51.0	71.7	36.6	62.2
Primary metals	8.0	5.8	3.5	5.2
Fabricated metal products, ordnance	6.4	9.6	−6.2	5.4
Nonelectrical machinery	10.0	10.3	3.5	8.5
Electrical machinery	5.2	12.4	9.8	11.7
Transportation equipment	8.9	25.1	8.2	20.5
Stone, clay, and glass products	3.1	2.2	5.2	3.0
Lumber and products	3.8	1.1	1.6	1.2
Furniture and fixtures	1.7	.8	3.8	1.6
Miscellaneous manufacturing	2.6	1.7	5.0	2.6
Instruments	1.4	2.7	2.3	2.6
Nondurables:	49.0	28.3	63.4	37.8
Textile mill products	7.3	.5	2.7	1.1
Apparel	4.9	2.0	3.9	2.5
Rubber products	1.6	1.4	1.0	1.3
Leather and leather products	1.7	.2	1.5	.6
Paper and allied products	3.4	3.4	8.5	4.8
Printing and publishing	4.6	2.3	8.5	4.0
Chemicals and allied products	6.3	10.5	20.7	13.2
Petroleum and coal products	4.0	2.9	3.5	3.1
Food and kindred products	12.8	4.3	13.0	6.7
Tobacco manufactures	2.4	.8	.2	.6

[7] Again, the reader should remember that the output of machinery is not the same thing as the output of the machinery industry.

The particular pattern of output changes during the postwar period is interesting not only for its own sake but also because it is related to the price and cost behavior of the different industries. It is to this aspect of the problem that we shall devote the remaining portion of our study.

PRICES AND COSTS

Table 2 presents the unit cost, or price [8] indexes, and the points contributed by the four component costs for all manufacturing except petroleum and coal products. The year 1947 is 100. Beneath the indexes are the year-to-year changes in the index, and the component points expressed as a percent of the total index for the individual years. Data for the individual industries, both the points of each component adding up to the price index and the points of each component expressed as a percentage of the price for each year, are presented in table 5.

Before attempting to analyze the cost data, it will be most helpful to have the general pattern of behavior of costs in mind. Over the period 1948–1956, total unit costs or price increased by 23 percent. The increase in compensation per unit contributed 16.3 points to the overall increase, or 72 percent of the total increase; net business income contributed 0.9 point, or 4 percent of the total increase; capital consumption contributed 3.5 points, or 16 percent of the total increase; and indirect taxes contributed 1.9 points, or 8 percent of the total increase. The significance of the contributions of the components to the increase depends, of course, on the share which each receives of the gross product originating (GPO) in manufacturing. Over the period 1948–56 the share of compensation was somewhat variable, but averaged 66 percent of GPO. Thus its 16.3 points, or 72 percent of the total increase, were very close to its average share of the GPO. Net business income's share of GPO was highly variable, as would be expected of the residual component. It averaged 21 percent of GPO, but its contribution to the increase was 0.9 points, only 4 percent of the total increase. Capital consumption, on the other hand, had a steady rise over the entire period. It averaged 5 percent of GPO, but its contribution of 3.5 points was 16 percent of the total increase. Thus, it contributed far more to the rise than its average share of GPO. It should be noted, however, that the combination of net business income and capital consumption averaged 26 percent of the GPO and contributed 25 percent of the rise. Thus, gross business income contributed approximately its proportionate share to the total cost rise. Indirect taxes averaged 8 percent of GPO and contributed only 8 percent of the rise, just its proportionate share of GPO.

If the shares of the four components of GPO are taken for 1948 instead of being averaged for all nine years, the disparities are somewhat greater between contributions to the total rise in unit costs and the shares of GPO, but the same general pattern prevails.

Examining the yearly indexes, we find that total unit cost has risen in each year except 1953, when it stayed practically even The year-to-year changes range from a high of the 10.3 point increase in 1951 to the no change of 1953.

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[8] The reader is reminded that the word "price" as used here refers to the price or cost only of the product originating within the industry or industries under consideration; i.e., it is the market price of the final product minus the cost of all purchased materials and supplies.

Compensation per unit was quite variable. It increased in each year except 1950 and 1955. The declines in 1950 and 1955 appear to be due to improved utilization of the labor force as output recovered from recession lows. Exactly the same pattern occurred for capital consumption, declines in 1950 and 1955 only.

Net business income behaved quite differently from compensation and capital consumption. It decreased in 5 of the 12 years, and the decreases were in 1952, 1953, 1954, 1956, and 1958. These are years when compensation and capital consumption per unit were increasing. Thus, in 7 of 12 years, the change in compensation and capital consumption per unit was partly offset by an opposite change in net business income per unit.

Indirect taxes decreased in 3 of 12 years. The timing appears to be haphazard rather than systematic in relation to the business cycle.

The figures for the yearly share of GPO of each of the four components show net business income securing its greatest share in 1950 and 1951, the years when the major influence of the Korean war was felt. The share of compensation dropped in those two years, but recovered, and by 1958 it had reached its largest value, as net business income per unit declined to its lowest value. Capital consumption accounted for an ever-increasing share of GPO, starting at 3.8 percent and rising fairly steadily to 6.3 percent in 1957 and 6.9 in 1958. Indirect taxes appeared to maintain its share fairly consistently over the whole period.

Any aggregate series is likely to show significant variation in the behavior of its individual components, and these unit cost indexes are no exception. Table 3 shows the price indexes of each manufacturing industry (except petroleum and coal products) as a point contribution to the manufacturing price index. These points are simply the individual price indexes multiplied by their respective GPO's as a share of the total manufacturing GPO in 1954. Table 4 shows the net change from year to year of each of the series in table 3. It is clear from examining the table of year-to-year changes that unit costs in some industries behaved quite differently from others. In spite of the fact that in each year except 1953 total costs rose for all manufacturing, pluses clearly dominate the picture in only 4 of the 11 pairs of year-to-year changes. The four pairs where pluses dominate are 1947–48, 1950–51, 1955–56, and 1956–57. In the other year-to-year comparisons, decreases are nearly as common as increases. A comparison of individual industries over the entire period shows that certain industries rose far more consistently than others. At one extreme are four industries—printing and publishing; stone, clay, and glass products; fabricated metals; and instruments—in each of which unit costs rose in all but one year. At the other extreme are five industries—textile products, apparel, lumber and wood products, paper and allied products, and leather and leather products—in each of which there were declines in at least 6 of the 11 year-to-year movements. This latter group included one industry, apparel, in which total unit costs declined for the period as a whole.

TABLE 2.—*Unit cost indexes for all manufacturing except petroleum and coal products*

UNIT COST INDEX AND COMPONENTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Total unit cost index	100.00	108.57	112.82	116.07	126.35	127.03	127.01	128.82	130.81	133.15	137.89	140.38
Compensation	68.87	72.50	73.66	72.58	80.83	84.43	86.05	88.08	85.93	90.20	94.36	98.48
Net business income	18.77	23.01	24.81	28.98	30.77	26.42	24.51	22.54	26.67	24.02	24.17	20.83
Capital consumption	3.79	4.26	5.03	4.74	5.17	5.83	6.36	7.75	7.73	8.07	8.64	9.69
Indirect taxes	8.57	8.80	9.31	9.77	9.57	10.34	10.08	10.45	10.49	10.85	10.73	11.38
Gross business income	22.56	27.27	29.84	33.72	35.94	32.25	30.87	30.29	34.40	32.09	32.81	30.52

NET CHANGE FROM PREVIOUS YEAR IN UNIT COST INDEX AND COMPONENTS

		1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Total unit cost index		8.57	4.24	3.25	10.28	0.68	−0.02	1.81	1.99	2.34	4.75	2.49
Compensation		3.63	1.16	−1.08	8.25	3.61	1.62	2.03	−2.16	4.28	4.15	4.12
Net business income		4.24	1.80	4.17	1.79	−4.35	−1.91	−1.97	4.13	−2.65	.15	−3.34
Capital consumption		.48	.77	−.29	.43	.66	.53	1.38	−.02	.35	.57	1.05
Indirect taxes		.23	.51	.46	−.20	.77	−.26	.37	.04	.36	−.13	.66
Gross business income		4.72	2.57	3.88	2.22	−3.69	−1.38	−.59	4.11	−2.30	.72	−2.29

COMPONENTS OF UNIT COST AS PERCENTAGE OF TOTAL UNIT COST

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Total unit cost	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	68.9	66.8	65.3	62.5	64.0	66.5	67.8	68.4	65.7	67.7	68.4	70.2
Net business income	18.8	21.2	22.0	25.0	24.3	20.8	19.3	17.5	20.4	18.0	17.5	14.8
Capital consumption	3.8	3.9	4.5	4.1	4.1	4.6	5.0	6.0	5.9	6.1	6.3	6.9
Indirect taxes	8.5	8.1	8.2	8.4	7.6	8.1	7.9	8.1	8.0	8.2	7.8	8.1
Gross business income	22.6	25.1	26.5	29.1	28.4	25.4	24.3	23.5	26.3	24.1	23.8	21.7

TABLE 3.—*Point contribution of each industry to unit cost index for all manufacturing* [1]

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Food and kindred products	11.55	12.76	12.50	12.76	13.07	13.89	14.38	14.01	14.60	14.39	14.53	14.53
Tobacco manufactures	2.25	2.33	2.44	2.42	2.50	2.72	2.85	2.88	2.88	2.92	3.01	2.97
Textile-mill products	4.11	4.30	3.82	3.71	4.34	3.90	3.71	3.47	3.59	3.62	3.60	3.56
Apparel	3.99	3.93	3.79	3.65	4.15	4.05	4.12	4.10	3.98	4.21	4.22	4.17
Lumber and products	2.99	3.34	3.21	3.37	3.81	3.64	3.46	3.35	3.56	3.71	3.52	3.40
Furniture and fixtures	1.61	1.79	1.89	1.87	2.16	2.19	2.11	1.95	1.98	2.07	2.15	2.10
Paper and allied products	3.72	3.87	3.77	3.88	4.58	4.50	4.40	4.43	4.41	4.73	4.62	4.54
Chemicals and allied products	7.27	8.06	8.37	8.07	8.67	8.21	8.24	8.51	8.67	8.38	8.49	8.39
Rubber products	1.53	1.48	1.47	1.37	1.94	2.02	1.89	1.68	1.73	2.08	2.16	2.21
Leather and leather products	1.34	1.57	1.47	1.36	1.74	1.63	1.64	1.63	1.55	1.63	1.66	1.60
Printing and publishing	4.81	4.94	5.10	5.14	5.39	5.74	5.96	5.89	6.13	6.24	6.54	6.66
Stone, clay, and glass products	3.47	3.80	4.03	4.22	4.37	4.37	4.75	4.97	5.24	5.21	5.30	5.46
Primary metals	8.48	9.29	10.51	10.77	12.56	12.36	13.06	13.62	13.57	14.62	15.67	16.39
Fabricated metals, ordnance	7.26	7.99	8.11	8.47	9.37	9.45	9.24	9.68	9.76	10.43	10.81	11.09
Instruments	2.07	2.26	2.50	2.68	3.02	2.81	2.86	2.95	2.97	3.12	3.19	3.33
Miscellaneous manufacturing	2.40	2.61	2.59	2.63	2.98	2.96	2.89	2.89	2.83	2.84	2.82	2.82
Nonelectrical machinery	10.61	11.89	12.76	13.06	14.49	14.77	14.38	15.31	15.23	15.97	17.39	17.87
Electrical machinery	6.65	7.32	7.51	7.93	8.69	8.38	8.33	8.21	7.91	8.05	8.92	9.84
Transportation equipments	13.89	15.03	16.99	18.71	18.49	19.43	18.74	19.28	20.21	18.93	19.31	19.46
Total, all manufacturing	100.00	108.56	112.83	116.07	126.32	127.02	127.01	128.81	130.80	133.15	137.91	140.39

[1] Excludes petroleum and coal products.

TABLE 4.—*Year-to-year changes in points of manufacturing industries in unit cost index for all manufacturing* [1]

	1947 to 1948	1948 to 1949	1949 to 1950	1950 to 1951	1951 to 1952	1952 to 1953	1953 to 1954	1954 to 1955	1955 to 1956	1956 to 1957	1957 to 1958	Number of increases	Number of decreases
Food and kindred products	+1.21	−0.26	+0.26	+0.31	+0.82	+0.49	−0.37	+0.59	−0.21	+0.14	0	7	3
Tobacco manufactures	+.08	+.11	−.02	+.08	+.22	+.13	+.03	0	+.04	+.09	−.04	8	2
Textile—mill products	+.19	−.48	−.11	+.63	−.44	−.19	−.24	+.12	+.03	−.02	−.04	4	7
Apparel	−.06	−.14	−.14	+.50	−.10	+.07	−.02	−.12	+.23	+.01	−.05	4	7
Lumber and products	+.35	−.13	+.16	+.44	−.17	−.18	−.11	+.21	+.15	−.19	−.05	5	6
Furniture and fixtures	+.18	+.10	−.02	+.29	+.03	−.08	−.16	+.03	+.09	+.08	−.05	7	4
Paper and allied products	+.15	−.10	+.11	+.70	−.08	−.10	+.03	−.02	+.32	−.11	−.08	5	6
Chemicals and allied products	+.79	+.31	−.30	+.60	−.46	+.03	+.27	+.16	−.29	+.11	−.10	7	4
Rubber products	−.05	−.01	−.10	+.57	+.08	−.13	−.21	+.05	+.35	+.08	+.05	6	5
Leather and leather products	+.23	−.10	−.11	+.38	−.11	+.01	−.01	−.08	+.08	+.03	−.06	5	6
Printing and publishing	+.13	+.16	+.04	+.25	+.35	+.22	−.07	+.24	+.11	+.30	+.12	10	1
Stone, clay and glass products	+.33	+.23	+.19	+.15	0	+.38	+.22	+.27	−.03	+.09	+.16	9	1
Primary metals	+.81	+1.22	+.26	+1.79	−.20	+.70	+.56	−.05	+1.05	+1.05	+.72	9	2
Fabricated metals, ordnance	+.73	+.12	+.36	+.90	+.08	−.21	+.44	+.08	+.67	+.38	+.28	10	1
Instruments	+.19	+.24	+.18	+.34	−.21	+.05	+.09	+.02	+.15	+.07	+.14	10	1
Miscellaneous manufacturing	+.21	−.02	+.04	+.35	−.02	−.07	0	−.06	+.01	−.02		5	5
Non-electrical machinery	+1.28	+.87	+.30	+1.43	+.28	−.39	+.93	−.08	+.74	+1.42	+.48	9	2
Electrical machinery	+.67	+.19	+.42	+.76	−.31	−.05	−.12	−.30	+.14	+.87	+.92	7	4
Transportation equipment	+1.14	+1.96	+1.72	−.22	+.94	−.69	+.54	+.93	−1.28	+.38	+.15	8	3
Total, all manufacturing	8.56	4.27	3.24	10.25	.70	−.01	1.80	1.99	2.35	4.76	2.48	10	1
Number of Increases	17	11	12	18	8	9	9	11	15	15	9		
Number of Decreases	2	8	7	1	10	10	9	7	4	4	8		

[1] Excludes petroleum and coal products.

TABLE 5.—*Cost indexes for manufacturing industries*

FOOD AND KINDRED PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index	100.0	110.5	108.2	110.5	113.2	120.3	124.5	121.3	126.4	124.6	125.8	125.8
Compensation	48.8	53.1	53.3	54.9	59.5	60.7	63.8	64.1	64.3	66.0	68.0	67.3
Net business income	17.0	23.3	20.0	18.9	16.4	20.0	20.3	17.8	22.6	17.7	17.9	17.9
Capital consumption	3.9	4.7	5.2	5.4	5.9	5.9	6.0	6.3	6.8	6.7	6.9	7.2
Indirect taxes	30.3	29.4	29.7	31.3	31.4	33.7	34.4	33.1	32.7	34.2	33.0	33.4
Gross business income	20.9	28.0	25.2	24.3	22.3	25.9	26.3	24.1	29.4	24.4	24.8	25.1
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	48.8	48.1	49.3	49.7	52.6	50.5	51.3	52.8	50.9	53.0	54.1	53.5
Net business income	17.0	21.1	18.5	17.1	14.5	16.6	16.3	14.7	17.9	14.2	14.2	14.2
Capital consumption	3.9	4.2	4.8	4.9	5.2	4.9	4.8	5.2	5.4	5.4	5.5	5.7
Indirect taxes	30.3	26.6	27.4	28.3	27.7	28.0	27.6	27.3	25.8	27.4	26.2	26.6
Gross business income	20.9	25.3	23.3	22.0	19.7	21.5	21.1	19.9	23.3	19.6	19.7	19.9

TOBACCO MANUFACTURING

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index	100.0	103.4	108.3	107.5	111.1	120.7	126.7	127.8	128.1	129.9	133.6	131.8
Compensation	12.4	12.5	13.2	13.7	14.8	15.0	16.1	17.5	17.5	18.5	18.4	17.5
Net business income	9.5	12.2	15.7	13.5	15.1	15.8	21.5	20.7	20.5	21.1	24.4	23.5
Capital consumption	.6	.7	.8	.8	.8	.9	.9	1.0	1.1	1.3	1.4	1.4
Indirect taxes	77.5	78.0	78.6	79.5	80.4	89.0	88.2	88.6	89.0	89.0	89.4	89.4
Gross business income	10.1	12.9	16.5	14.3	15.9	16.7	22.4	21.7	21.6	22.4	25.8	24.9
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	12.4	12.1	12.2	12.7	13.3	12.4	12.7	13.7	13.6	14.2	13.8	13.3
Net business income	9.5	11.8	14.5	12.6	13.6	13.1	17.0	16.2	16.0	16.3	18.3	17.8
Capital consumption	.6	.7	.7	.7	.7	.7	.7	.8	.9	1.0	1.0	1.1
Indirect taxes	77.5	75.4	72.6	74.1	72.4	73.8	69.6	69.3	69.5	68.5	66.9	67.8
Gross business income	10.1	12.5	15.2	13.3	14.3	13.8	17.7	17.0	16.9	17.3	19.3	18.9

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

TEXTILE-MILL PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	104.7	93.0	90.3	105.7	95.0	90.3	84.4	87.4	88.1	87.5	86.7
Compensation_____	65.9	70.7	69.2	69.6	74.2	72.5	71.7	69.1	66.8	67.5	68.6	66.9
Net business income_____	29.4	28.9	17.7	14.8	24.8	15.7	11.6	7.4	12.5	12.2	9.9	10.4
Capital consumption_____	3.1	3.4	4.2	4.0	4.6	4.7	5.0	5.7	5.8	6.1	6.6	6.9
Indirect taxes_____	1.6	1.7	1.9	1.9	2.1	2.1	2.0	2.2	2.3	2.3	2.4	2.5
Gross business income___	32.5	32.3	21.9	18.8	29.4	20.4	16.6	13.1	18.3	18.3	16.5	17.3
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	65.9	67.5	74.4	77.1	70.2	76.3	79.4	81.9	76.4	76.6	78.4	77.2
Net business income_____	29.4	27.6	19.0	16.4	23.4	16.5	12.9	8.8	14.3	13.9	11.3	12.0
Capital consumption_____	3.1	3.3	4.5	4.4	4.4	5.0	5.5	6.7	6.7	6.9	7.6	7.9
Indirect taxes_____	1.6	1.6	2.1	2.1	2.0	2.2	2.2	2.6	2.6	2.6	2.7	2.9
Gross business income___	32.5	30.9	23.5	20.8	27.8	21.5	18.4	15.5	21.0	20.8	18.9	19.9

APPAREL AND OTHER FINISHED FABRIC PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	98.6	95.0	91.4	103.9	101.6	103.3	102.7	99.8	105.5	105.7	104.6
Compensation_____	78.5	81.4	79.5	80.2	85.4	85.0	88.8	89.3	86.3	91.0	93.9	92.8
Net business income_____	18.6	13.9	11.9	7.7	14.7	12.9	10.8	9.2	9.4	10.3	7.8	7.4
Capital consumption_____	1.3	1.5	1.7	1.6	1.9	1.7	1.8	2.0	1.9	2.0	1.9	2.0
Indirect taxes_____	1.6	1.8	1.9	1.9	1.9	2.0	1.9	2.2	2.2	2.2	2.1	2.4
Gross business income___	19.9	15.4	13.6	9.3	16.6	14.6	12.6	11.2	11.3	12.3	9.7	9.4
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	78.5	82.6	83.7	87.7	82.2	83.6	86.0	87.0	86.5	86.2	88.8	88.7
Net business income_____	18.6	14.1	12.5	8.4	14.2	12.7	10.5	9.0	9.4	9.8	7.4	7.1
Capital consumption_____	1.3	1.5	1.8	1.8	1.8	1.7	1.7	1.9	1.9	1.9	1.8	1.9
Indirect taxes_____	1.6	1.8	2.0	2.1	1.8	2.0	1.8	2.1	2.2	2.1	2.0	2.3
Gross business income___	19.9	15.6	14.3	10.2	16.0	14.4	12.2	10.9	11.3	11.7	9.2	9.0

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

LUMBER AND WOOD PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	111.7	107.2	112.8	127.5	121.9	115.7	112.2	119.1	124.0	117.6	113.6
Compensation_____	72.2	76.3	76.3	75.6	87.1	88.7	85.2	83.1	84.0	89.5	88.8	85.8
Net business income_____	22.1	28.2	22.1	29.0	31.0	23.1	20.2	19.1	24.4	22.9	16.4	15.7
Capital consumption____	4.1	5.4	6.8	6.1	7.3	7.8	8.0	7.6	8.1	8.7	9.4	9.0
Indirect taxes_____	1.6	1.8	2.0	2.1	2.1	2.3	2.3	2.4	2.6	2.9	3.0	3.1
Gross business income___	26.2	33.6	28.9	35.1	38.3	30.9	28.2	26.7	32.5	31.6	25.8	24.7
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	72.2	68.3	71.2	67.0	68.3	72.8	73.6	74.1	70.5	72.2	75.5	75.6
Net business income_____	22.1	25.3	20.6	25.7	24.3	18.9	17.5	17.0	20.5	18.5	13.9	13.8
Capital consumption____	4.1	4.8	6.3	5.4	5.7	6.4	6.9	6.8	6.8	7.0	8.0	7.9
Indirect taxes_____	1.6	1.6	1.9	1.9	1.7	1.9	2.0	2.1	2.2	2.3	2.6	2.7
Gross business income___	26.2	30.1	26.9	31.1	30.0	25.3	24.4	23.8	27.3	25.5	21.9	21.7

FURNITURE AND FIXTURES

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	110.9	117.1	116.4	134.3	135.9	131.1	121.4	123.0	128.4	133.3	130.2
Compensation_____	84.2	89.0	91.9	92.3	102.6	106.1	107.6	98.4	97.6	100.9	107.8	110.1
Net business income_____	11.4	17.1	19.5	18.4	25.3	23.0	16.7	15.8	18.4	20.4	17.9	12.3
Capital consumption____	2.7	3.0	3.6	3.6	4.1	4.4	4.4	4.6	4.4	4.4	4.8	4.8
Indirect taxes_____	1.7	1.8	2.1	2.1	2.3	2.4	2.4	2.6	2.6	2.7	2.8	3.0
Gross business income___	14.1	20.1	23.1	22.0	29.4	27.4	21.1	20.4	22.8	24.8	22.7	17.1
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	84.2	80.3	78.5	79.3	76.4	78.1	82.1	81.1	79.3	78.6	80.9	84.6
Net business income_____	11.4	15.4	16.6	15.8	18.8	16.9	12.7	13.0	15.0	15.9	13.4	9.4
Capital consumption____	2.7	2.7	3.1	3.1	3.1	3.2	3.4	3.8	3.6	3.4	3.6	3.7
Indirect taxes_____	1.7	1.6	1.8	1.8	1.7	1.8	1.8	2.1	2.1	2.1	2.1	2.3
Gross business income___	14.1	18.1	19.7	18.9	21.9	20.1	16.1	16.8	18.6	19.3	17.0	13.1

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

PAPER AND ALLIED PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	104.1	101.3	104.2	123.2	121.0	118.3	119.2	118.5	127.2	124.3	122.1
Compensation_____	58.8	64.4	65.7	63.0	68.4	74.7	76.0	77.3	74.7	77.6	81.5	82.1
Net business income_____	34.7	32.3	27.0	33.2	46.0	36.1	31.8	29.8	30.8	35.8	28.5	25.3
Capital consumption____	4.6	5.4	6.3	5.8	6.4	7.6	8.0	9.2	10.1	10.7	11.0	11.2
Indirect taxes_____	1.9	2.0	2.3	2.2	2.4	2.6	2.5	2.9	2.9	3.1	3.3	3.5
Gross business income___	39.3	37.7	33.3	39.0	52.4	43.7	39.8	39.0	40.9	46.5	39.5	36.5
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	58.8	61.9	64.8	60.4	55.5	61.7	64.2	64.8	63.0	61.0	65.6	67.2
Net business income_____	34.7	31.0	26.7	31.9	37.3	29.8	26.9	25.0	26.0	28.2	22.9	20.7
Capital consumption____	4.6	5.2	6.2	5.6	5.2	6.3	6.8	7.7	8.5	8.4	8.8	9.2
Indirect taxes_____	1.9	1.9	2.3	2.1	2.0	2.2	2.1	2.5	2.5	2.4	2.7	2.9
Gross business income___	39.3	36.2	32.9	37.5	42.5	36.1	33.7	32.7	34.5	36.6	31.7	29.9

CHEMICAL AND ALLIED PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	110.8	115.1	111.0	119.3	112.9	113.4	117.1	119.2	115.2	116.8	115.4
Compensation_____	58.4	59.2	60.4	54.0	58.2	60.6	63.2	65.9	60.4	62.3	64.5	65.1
Net business income_____	32.6	41.6	43.1	46.4	50.2	39.5	36.1	34.9	42.7	36.7	35.8	33.0
Capital consumption____	6.6	7.5	8.8	8.1	8.5	10.2	11.5	13.4	13.3	13.3	13.5	13.9
Indirect taxes_____	2.4	2.5	2.8	2.6	2.4	2.6	2.6	2.9	2.8	2.9	3.0	3.4
Gross business income___	39.2	49.1	51.9	54.5	58.7	49.7	47.6	48.3	56.0	50.0	49.3	46.9
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	58.4	53.4	52.5	48.6	48.8	53.7	55.7	56.3	50.7	54.1	55.2	56.4
Net business income_____	32.6	37.5	37.4	41.8	42.1	35.0	31.8	29.8	35.8	31.9	30.7	28.6
Capital consumption____	6.6	6.8	7.7	7.3	7.1	9.0	10.2	11.4	11.2	11.5	11.5	12.0
Indirect taxes_____	2.4	2.3	2.4	2.3	2.0	2.3	2.3	2.5	2.3	2.5	2.6	3.0
Gross business income___	39.2	44.3	45.1	49.1	49.2	44.0	42.0	41.2	47.0	43.4	42.2	40.6

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

RUBBER PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Unit price index and points of cost components												
Unit price index_____	100.0	96.8	96.4	89.7	127.0	132.0	123.5	109.8	113.0	136.0	141.4	144.6
Compensation_____	68.4	69.3	70.1	69.3	78.7	84.5	85.6	83.3	84.6	90.6	95.4	96.9
Net business income_____	14.9	10.8	8.0	2.4	31.3	30.1	22.1	9.0	11.5	23.3	21.6	20.6
Capital consumption_____	3.4	3.8	4.3	3.6	4.0	4.3	4.6	5.6	5.7	6.6	7.2	8.2
Indirect taxes_____	13.3	12.9	14.0	14.4	13.0	13.1	11.2	11.9	11.2	15.5	17.2	18.9
Gross business income___	18.3	14.6	12.3	6.0	35.3	34.4	26.7	14.6	17.2	29.9	28.8	28.8
Component costs as percent of unit prices												
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	68.4	71.6	72.7	77.2	62.0	64.0	69.3	75.9	74.9	66.6	67.4	67.0
Net business income_____	14.9	11.2	8.3	2.7	24.6	22.8	17.9	8.2	10.2	17.1	15.3	14.2
Capital consumption_____	3.4	3.9	4.5	4.0	3.2	3.3	3.7	5.1	5.0	4.9	5.1	5.7
Indirect taxes_____	13.3	13.3	14.5	16.1	10.2	9.9	9.1	10.8	9.9	11.4	12.2	13.1
Gross business income___	18.3	15.1	12.8	6.7	27.8	26.1	21.6	13.3	15.2	22.0	20.4	19.9

LEATHER AND LEATHER PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
Unit price index and points of cost components												
Unit price index_____	100.0	116.9	109.4	101.2	129.8	121.5	122.1	121.3	115.7	121.4	123.8	119.3
Compensation_____	85.7	93.0	94.0	92.6	100.7	101.4	104.7	102.0	101.6	104.3	107.4	107.5
Net business income_____	11.0	20.2	11.6	4.8	24.8	16.0	13.3	15.1	9.8	12.7	11.9	6.8
Capital consumption_____	1.8	2.1	2.1	2.1	2.5	2.4	2.4	2.4	2.6	2.6	2.7	3.0
Indirect taxes_____	1.5	1.6	1.7	1.7	1.8	1.7	1.7	1.8	1.7	1.8	1.8	2.0
Gross business income___	12.8	22.3	13.7	6.9	27.3	18.4	15.7	17.5	12.4	15.3	14.6	9.8
Component costs as percent of unit prices												
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	85.7	79.5	85.9	91.5	77.6	83.4	85.7	84.1	87.8	85.9	86.7	90.1
Net business income_____	11.0	17.3	10.6	4.7	19.1	13.2	10.9	12.4	8.5	10.5	9.6	5.7
Capital consumption_____	1.8	1.8	1.9	2.1	1.9	2.0	2.0	2.0	2.2	2.1	2.2	2.5
Indirect taxes_____	1.5	1.4	1.6	1.7	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.7
Gross business income___	12.8	19.1	12.5	6.8	21.0	15.2	12.9	14.4	10.7	12.6	11.8	8.2

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

PRINTING AND PUBLISHING

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1947	1958
	Unit price index and points of cost components											
Unit price index	100.0	102.8	106.0	106.9	112.0	119.3	123.9	122.4	127.5	129.7	135.9	138.4
Compensation	73.7	77.9	80.6	81.8	86.9	93.0	96.5	97.0	97.8	99.9	105.8	110.7
Net business income	22.2	20.4	20.1	19.6	19.2	20.1	20.9	18.8	22.5	22.3	22.0	19.2
Capital consumption	2.7	3.0	3.4	3.8	4.1	4.3	4.4	4.5	5.0	5.2	5.6	5.9
Indirect taxes	1.4	1.5	1.8	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.5	2.6
Gross business income	24.9	23.4	23.6	23.4	23.3	24.4	25.3	23.3	27.5	27.5	27.6	25.1
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	73.7	75.8	76.0	76.5	77.6	78.0	77.9	79.2	76.7	77.0	77.9	80.0
Net business income	22.2	19.8	19.0	18.3	17.1	16.8	16.9	15.4	17.6	17.2	16.2	13.9
Capital consumption	2.7	2.9	3.3	3.6	3.7	3.6	3.6	3.7	3.9	4.0	4.1	4.2
Indirect taxes	1.4	1.5	1.7	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.9
Gross business income	24.9	22.7	22.3	21.9	20.8	20.4	20.5	19.1	21.5	21.2	20.3	18.1

STONE, CLAY, AND GLASS PRODUCTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index	100.0	109.6	116.1	121.5	126.0	125.9	136.9	143.1	151.1	150.2	152.6	157.3
Compensation	70.3	76.1	78.3	74.9	81.1	84.7	90.7	92.7	91.7	95.1	99.2	104.0
Net business income	23.2	26.1	28.9	38.1	36.0	30.5	33.9	36.6	45.0	40.3	37.0	35.0
Capital consumption	4.9	5.6	6.9	6.5	6.9	8.4	9.8	10.9	11.4	11.7	13.0	14.6
Indirect taxes	1.6	1.8	2.0	2.0	2.0	2.3	2.5	2.9	3.0	3.1	3.4	3.7
Gross business income	28.1	31.7	35.8	44.6	42.9	38.9	43.7	47.5	56.4	52.0	50.0	49.6
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	70.3	69.4	67.5	61.6	64.3	67.3	66.2	64.8	60.7	63.3	65.0	66.1
Net business income	23.2	23.8	24.9	31.4	28.6	24.2	24.8	25.6	29.8	26.8	24.3	22.2
Capital consumption	4.9	5.1	5.9	5.4	5.5	6.7	7.2	7.6	7.5	7.8	8.5	9.3
Indirect taxes	1.6	1.7	1.7	1.6	1.6	1.8	1.8	2.0	2.0	2.1	2.2	2.4
Gross business income	28.1	28.9	30.8	36.8	34.1	30.9	32.0	33.2	37.3	34.6	32.8	31.5

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

PRIMARY METAL INDUSTRIES

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1598
	Unit price index and points of cost components											
Unit price index	100.0	109.6	123.9	127.0	148.1	145.8	154.0	160.6	160.0	172.4	184.8	193.3
Compensation	77.4	81.4	86.6	84.6	95.3	106.4	105.2	113.4	106.6	117.4	128.1	142.7
Net business income	15.8	20.7	27.9	34.0	43.6	26.2	33.0	25.5	34.8	35.6	35.8	25.6
Capital consumption	5.3	5.9	7.3	6.5	7.3	10.9	13.4	18.9	15.9	16.4	17.7	20.9
Indirect taxes	1.5	1.6	2.1	1.9	2.0	2.3	2.4	2.8	2.7	3.0	3.2	4.1
Gross business income	21.1	26.6	35.2	40.5	50.9	37.1	46.4	44.4	50.7	52.0	53.5	46.5
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	77.4	74.3	69.9	66.6	64.3	72.9	68.3	70.6	66.6	68.1	69.3	73.8
Net business income	15.8	18.9	22.5	26.8	29.4	18.0	21.4	15.9	21.8	20.6	19.4	13.3
Capital consumption	5.3	5.4	5.9	5.1	4.9	7.5	8.7	11.8	9.9	9.5	9.6	10.8
Indirect taxes	1.5	1.4	1.7	1.5	1.4	1.6	1.6	1.7	1.7	1.8	1.7	2.1
Gross business income	21.1	24.3	28.4	31.9	34.3	25.5	30.1	27.7	31.7	30.1	29.0	24.1

FABRICATED METALS, INCLUDING ORDNANCE

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index	100.0	110.0	111.7	116.6	129.1	130.1	127.3	133.4	134.5	143.7	148.9	152.8
Compensation	76.5	80.5	83.0	80.6	90.1	99.5	100.4	104.5	104.3	112.6	117.0	122.4
Net business income	17.7	23.3	21.3	29.2	31.8	34.0	19.4	19.7	20.7	21.0	21.1	18.5
Capital consumption	3.8	4.0	4.8	4.3	4.7	5.0	5.0	6.2	6.5	6.8	7.3	8.1
Indirect taxes	2.0	2.2	2.6	2.5	2.5	2.6	2.5	3.0	3.0	3.3	3.5	3.8
Gross business income	21.5	27.3	26.1	33.5	36.5	28.0	24.4	25.9	27.2	27.8	28.4	26.6
	Component costs as percent of unit prices											
Unit price	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation	76.5	73.2	74.3	69.1	69.8	76.5	78.9	78.3	77.6	78.4	78.6	80.1
Net business income	17.7	21.2	19.1	25.0	24.6	17.7	15.2	14.8	15.4	14.6	14.2	12.1
Capital consumption	3.8	3.6	4.3	3.7	3.7	3.8	3.9	4.6	4.8	4.7	4.9	5.3
Indirect taxes	2.0	2.0	2.3	2.2	1.9	2.0	2.0	2.3	2.2	2.3	2.3	2.5
Gross business income	21.5	24.8	23.4	28.7	28.3	21.5	19.1	19.4	20.0	19.3	19.1	17.4

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

INSTRUMENTS

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index..........	100.0	109.3	120.7	129.3	145.8	135.9	138.2	142.4	143.4	150.7	154.3	160.8
Compensation............	80.3	84.5	90.6	91.6	102.1	97.8	101.6	103.0	102.3	107.1	112.2	115.1
Net business income.....	13.6	18.5	22.2	29.9	34.5	29.5	27.8	29.7	30.4	31.3	29.2	31.0
Capital consumption.....	3.2	3.4	4.3	4.1	5.6	5.2	5.4	6.2	7.1	8.2	8.6	9.9
Indirect taxes...........	2.9	2.9	3.6	3.7	3.6	3.4	3.4	3.5	3.6	4.1	4.3	4.8
Gross business income...	16.8	21.9	26.5	34.0	40.1	34.7	33.2	35.9	37.5	39.5	37.8	40.9
	Component costs as percent of unit prices											
Unit price................	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation............	80.3	77.3	75.1	70.8	70.0	72.0	73.5	72.3	71.3	71.0	72.7	71.6
Net business income.....	13.6	16.9	18.4	23.1	23.7	21.7	20.1	20.9	21.2	20.8	18.9	19.3
Capital consumption	3.2	3.1	3.5	3.2	3.8	3.8	3.9	4.3	5.0	5.5	5.6	6.1
Indirect taxes...........	2.9	2.7	3.0	2.9	2.5	2.5	2.5	2.5	2.5	2.7	2.8	3.0
Gross business income...	16.8	20.0	21.9	26.3	27.5	25.5	24.0	25.2	26.2	26.3	24.5	25.4

MISCELLANEOUS MANUFACTURING

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index..........	100.0	108.8	108.0	109.5	124.2	123.2	120.6	120.6	118.1	118.5	117.7	117.3
Compensation..........	73.0	76.8	76.9	73.7	85.0	86.0	89.6	90.5	85.4	87.3	90.1	91.8
Net business income.....	17.2	22.4	20.7	26.5	28.4	25.6	20.2	18.5	21.0	19.0	15.2	13.9
Capital consumption	5.5	5.2	5.7	4.9	6.0	6.2	6.1	6.8	7.0	7.1	7.2	6.4
Indirect taxes...........	4.3	4.4	4.7	4.4	4.8	4.9	4.7	4.8	4.7	5.1	5.2	5.2
Gross business income...	22.7	27.6	26.4	31.4	34.4	31.8	26.3	25.3	28.0	26.1	22.4	20.3
	Component costs as percent of unit prices											
Unit price................	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation............	73.0	70.6	71.2	67.3	68.4	70.2	74.3	75.0	72.3	73.7	76.6	78.3
Net business income.....	17.2	20.6	19.2	24.2	22.9	20.8	16.7	15.3	17.8	16.0	12.9	11.8
Capital consumption	5.5	4.8	5.3	4.5	4.8	5.0	5.1	5.6	5.9	6.0	6.1	5.5
Indirect taxes...........	4.3	4.0	4.3	4.0	3.9	4.0	4.9	4.0	4.0	4.3	4.4	4.4
Gross business income...	22.7	25.4	24.5	28.7	27.7	25.8	21.8	20.9	23.7	22.0	19.0	17.3

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

NONELECTRICAL MACHINERY

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	112.1	120.3	123.1	136.6	139.2	135.5	144.3	143.5	150.5	163.9	168.4
Compensation_____	76.1	82.9	84.9	83.5	92.9	96.6	99.0	105.4	105.1	108.8	119.1	124.7
Net business income_____	17.4	21.8	26.2	30.4	35.1	33.3	26.6	26.6	25.5	28.7	29.7	25.5
Capital consumption____	3.6	4.2	5.5	5.3	5.2	5.7	6.3	8.4	9.0	8.8	10.4	12.8
Indirect taxes_____	2.9	3.2	3.7	3.9	3.4	3.6	3.6	3.9	3.9	4.2	4.7	5.4
Gross business income___	21.0	26.0	31.7	35.7	40.3	39.0	32.9	35.0	34.5	37.5	40.1	38.3
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	76.1	74.0	70.6	67.8	68.0	69.4	73.1	73.1	73.2	72.3	72.7	74.0
Net business income_____	17.4	19.4	21.8	24.7	25.7	23.9	19.6	18.4	17.8	19.1	18.1	15.2
Capital consumption_____	3.6	3.7	4.6	4.3	3.8	4.1	4.6	5.8	6.3	5.8	6.3	7.6
Indirect taxes_____	2.9	2.9	3.1	3.2	2.5	2.6	2.7	2.7	2.7	2.8	2.9	3.2
Gross business income___	21.0	23.1	26.4	29.0	29.5	28.0	24.2	24.2	24.1	24.9	24.4	22.8

ELECTRICAL MACHINERY

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	110.1	113.0	119.3	130.7	126.0	125.3	123.5	118.9	121.0	134.1	147.9
Compensation_____	79.7	84.3	82.3	79.9	91.6	87.4	91.6	92.1	91.2	92.5	99.2	110.7
Net business income_____	10.7	15.2	19.5	26.7	27.4	26.9	22.4	19.6	15.8	16.5	22.6	22.6
Capital consumption____	2.6	3.1	3.7	3.3	3.6	3.6	4.0	4.9	5.2	5.4	5.7	6.9
Indirect taxes_____	7.0	7.5	7.5	9.4	8.1	8.1	7.3	6.9	6.7	6.6	6.6	7.7
Gross business income___	13.3	18.3	23.2	30.0	31.0	30.5	26.4*	24.5	21.0	21.9	28.3	29.5
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Compensation_____	79.7	76.6	72.8	67.0	70.1	69.4	73.1	74.6	76.7	76.4	74.0	74.8
Net business income_____	10.7	13.8	17.3	22.4	21.0	21.3	17.9	15.9	13.3	13.6	16.9	15.3
Capital consumption____	2.6	2.8	3.3	2.8	2.7	2.9	3.2	4.0	4.4	4.5	4.2	4.7
Indirect taxes_____	7.0	6.8	6.6	7.9	6.2	6.4	5.8	5.6	5.6	5.5	4.9	5.2
Gross business income___	13.3	16.6	20.6	25.2	23.7	24.2	21.1	19.9	17.7	18.1	21.1	20.0

TABLE 5.—*Cost indexes for manufacturing industries*—Continued

TRANSPORTATION EQUIPMENT

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958
	Unit price index and points of cost components											
Unit price index_____	100.0	108.2	122.3	134.7	133.1	139.9	134.9	138.8	145.5	136.3	139.0	140.1
Compensation_____	72.6	72.6	72.7	73.1	85.4	91.4	90.5	92.2	87.3	93.7	92.9	98.7
Net business income_____	14.5	21.2	33.4	44.5	31.0	30.1	27.5	25.8	37.0	20.1	24.3	16.3
Capital consumption____	3.4	3.5	3.7	3.5	3.8	4.0	4.2	5.7	5.4	6.7	7.1	8.6
Indirect taxes_____	9.5	10.9	12.5	13.6	12.9	14.4	12.7	15.1	15.8	15.8	14.7	16.5
Gross business income___	17.9	24.7	37.1	48.0	34.8	34.1	31.7	31.5	42.4	26.8	31.4	24.9
	Component costs as percent of unit prices											
Unit price_____	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.01	100.0	100.0	100.0
Compensation_____	72.7	67.1	59.5	54.3	64.2	65.3	67.1	66.4	60.0	68.7	66.8	70.5
Net business income_____	14.5	19.6	27.3	33.0	23.3	21.5	20.4	18.6	25.4	14.8	17.5	11.6
Capital consumption____	3.4	3.2	3.0	2.6	2.8	2.9	3.1	4.1	3.7	4.9	5.1	6.1
Indirect taxes_____	9.5	10.1	10.2	10.1	9.7	10.3	9.4	10.9	10.9	11.6	10.6	11.8
Gross business income___	17.9	22.8	30.3	35.6	26.1	24.4	23.5	22.7	29.1	19.7	22.6	17.7

With this broad picture of the postwar behavior of costs in manufacturing industries in mind, let us now attempt to determine the *why* of this behavior. The mere possession of historical price and cost data does not, in itself, furnish us with any answers to the question of *why* prices and costs behaved the way they did. The simple fact that costs rose in industry after industry gives us no warrant to assert that prices rose solely because costs rose. And even if we knew that the rise in prices stemmed, in a causal sense, from the rise in costs, the more relevant question—why did costs rise—would still remain unanswered. We are, however, not restricted to the examination of cost and price data alone. By combining our data on prices and costs with our measures of output and expenditures we can begin to draw some tentative conclusions about the relationship of price and cost changes to changes in demands and technology. In particular we can investigate the *relative* magnitude of changes in prices and in price-cost relationships among various industries and examine how these relative magnitudes compare with the relative size of expenditure and output changes in the same industries. We can construct hypotheses about the behavior of prices and costs in relationship to output and productivity and test them against our data.

One of the major questions to which we will address ourselves is how to explain the behavior of relative prices among the 19 manufacturing industries. This explanation of the behavior of relative prices can be divided into two parts. First, given the behavior of relative costs and demands, did relative prices behave as economic theory would have predicted. Second, what explanation can be given for the behavior of relative costs. We will examine each of these questions in turn.

To this point we have defined total unit costs to include labor costs, indirect taxes, and gross business income. In the following analysis, however, gross business income will be treated as the residual or balancing element between prices and costs. Thus, unless otherwise

noted, the word cost will refer to the combination of labor cost and indirect taxes and will *not* include gross business income. Using the word cost in this sense, we may say that prices are determined by the interaction of demand and cost, with gross business income being the residual.[9] Given demand and cost behavior, we will consider whether this balancing item, gross business income, has behaved as expected. More specifically, we will assume the goal of profit maximization, formulate hypotheses about the behavior of prices under various conditions of costs and demands, and examine the data to see if they are consistent with the behavior predicted by the hypothesis. In order to formulate specific hypothesis, capable of being tested by the data available, we will be forced to make certain simplifying assumptions, and in some cases to employ rough and ready techniques for evaluating the data where more precise measurements are impossible. Wherever possible, we will discuss, qualitatively at least, the implications of our departure from the theoretically desirable refinements and measurements.

Regarding costs, we assume initially, that in each industry the direction of relative changes in costs is given by the direction of relative changes in unit labor costs. This assumption will be relaxed at a later point insofar as indirect taxes are concerned.

Changes in demand as has been noted above, are assumed to be given. There is the problem, however, of measuring changes in demand. The term demand is employed here in the sense common to economic usage, i. e., the complete schedule of amounts that buyers are willing to purchase at all possible prices, and not merely the amount exchanged at the going market prices. Thus an increase in demand refers to a shift of the entire schedule and means, in general, that buyers are willing to purchase more at all possible prices than they were before the shift.   We have no precise measures of demand in this sense. Nevertheless, we can classify most industries on the basis of whether their demand rose by more or less than the average for all industries. If, for example, both the price and the output of a particular industry rose by more than average, there is good reason to believe (although there is no certainty) that demand rose by more than average. Similarly, a less than average rise in both price and output indicates a less than average rise in demand. Where less than average increases in output are accompanied by more than average increases in price, or vice versa, it is more difficult to classify the the increase in demand. In general, however, an inspection of the relative magnitudes involved will allow us to classify a demand change as greater or less than average.

There is an assumption in this procedure which should be made explicit. The price which is relevant for investigating changes in demand is the market price, whereas we are using the price of value added in each industry. The two prices will differ when there is a divergence between the movement of raw materials prices and that of value added prices. Since we are mainly interested in *relative* price and cost movements, our analysis is weakened to the extent that the relative movements of prices of raw materials among industries differs significantly from the relative movement of value added prices. A

[9] This should not be taken to deny that in the long run at least, some part of gross business income becomes a cost.

section, however, has been incorporated, which indicates, very roughly, the influence of relative changes in the prices of raw materials.

Table 6 summarizes the changes in output, prices, and the major components of unit costs in the 1948–56 period. On the basis of this table, each industry may be classified according to the changes in its relative unit labor cost, the changes in the relative demand for its products (as reflected in the price and output changes), and the changes in its gross margin (i.e. the percent of value added represented by gross business income). Table 7 shows the 19 manufacturing industries classified by this three-way classification method. Before examining table 7, however, let us consider exactly what behavior of gross margins our assumptions would lead us to expect.

TABLE 6.—*Percent changes in prices, component costs per unit, gross margins,[1] and output in manufacturing,[2] 1948–56*

	Percent change in price per unit	Percent change in component costs per unit			Percent change in output	Percent change in gross margin	Demand rise relative to average[3]	Labor cost increase relative to average[3]	Direction of change of gross margin	Preliminary classification[4]	Corrected classification[4]
		Labor	Gross business income	Indirect taxes							
Total manufacturing	23	24	18	23	40	-4	---	---	+	---	---
Primary metals	57	44	96	88	26	24	G	G	+	U	I
Fabricated metals, ordnance	31	40	2	50	35	-22	G	G	-	U	O
Nonelectrical machinery	34	31	44	31	35	8	G	G	+	U	C
Electrical machinery	10	10	20	-12	91	9	G	L	+	C	C
Transportation equipment	26	29	9	45	91	-14	G	G	-	U	U
Stone, clay, glass	37	25	64	72	40	20	G	S	+	C	C
Lumber and products	11	17	-6	61	13	-15	L	L	-	U	C
Furniture and fixtures	16	13	23	50	39	7	L	L	+	U	U
Miscellaneous manufacturing	9	13	-5	16	40	-13	L	L	-	U	C
Instruments	38	27	80	41	72	32	G	G	+	U	O
Textiles	-16	-5	-43	35	6	-33	L	L	-	U	C
Apparel	7	12	-20	22	19	-25	L	L	-	U	C
Rubber	40	31	105	20	29	46	S	G	+	U	I
Leather, leather products	4	12	-31	13	14	-34	L	L	-	I	O
Paper and allied products	22	20	23	55	53	1	G	L	-	I	O
Printing and publishing	26	28	18	53	33	-7	S	G	-	I	O
Chemicals and allied products	4	5	2	16	85	-2	G	L	-	I	O
Food and kindred products	13	24	-13	16	21	-23	L	S	-	O	O
Tobacco	26	48	74	14	10	38	L	G	+	I	O

[1] Gross margin is the percent of value added contributed by gross business income. For example, the gross margin in the food and kindred products industry in 1948 was 25.3 percent and in 1956, 19.6 percent. The percent change in these 2 figures was therefore −23.

[2] Excludes petroleum and coal products.

[3] G—relative increase greater than average; S—relative increase about the same as average; L—relative increase less than average.

[4] C—behavior consistent with expected behavior; U—behavior uncertain with respect to expected behavior; I—behavior inconsistent with expectations. For the explanation of these classifications see text.

If during a particular period demands in all industries were to rise by the same amount, then, granted the assumptions made above, in industries with greater than average increases in unit labor costs, gross business incomes per unit should rise by a smaller amount than unit costs; more simply, gross profit margins as a percent of value added should fall.[10]　The opposite results would be expected to emerge in those industries whose advance in unit labor costs was less than average.　These expectations, in turn, would be modified by two other considerations.　If the demand for the products of an industry increased at a sufficiently greater than average rate, then gross margins might increase, even though the rise in unit labor costs were greater than average.　Further, when we modify our assumption that a relative increase in unit labor costs implies a relative increase in total costs (excluding gross margins), we must modify our conclusions. In particular, if indirect taxes form a significant proportion of total costs, then the relationship between prices, demands, and unit labor costs could be altered by a change in indirect taxes which differed sharply from the average.　The same is true of capital consumption allowances.　We have data for these two nonlabor costs, and can include their influence in the analysis.　As was indicated earlier, however, relative shifts in the unit cost of raw materials cannot be formally incorporated into the data.　We will attempt a qualitative evaluation of such costs at a later point.

It may be worth the risk of excessive repetition to recast the foregoing analysis in somewhat simpler terms.　We are stating that the profit maximization hypothesis implies the following:

1. When relative costs increase and relative demands are unchanged, gross "profit" margins will be narrowed, i.e., gross business income per unit of output will rise by less than costs per unit, and will thus decline as a percent of value added.　The opposite holds true for decreases in relative costs.

2. When relative demands increase and relative costs are unchanged, gross profit margins will be widened, and vice versa for relative decreases in demand.

3. The actual behavior of gross margins, therefore, will depend largely on the combined influence of relative changes in demand and costs.

4. Relative changes in unit labor costs, the largest single element of costs, are taken as indicative of relative changes in total costs. The analysis will be explicitly modified to take into account the effects of significant changes in indirect taxes and capital consumption allowances.　The analysis is seriously weakened, however, by its failure to include more specifically changes in relative costs of raw materials, although we shall attempt to indicate in a general way the influence of such costs.

Table 7 presents a three-way cross-classification of manufacturing industries; each industry is classified according to the direction of change in its relative unit labor costs, its relative demand, and its gross margin.

[10] This is not exactly accurate.　It is possible that a change in average unit costs may alter both average cost curves and marginal cost curves in such a fashion that profit maximization would lead to behavior different from that suggested in the text.　However, for purposes of building our hypothesis, we will assume that any change in average cost curves results in a change in marginal cost curves which maintains the same relative relationship between the two.　Similarly, changes in the relative elasticities of demand would change relative prices; we have, therefore, assumed constancy of relative elasticities of demand.　These relationships may also be affected by the degree of competitiveness and by deviation from simple profit maximizing behavior.

TABLE 7.—*Relationship of changes in demands, unit labor costs and gross margins,*[1] *1948–56*

[Number of industries]

	Gross margins decreased, demand rise relative to average			Gross margins approximately unchanged, demand rise relative to average			Gross margins increased, demand rise relative to average		
	Greater	Same	Less	Greater	Same	Less	Greater	Same	Less
Unit labor cost increase greater than average	2	1	0	0	0	0	3	1	1
Unit labor cost increase about the same as average	0	0	1	0	0	0	1	0	0
Unit labor cost increase less than average	0	0	5	2	0	0	1	0	1

[1] Gross margins are the percent of value added going to gross business incomes.

Industries are first classified according to whether their unit labor costs, during the 1948–56 period, rose more, about the same, or less than the average for all industries. Within each of these groups, industries are further classified according to whether gross business incomes rose or fell as a percent of value added. In each of these subgroups a further classification is provided according to the relative magnitude of demand increases. Each cell in the table can be labeled according to whether its characteristics are consistent, inconsistent, or are uncertain, with respect to expected behavior. For example, in an industry whose unit labor cost rose by less than average, while the demand for its products rose by more than average, we should expect to find that gross business income rose as a percent of value added. Industries which exhibited these three characteristics, we label as consistent with expectations. This does not necessarily imply that profit maximization was the sole guide to price-cost relationships. It merely indicates that the actual behavior of prices relative to costs did not contradict what would be expected from a profit maximization hypothesis, over a period of intermediate length. An industry which possessed the first two characteristics (labor costs rising less than average, demands more than average) but whose gross business income fell relative to value added, would exhibit behavior inconsistent with expectations. There are a number of situations, however, which preliminarily we should have to label "uncertain." If one characteristic, e.g., a less-than-average rise in unit labor costs, leads us to expect an increase in gross business income relative to value added, while the other characteristic, a less-than-average rise in demand, leads us to expect the opposite, then without information about the *magnitude* of the forces involved we must label the results as uncertain. While we do not have a precise measurement of the extent to which the rise in demand was greater or less than average, we can resolve a number of uncertain cases where it is obvious that increases in demands were *substantially* greater or less than average.

A preliminary count of the characteristics of the 20 industries yields 4 cases in which actual behavior is consistent with expectations, 4 cases of inconsistency, and 11 uncertain cases. An investigation of the relative magnitudes involved, however, allows us to correct our findings to 13 cases of agreement, 3 disagreement, and 3 uncertain.

TABLE 8.—*Consistency of actual behavior with expectations, 19 manufacturing industries, 1948–56*

[Number of industries]

	Consistent	Inconsistent	Uncertain
Preliminary classification_____	4	4	11
Corrected classification_____	13	4	2

Five of the eleven "uncertain" cases were industries in which unit labor costs rose by less than average, demands rose by less than average, and gross business incomes rose by less than unit labor costs. These industries were: lumber, textiles, apparel, leather, and miscellaneous manufacturing. The first characteristic, a less-than-average rise in unit labor costs, would lead us to expect an increase in gross margins. The second characteristic, a less-than-average rise in demand, would lead us to expect a decrease in gross margins. In all five industries gross business income did actually fall as a percent of value added. Since the rise in demand in all of these industries appeared to be *substantially* less than the rise in demand for other industries, the behavior of gross business income per unit may be judged to be consistent with expectations. In the "corrected" classification we have transferred these industries to the column denoting consistency with expectations.

In two of the "uncertain" industries, fabricated metal products and transportation equipment, unit labor costs rose more than average (expectation: a decrease in the gross margin) and demand rose more than average (expectation: an increase in the gross margin). In both of these industries gross margins fell. In the case of fabricated metal products the rise in demand appeared to be only slightly greater than average, while the rise in unit labor costs was substantially greater than average. Hence the actual results appear to confirm expectations and the industry was transferred to the "consistent" column. In the case of transportation equipment, however, the rise in demand was substantially greater than average while the rise in unit labor costs was only moderately greater than average. The actual behavior of gross margins was, therefore, inconsistent with expectations. There are two very important subindustries within this industry group—aircraft and automobiles. Responding to the huge increase in Government aircraft procurement, the aircraft industry has grown more rapidly than the automobile industry. Since a very large proportion of plant and equipment in the aircraft industry is Government owned, a satisfactory rate of return on private investment can be earned with a very small margin on sales. Thus, as the proportion of total output in the industry accounted for by aircraft rises, the total industry figure for gross business income per unit tends to be depressed. This may account for the apparent disagreement between expectations and actual results for this industry. Without a further breakdown of the data, it is impossible to test this hypothesis, however, and we have left the industry in the "uncertain" column.

There were three "uncertain" industries, primary metals, nonelectrical machinery, and instruments, in which unit labor costs rose more than average (expectation: a decrease in gross margins)

while demand also rose more rapidly than average (expectation: an increase in gross margins). Gross margins in these three industries actually rose. In two of the industries—nonelectrical machinery and instruments—the rise in demands appeared to be greater than average, while the rise in unit labor costs was only slightly to moderately greater than average. Hence, expectations and results coincided, and the industries were transferred to the "consistent" column. In the case of primary metals, however, demand appeared to have risen only moderately more than average, while unit labor costs increased by very much more than the average for other industries. Yet the share of gross business incomes increased. Further, the increase in capital consumption allowances per unit in the primary metal industries exceeded by far that in any other industry. Despite the large rise in both labor costs and capital consumption allowances relative to average, the share taken by *net* business income rose substantially.

The increase in demand does not appear to have been sufficiently greater than average to explain this behavior. Indeed, if we take into account the fact that the demand for primary metals is probably less elastic than in most other industries, the combined output and price changes in the industry may indicate an increase in demand little if any larger than the all-industry average.[11] For all of these reasons we have reclassified the primary metals industry as one of those which are inconsistent with expectations.

The furniture industry was classified as an uncertain case. Unit labor costs rose by less than average, but demand also rose by less than average. Gross business income per unit rose by more than unit labor costs. The *relative* decline in unit labor costs was significant; the *relative* decline in demand appeared to be quite moderate. Hence we might be justified in placing the industry in the "consistent" column. However, the various relative changes were not so large as to make this conclusion obvious, and we have left the industry as "uncertain."

The tobacco industry was one of those originally placed in the "inconsistent" column. In this industry unit labor costs rose more than average, demand rose less than average, yet gross business income obtained an increasing share of value added. Unlike the situation in most industries, however, indirect business taxes form a very large part of total costs in the tobacco industry. In 1948 such taxes accounted for about 75 percent of total costs. Between 1948 and 1956 indirect taxes per unit rose by only 14 percent. Relative to the rise in other costs, this was quite small. Even though the increase in demand for the products of the tobacco industry was smaller than average, the relatively modest rise in the chief element of its cost structure made possible an increase in gross business income per unit relative to value added. We have reclassified this industry from the "inconsistent" to the "consistent" column.

On the basis of the given data one would have to classify paper and allied products as an industry in which price-cost relationships

[11] We have used the magnitude of relative output and price changes as a rough measure of changes in relative demand. Without a measurement of demand elasticities in the various industries, however, our criteria are very rough approximations. In general, the lower the demand elasticity the greater the change in relative price consistent with an unchanging relative demand. In the case of primary metals, output rose by 26 percent compared to an average rise of 40 percent for all industries. Prices on the other hand rose by 57 percent compared to an average rise of 23 percent. We have preliminarily considered these magnitudes to indicate a rise in relative demand. If, however, the overall elasticity of demand for primary metals is substantially lower than that which characterizes most other industries, the relative price and output behavior of the industry might be consistent with a rise in demand no greater than average.

were inconsistent with expectation.   This industry has been retained in this classification.   However, it should be noted that unit labor costs rose by less than average, demand increased by more than average, yet the percentage of value added going to gross business income remained about the same in 1956 as in 1948.   Further, the relative decline in unit labor costs was quite modest—a 20-percent increase as against the 24-percent average increase for all industries; similarly, the apparent increase in relative demand was not large.   The "measured" deviation of price-cost behavior from expectations was, therefore, a minor one.

Those industries in which the relative behavior of costs and demands was clearly inconsistent with expected behavior were rubber and chemicals.   These two industries illustrate the opposite extremes of disagreement with expectations.   In the rubber industry, unit labor costs rose by more than average.   Even though the increase in demand in the industry appeared to be about average, both gross and net business income per unit increased by far more than unit labor costs.   In the chemical industry on the other hand, unit labor costs increased very much less than average.   Demand on the other hand rose by more than average.   Both of these factors would lead us to expect an increase in gross business income per unit larger than the increase in unit labor costs.   In actuality, however, the opposite occurred. Indeed, net business income per unit declined.

The reader will recall that we added to the four industries whose relative demand and cost behavior was originally classified as inconsistent with expectations, one other industry: primary metals. We also eliminated the tobacco industry from this classification, since its apparent deviation from expectations could be explained by the behavior of indirect taxes.   We are thus left with 13 industries in which the relationship of unit labor costs and gross business incomes per unit appear to be explainable by the relative changes in demands and unit labor costs, 4 industries in which the unit labor cost-gross business income relationship seems to deviate from what would be expected on the basis of relative cost and demand changes, and 2 industries which cannot be easily classified.

The analysis has to this point been carried out in terms of value added prices and unit costs.   It has thus ignored the impact of relative changes in raw materials prices.   There are two major ways in which certain types of relative changes in raw materials costs incurred by different industries could seriously affect our analysis.   First, we have classified the relative change in demand among the different industries on the basis of relative changes in output and *value added* prices.   However, the appropriate criterion is changes in *market* prices.   For example, an industry exhibiting a significant relative increase in its value added price might not have experienced a rise in its relative market price if the relative cost of its raw materials declined substantially.   A second problem introduced by the lack of data on raw materials prices is that it weakens the validity of our assumption that a relative increase in unit labor costs indicates a relative increase in total unit costs, excluding gross business incomes. A greater than average rise in unit labor costs may not connote a greater than average rise in total unit costs if the relative cost of raw materials to the industry has declined.

We have no precise data on the movement of the raw materials costs incurred by each industry.   However, from the Bureau of Labor Statistics wholesale price indexes we can arrive at some general conclusions about the relative change in the prices of important raw materials consumed by different industries.

The major conclusion yielded by an examination of BLS price indexes is that prices of materials consumed by the durable goods industries, particularly the metal fabricating industries, have risen substantially more rapidly than prices of materials used in nondurable manufacturing.   The BLS index of "intermediate materials, supplies, and components," rose by 17 percent between 1948 and 1956.   Intermediate materials used in the nondurable goods industries, except food processing, declined by 1 percent and materials consumed by the food-processing industry fell 8 percent.   On the other hand, prices of materials used in durable goods manufacturing rose 44 percent and prices of components increased 40 percent.   Steel mill product prices rose 61 percent.   A similar divergence in the movement of the prices of durable and nondurable crude materials is apparent in the BLS data.   With the aid of these indexes, supplemented by individual price indexes for such raw materials as crude rubber, hides and skins, woodpulp, and others, we can classify most of the 19 manufacturing industries according to whether the increase in their raw material prices appeared to be larger or smaller than the average increase for all industries.

Examining all of the cases for which the probable direction of relative changes in raw materials costs could be ascertained we find only two situations in which our classification of demand changes might require alteration.   These two were furniture and rubber.   In neither case, however, is the relative change in raw materials prices so different from the relative change in value added prices that a significant alteration in our conclusions about these industries seems called for.

A similar examination of each industry reveals only one case, electrical machinery, in which a relative change in unit labor costs in one direction was accompanied by a relative shift in raw materials costs in the opposite direction.   In the electrical machinery industry we found that unit labor costs rose less than average, and demand more than average; consequently, the rise in gross margins was quite in accordance with expectations.   The fact that a relative decline in unit labor costs was at least partly offset by a relative increase in raw materials costs does not, however, invalidate this conclusion.   The relative decline in unit labor costs was substantial; so also was the relative increase in demands.   Hence, it is doubtful if the relative rise in raw material costs would destroy our finding that the price-cost-demand relationships in this industry were in accord with expectations.

The absence of more specific information on raw materials costs admittedly weakens our conclusions with respect to price, cost, and demand relationships.   Nevertheless, a brief examination of changes in relative raw materials prices does not bring to light any major situations in which our specific conclusions appear to be substantially in error.

The tests we have applied in this section of the study relate only to the *direction* of changes in relative costs, demands, and prices.   Thus, our statement that the change in the share of gross business income was consistent with expectations in 13 of the 19 industries,

means only that margins changed in the expected direction.   It does not tell us whether the *magnitude* of the change in the share going to gross business incomes can be explained by the *magnitude* of shifts in relative demands and unit labor costs.

The general hypothesis tested in this section was that the behavior of relative prices of the products of manufacturing industries may be explained by two major factors: (1) the relative behavior of unit labor costs, assumed to be given, and (2) the relative behavior of demands.   It was found that in a large number of industries the degree of change in relative prices could be explained by relative shifts in demands and unit labor costs, at least to the extent of explaining whether or not gross business incomes rose or fell as a percent of value added.   However, the investigation revealed some exceptions to this general pattern.   Of the 19 industries examined, 13 were consistent with expectations, 4 were not, and in the case of 2 other industries, it proved impossible to determine whether or not price behavior was consistent with expectations.

The hypothesis tested was constructed on the assumption that producers set prices with profit maximization as their goal.   It should be remembered, however, that the analysis covered a change in relative costs, demands, and prices over an 8-year span.   Even though the data for a majority of industries suggested behavior not in contradiction to the profit maximization hypothesis, the analysis by no means implies profit maximization for very short-run periods.   And even for the longer period of 8 years, the analysis simply indicates that the *direction*, not necessarily the magnitude, of margin changes was consistent with profit maximization.   Indeed, cost-price behavior during the three short postwar recessions indicates that in such periods of absolute demand declines, prices in many industries do not move relative to costs as might be expected from a pure short-run profit maximization hypothesis.

UNIT LABOR COSTS, AVERAGE EARNINGS, AND DEMANDS

A simple hypothesis about unit labor costs would be that they are largely determined by the demand for labor.   As shown below, however, the effect of changes in the demand for labor on unit labor costs appears to be very greatly modified by other factors.   In fact, there appears to be very little relationship between the relative magnitudes of changes in unit labor costs and the demand for labor.

Over the entire period from 1948 to 1957, there was a very wide range of experience among the various industries in terms of the changes in their unit labor costs.   The changes ranged from a decrease of 3 percent in the textile industry to an increase of 57 percent in the primary metals industry.   The average rise in unit labor costs in the five industries with the largest increase was 46 percent; the average rise in the industries with the lowest increase was only 11 percent.

An examination of increases in wage rates compared to the increase in employment indicates that the two magnitudes had little if any relationship to each other.   In table 9 we compare changes in average hourly earnings of production workers to changes in employment for the 20 manufacturing industries.   Between 1948 and 1957 the average increase in wage rates for those industries whose employment was expanding most rapidly was insignificantly larger than the increase in

those industries with the largest decline in employment.[12]   Between 1955 and 1957 wage rate increases in those industries with the least expansion in employment were the same, on the average, as those in industries with the most rapid expansion in employment.   If the mobility of the labor force were very high, these results would call for little comment.   There is, however, far from perfect mobility in the labor force, particularly in the short run, and there are substantial differences in wage rate increases among various industries.   The central fact is that these differences are not at all closely related with the magnitude of increases in the employment of production workers.

TABLE 9.—*Relationship of change in employment to change in average hourly earnings of production workers*

	Percent change in production worker employment		Percent change in average hourly earnings	
	1948–57	1955–57	1948–57	1955–57
Upper quartile [1]	21	2	53	9
All industry average	1	−3	51	10
Lower quartile [1]	−20	−10	50	9

[1] Quartiles selected on basis of employment changes only.

Sources: Bureau of Labor Statistics.

If, however, we compare changes in wage rates, not to changes in employment, but to changes in production, there does appear to be some relationship between the two, particularly in the longer period, 1948 to 1957.   The changes in wage rates appear therefore to be more closely related to changes in the demand for output rather than to the changes in the demand for labor.

TABLE 10.—*Relationship of changes in output to changes in average hourly earnings of production workers*

[Percent change]

	Output		Average hourly earnings	
	1948–57	1955–57	1948–57	1955–57
Upper quartile [1]	84	9	57	11
All industry average	39	3	51	10
Lower quartile [1]	10	−5	40	9

[1] Quartiles selected on basis of output change only.

Sources: Average hourly earnings; BLS. Output; FRB indexes of manufacturing production used in this study.

From 1948 to 1957 the average increase in hourly earnings in the five most rapidly expanding industries was 57 percent; in the five most slowly expanding industries the increase was 40 percent.   From 1955 to 1957 the differences were relatively smaller; the rate of increase in wages in the most rapidly expanding industries was about 22 percent higher than in the slowly expanding industries (i.e. 11 percent

[12] The coefficient of rank correlation between increases in man-hours of production worker employmnet and increases in wage rates during the 1948–57 period was only 0.14.

versus 9 percent); the difference in wage rate increases between the two groups of industries over the whole 9 year period was 43 percent (i.e. 57 percent versus 40 percent).

If we examine the particular industries which make up the upper and lower quartiles when ranked according to employment expansion, and compare them with industries comprising the upper and lower quartiles when ranked according to output expansion, we can gain some better understanding of the relationships between the variables.

Among the industries which had the lowest increase in employment between 1948 and 1957 are the petroleum and the food and beverage industries. Both of these industries experienced significant productivity gains. Despite a decline in production man-hours in these industries, they had larger than average wage increases. Hence their inclusion in the lower quartile increases the average wage rise for the group. When industries are ranked by output increases instead of employment increases, these two industries are replaced in the lower quartile by the apparel and the leather industries, both of which had less than average productivity gains and wage increases, As a consequence, the average wage increase for the quartile is reduced. Conversely, one of the most rapidly expanding industries in terms of output increases was the chemicals industry. It experienced very sizable increases in productivity and one of the highest wage rate increases. This tended to increase the average wage rate gain in the upper quartile of industries when ranked by the size of output gains. When the ranking is made in terms of employment increases, the chemical industry, on account of its very large productivity gain, is replaced by the printing and publishing industry, with a lower than average productivity gain and a lower than average wage rate gain. This reduces the average wage gain in the upper quartile, when the ranking is done by the size of employment gain.

So far we have considered changes in wages of production workers only. However, unit labor costs include both wages and salaries. Because of the very rapid substitution of salaried workers for wage workers during the postwar period, the increase in salary costs per unit of output has been substantially larger than the increase in wage costs per unit of output. Consequently an investigation of the behavior of unit labor costs must take into account changes in salary rates as well as changes in wage rates. We have no reliable figures on the change in salary rates per *man-hour* of salaried employees for each of the 20 manufacturing industries. However we can obtain data on average annual earnings per *employee*. Compensation per employee includes both wages and salaries. The difference between the behavior of average hourly earnings of production workers and average compensation per employee, however, will be affected not only by the fact that the former excludes, and the latter includes, changes in salary rates, but also by the fact that the annual earnings data include the effect of changes in the number of hours worked per year.[13] Even if wage and salary rates increased by the same amount, in industries characterized by changing hours of work during the period in question average annual earnings would increase by a different percentage than average hourly earnings. Further, a change in the proportion of

[13] There are also some relatively modest discrepancies of a purely statistical nature, resulting from the fact that the two series are prepared by different agencies, and include some adjustment factors not common to both series.

salaried workers to total workers will tend to raise the percentage change in average annual earnings relative to the change in average hourly earnings of production workers, since the level of salary rates tends to be higher than the level of wage rates.

TABLE 11.—*Relationship of changes in employment to change in average annual earnings (wage and salary workers)*

[Percent change]

	Employment		Average annual earnings	
	1948–57	1955–57	1948–57	1955–57
Upper quartile [1]	32	6	60	20
All industry average	8	5	53	17
Lower quartile [1]	−16	−5	48	14

[1] Quartiles selected on basis of employment only.

Source: Average full-time equivalent employees, and average annual earnings of full-time equivalent employees; U.S. Department of Commerce.

If we rank the 20 manufacturing industries by size of employment increases and compare the increase in average annual earnings of both wage and salary workers in the upper and lower quartiles, we find this time a difference between the average earnings gain in the two quartiles.

In view of the substantial differences in changes in employment, differences in average annual wage rate increases were not striking.[14]

If we rank industries according to output increases and compare the increase in average annual earnings in the upper and lower quartiles, we arrive at the same results found in the comparison of wage rates and output—there does appear to be a noticeable difference in the increase in average annual earnings in the two quartiles. The difference between the quartiles is somewhat larger during the 1955–57 period, when the comparison is made on the basis of average annual earnings than when it is made on the basis of average hourly earnings.

In general we have found that there appears to be only a modest association between *relative* changes in wage and salary rates and relative changes in employment. Between 1948 and 1957 there did appear to be some relationship between the relative magnitude of wage and salary increases and the relative size of output increases. In the shorter period from 1955 to 1957, the relationship between wage and salary changes on the one hand and output changes on the other was much weaker, and may have been so small as to be insignificant.

WAGES, PRODUCTIVITY, AND UNIT LABOR COSTS

Changes in unit labor costs may be separated into two distinct components: changes in the cost of labor inputs and changes in labor productivity. To the extent that increases in compensation per employee exceed increases in output per employee, unit labor costs

[14] A further test can be performed by constructing rough estimates of average wage and salary compensation by man-hour, and comparing changes in such average compensation with changes in man-hours of employment. The coefficient of rank correlation between the two sets of increases was only 0.36. The estimates of average compensation per man-hour of both wage and salaried employees was constructed by dividing Department of Commerce estimates of total employee compensation by estimates of total man-hours of employment including nonproduction workers. In making this calculation, nonproduction workers were assumed to work an average of 40 hours per week in all years.

will rise.   Table 12 gives a summary comparison of changes in compensation per employee, changes in output per employee man-hour, and the resultant change in unit labor costs for the period 1948–56.

TABLE 12.—*Percent changes in compensation per employee, output per man-hour, and unit labor costs, manufacturing industries, 1948–56*

	Percent change in compensation per employee [1]	Percent change in output per man-hour [2]	Percent change in unit labor costs
All manufacturing	56	26	24
Primary metals	70	18	44
Fabricated metal products	61	15	40
Nonelectrical machinery	53	17	31
Electrical machinery	50	36	10
Transportation equipment	65	28	29
Stone, clay, and glass	59	27	25
Lumber and products	50	28	17
Furniture and fixtures	46	29	13
Miscellaneous	49	32	13
Instruments	66	31	27
Textiles	29	36	−5
Apparel	28	14	12
Rubber	39	21	31
Leather	19	6	12
Paper	54	28	20
Printing	47	15	28
Chemicals	65	57	5
Petroleum and coal products	60	32	21
Food and kindred products	53	23	24
Tobacco	86	26	48

[1] Estimated by dividing total employee compensation (Department of Commerce) by total man-hours of employment assuming average hours of work by nonproduction workers to be 40 hours per week.
[2] Man-hours derived as explained in footnote 1.

Sources: BLS, U.S. Department of Commerce, and table 5.

As we noted earlier, there is substantial variation among the different industries in the percentage rise in unit labor costs.   An analysis of the data indicates that, with several important exceptions, differences in productivity behavior were more important than differences in wage and salary changes in producing this variation in unit labor cost changes.   If we rank industries by the magnitude of their wage and salary increase over the period, we notice two industries— tobacco and primary metals—with very large wage and salary increases, 86 and 70 percent, respectively, and three industries—textiles, apparel, and leather—with very small increases, 29, 28, and 19 percent, respectively.   The other 20 industries form a middle group with wages and salary increases ranging from 46 to 66 percent. Among the middle group of industries, differences in the magnitude of productivity gains accounted for the largest part of the variation in unit labor costs.   If we rank this middle group of industries by the size of their increases in unit labor costs, we find that the five industries with the largest unit labor cost increases had productivity gains averaging only 20 percent.   Industries with the lowest increase in unit labor costs, on the other hand, had productivity gains averaging 36 percent.   The differences in wage rate increases between these two groups of industries was much smaller, 52 percent versus 57 percent. In other words among the 15 industries, those with the lowest increases in unit labor costs had wage increases almost as large as those industries with the smallest increase in unit labor costs.

TABLE 13.—*Comparison of unit labor cost, average compensation, and productivity, 15 manufacturing industries,*[1] *1948–56*

[Percent change]

	Unit labor costs	Compensation per employee	Output per man-hour
5 industries with highest increase in unit labor cost_____	32	57	20
5 industries with lowest increase in unit labor cost_____	12	52	36

[1] All industries except tobacco, primary metals, textiles, apparel, and leather.

These conclusions are confirmed when we rank the 15 industries by their increase in productivity instead of their increase in unit labor costs (table 14). The five industries with the largest gains in productivity (averaging 37 percent) experienced wage increases no larger than the industries with the smallest gains in productivity (averaging only 18 percent). As a consequence unit labor costs rose by a substantially larger amount in the industries which experienced the smallest productivity gains.

TABLE 14.—*Comparison of productivity, average compensation, and unit labor costs, 15 manufacturing industries,*[1] *1948–56*

[Percent change]

	Productivity	Compensation per employee	Unit labor costs
5 industries with highest increase in productivity_____	37	54	8
5 industries with lowest increase in productivity_____	18	55	31

[1] All industries except tobacco, primary metals, textiles, apparel, and leather.

Because there appeared to be little if any correlation between advances in productivity and advances in wage and salary rates, those industries with the largest productivity gains had the smallest increases in unit labor costs. And because the variation in wage and salary increases was substantially less than the variation in productivity gains among these 15 industries, most of the differences in unit labor cost performance were due to the difference in productivity behavior.[15]

In the other five industries exceptionally large or exceptionally small changes in wage and salary rates were the dominant factor in explaining the relative behavior of unit labor costs. In the tobacco industry average wage and salary rates increased by 86 percent, while the rise in productivity was 26 percent, about the same as the average for all industries. The increase in average wage and salary rates in primary metals was 70 percent, and the increase in productivity only 18 percent. At the other end of the scale, increases in average wage and salary rates in leather and apparel were so far below average that, despite below average productivity performance, unit labor costs rose less than the average for all industries. In textiles, below average wage and salary increases were coupled with above average pro-

[15] For all 20 industries the coefficient of rank correlation between changes in output per man-hour and changes in average wage and salary rates (1948–56) was only 0.21.

ductivity gains, with the result that unit labor costs actually fell during the period. This was the only industry in which the absolute level of unit labor costs decreased.[16]

In summary, we have found that the direction of relative price movements in most industries can be explained by the *relative* magnitude of changes in demand and the *relative* size of increases in unit labor costs. In a large majority of industries the magnitude of price increases relative to unit labor cost increases, as measured by the movement of gross business incomes per unit, can also be explained by changes in relative demands and the relative magnitude of unit labor cost increases. There is, however, a small minority of important industries in which the behavior of gross business incomes relative to unit labor costs does not conform to the predictions of orthodox price theory.

The behavior of unit labor costs themselves is much more difficult to explain. The relative magnitude of increases in wages and salaries does not appear to be related to the relative magnitude of increases in employment. There does appear to be a weak relationship between the magnitude of increases in output and increases in wage and salary rates over longer periods; but this relationship was not in evidence during the 1955–57 period of rising prices. For most industries differences in the magnitude of productivity gains rather than differences in wage and salary increases explain most of the relative variation in the size of unit labor cost increases. There were, however, five industries in which extremely high or extremely low increases in wage and salary gains provided the major explanation of relative changes in unit labor costs.

<center>UNIT LABOR COSTS AND "PRODUCT MIX"</center>

In estimating changes in unit labor costs for manufacturing industry as a whole, two basic methods of measurement are possible. One may sum the total wage and salary bill for all industries and divide the total by a measure of manufacturing output. Indexes of output are normally derived by weighting quantities produced with price weights. An index of unit labor costs derived by dividing the total wage and salary bill by an index of total output will change if the composition of output shifts toward industries in which labor costs are a larger percentage of price than the average for all industries. Such a unit labor cost index will reflect, therefore, not only changes in unit labor costs in each industry, but also shifts in output from industries with low unit labor costs (as a percent of price) to industries with high unit labor costs, or vice versa. On the other hand, an index of unit labor costs constructed by weighting individual industry cost indexes with constant weights, will reflect only the changes in unit labor costs in individual industries, and will exclude the effects of a shifting composition of output.

We have constructed such a "constant weight" unit labor cost index, using 1947 output to weight the indexes of unit labor cost in each industry. Table 15 compares the change in manufacturing unit

[16] The behavior of relative wages in the five industries named is consistent with the findings on relative wages reported in ch. 5, "Staff Report, Joint Economic Committee, Study of Employment, Growth, and Output." Investigations by Conrad and Levinson showed relative wages to be positively correlated with industry concentration ratios and with profits. The two industries with very high wage increases—primary metals and tobacco—are industries with relatively high concentration ratios. These industries also had very large increases in gross margins over the period in question. Precisely the opposite characteristics are associated with the three industries in which relative wages fell sharply—textiles, apparel, and leather.

labor costs as shown by the constant weighted index with the change shown by the aggregate index (i.e., aggregate wage and salary bill divided by aggregate output). The difference between the two indexes shows the influence of shifts between low and high unit labor cost industries.[17] Over the period 1947–57 the two indexes rose by almost the same percentage. Practically all of the rise in unit labor costs shown by the "aggregate" index was due to changes in unit labor costs in each industry; very little was due to shifts in the composition of output.

TABLE 15.—*Comparison of 2 indexes of unit labor costs, all manufacturing industries*

[Percent change]

	1947–57	1948–49	1953–54	1957–58
"Aggregate" index	36. 5	0. 9	1. 3	2. 2
"Constant weight" index	37. 7	2. 2	2. 6	4. 1

On the other hand, in each recession of the postwar period, the increase in unit labor costs shown by the aggregate index was substantially less than the increase shown by the constant weighted index. In other words, the rise in unit labor costs in each industry was partly offset by a decline in the relative importance of high labor cost industries. Both indexes show that the rise in unit labor costs during the 1957–58 recession was somewhat larger than the rise during earlier recessions. While we have not fully investigated the factors which might have been responsible for this greater increase in unit labor costs during the recent recession, two factors suggest themselves immediately; first, the decline in output was larger during the 1957–58 recession than during the prior ones; and secondly the proportion of total labor costs represented by the relatively fixed salary component was larger in 1957 and 1958 than in earlier years.

PRICES AND COSTS IN RECESSION AND RECOVERY

In this section we will examine the behavior of the prices of the products of manufacturing industries in the course of recessions and recoveries. Concerning their behavior during recessions, a very interesting comparison may be made between the behavior of these prices and other prices in the economy. The price indexes which have been constructed in this study are, it will be remembered, indexes of the price of gross product originating in each industry. The price of gross product originating in any industry is conceptually equivalent to the price of the product minus the unit cost of materials and supplies purchased from other firms. For the manufacturing industry as a whole, the price of gross product originating is equal to the price of products sold minus the unit cost of materials and supplies purchased from nonmanufacturing industries.

If we examine the behavior of market prices of manufactured goods during postwar recessions, we find that in the 1949 recession prices declined, in the 1954 recession they rose slightly, and in the 1958 recession they rose somewhat more. A similar pattern was exhibited by the wholesale and consumer price indexes. These changing pat-

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[17] More correctly, we can isolate the effect of shifts in the composition of output among our 20 industries. Shifts in the composition of output within each industry are still reflected in our individual industry indexes.

terns of price behavior have led many observers to believe that prices are becoming increasingly likely to rise during recessions. However, an examination of table 16 shows that at least for the prices of the product which originates *within* manufacturing industries, i.e. our "value added" prices, such does not appear to be the case. In this table published Bureau of Labor Statistics indexes for manufactured goods and for raw materials are compared with the indexes of value added (gross product originating) prices constructed for this study. The three sets of indexes are not so constructed that they are completely consistent with each other. Nevertheless, changes in the prices of manufactured goods, as shown by the BLS indexes, will be approximately determined by the combined influence of changes in raw materials prices and changes in prices of value added.

TABLE 16.—*Changes in various prices in postwar recessions*

[Percent change]

	1948–49	1953–54	1957–58
Total manufacturing: [1]			
Product prices	−3.4	.8	1.1
Raw materials prices	−10.2	−1.8	2.7
Price of value added	3.9	1.4	1.8
Durable manufacturing:			
Product prices	2.9	1.2	1.4
Raw materials prices	−19.6	−8.8	−11.4
Price of value added	7.3	3.0	3.0
Nondurable manufacturing: [1]			
Product prices	−8.2	.3	.7
Raw materials prices	−9.6	−1.4	3.6
Price of value added	−1.2	−1.3	−.4
Consumer price index	−1.0	.3	.7
Food	−3.9	−.2	4.2
Other commodities	−1.4	−1.3	1.0
Services	4.7	2.7	3.8
Wholesale price index	−5.0	.2	1.4
Farm	−13.5	−1.4	4.4
Food	−9.8	.7	5.0
Industrial	−2.0	.4	.3

[1] Excludes petroleum and coal products industry.

NOTE.—The indexes of product prices, value added prices, and raw materials prices, from which the changes shown in the table were derived, are not completely consistent with each other in terms of weighting and coverage. As a consequence, the change in product prices, in some instances, may not be fully explained by the change in the indexes of value added prices and raw materials prices.

It is clear from the table that the major changes in the behavior of product market prices in the various recessions are traceable not to changes in the behavior of the prices of product originating within manufacturing (that is, the prices of value added), but rather to changes in the behavior of raw materials prices. It is true that the price of value added within manufacturing increased in all three recessions. However, the percent increase in this price of value added was greatest in 1948–49, and was substantially smaller in the two succeeding recessions. We may conclude then that the changed behavior of the market prices of manufactured products did not occur because manufacturers added a larger overall markup to raw materials costs in succeeding recessions. Rather the explanation lies in the fact that raw materials prices declined sharply in 1948–49, declined moderately in 1953–54, and increased moderately in 1957–58. Thus the *change* in the pattern of behavior of the market prices of manufactured goods is largely attributable to the change in the pattern of raw materials prices.

In assessing the importance of the change in the pattern of behavior of raw materials prices, it should be kept in mind that the behavior of

the overall index of raw materials prices is dominated by movements of farm prices. In the durable goods industries, raw materials purchased from nonmanufacturing firms play a very small role. In part this is a statistical phenomenon. Most important raw materials (iron ore, bauxite, copper ore, etc.) are produced by establishments owned by manufacturing firms. The first time the product appears on the market it has already been fabricated to some extent (steel ingot, steel shapes, aluminum ingot, refined copper). The amount of pure raw material changing hands on the market is quite limited. Rightly then, the BLS price index of raw materials gives very small weight to the prices of such materials. These prices are often mere accounting prices established in the transfer of materials between mining and manufacturing establishments owned by the same firm. On the other hand, the major group of raw materials used in the nondurable industries, farm commodities, does pass through the marketplace. As a consequence, the overall index of raw materials prices is dominated by the behavior of farm prices.

During the 1949 recession farm prices fell substantially; during the 1954 recession farm prices declined very moderately, having by 1953 already fallen sharply from peaks reached in 1951. In 1958, on the other hand, farm prices rose. The different behavior of farm prices during the various recessions is mainly attributable not to a significant difference in the pattern of demand but rather to a difference in the behavior of output. The rise in farm prices in 1958 can be traced in large part to reduced supplies, particularly supplies of livestock.

The impact of farm prices on the consumer price index is somewhat greater than its significance for manufactured prices. Food prices account for almost one-third of the total weight in the consumer price index. The direct influence of farm prices, as raw materials costs, on the prices of manufactured goods is substantially smaller. As a consequence the differential behavior of farm prices in the three recessions is more strikingly evident in the consumer price index than in the index of manufactured goods prices.

For manufacturing as a whole, the price of value added had its greatest rise in 1948–49, with smaller rises in the two succeeding recessions. The most significant change in the behavior of manufacturing value added prices took place in the durable goods industries, where the price of value added rose by a very sizable 7.3 percent in 1948–49, but by only 3 percent in both the 1954 and 1958 recessions. In the nondurable goods industries, there were relatively small declines in the price of value added in each recession, the changes being −1.2 percent in 1948–49, −1.3 percent in 1953–54, and −0.9 percent in 1957–58. Table 17 summarizes the changes in prices and their component costs in each industry during the three recessions. From this table it is possible to pinpoint the cost components which were responsible for the change in behavior of the price of value added. The cost whose behavior changed most radically was unit gross business income, and the major share of this change was contributed by the durable goods industries. The table shows that gross business incomes per unit in durable goods industries shifted from a very large increase of 23 percent in 1949 to a negligible increase of 0.5 percent in 1954, to a sizable decline of −8.7 percent in 1958. The major industries contributing to the overall increase in 1949 were the primary metals, the machinery, and the transportation equipment industries. One of the major reasons for the rise in durable goods margins during the 1949 recession

was the fact that throughout the recession purchases of automobiles, consumer appliances, and new houses continued to rise.   There was, in other words, no recession for these industries and some of their chief suppliers.   Moreover, gross margins, even by 1948, had not recovered to "normal" levels after the price controls and low unit margins of World War II.   In the nondurable goods industries, however, the postwar reconversion of production and the recovery of margins had been much quicker.   Indeed margins in many nondurable goods industries were quite large in 1948, and were vulnerable to the effects of the 1949 recession.

TABLE 17.—*Changes in prices and unit costs in postwar recessions, manufacturing industries* [1]

[Percent change]

	1948–49			1953–54			1957–58		
	Price	ULC[2]	GBI[3]	Price	ULC[2]	GBI[3]	Price	ULC[2]	GBI[3]
Total manufacturing	3.9	1.6	9.4	1.4	2.4	−1.9	1.8	4.4	−7.0
Durables	7.3	2.1	22.5	3.0	3.2	.5	3.0	6.3	−8.7
Primary metals	13.0	6.4	32.3	4.3	7.8	−4.3	4.6	11.3	−13.1
Fabricated metal products	1.6	3.1	−3.9	4.8	4.1	5.9	2.3	4.6	−6.3
Nonelectrical machinery	7.3	2.4	21.9	6.5	6.5	6.4	2.7	4.7	−4.5
Electrical machinery	2.6	−2.4	26.8	−1.4	.5	−7.2	10.3	11.5	4.2
Transportation equipment	13.0	.1	50.2	2.9	1.9	−.6	.8	6.2	−20.7
Stone, clay, and glass	5.9	2.9	12.9	4.5	2.2	8.7	3.1	4.8	−.8
Lumber and products	−4.0	0	−14.0	−3.0	−2.5	−6.3	−3.4	−3.4	−4.3
Furniture and fixtures	5.6	3.3	14.9	−7.4	−8.6	−3.3	−2.3	2.1	−24.7
Miscellaneous manufacturing	−.7	.1	−4.3	0	1.0	−3.8	−.3	1.9	−9.4
Instruments	10.4	7.2	21.0	3.0	1.4	8.1	4.2	2.6	8.2
Nondurables [1]	−1.2	.7	−7.0	−1.3	.6	−6.1	−.4	.4	−3.8
Textiles	−11.2	−2.1	−32.2	−6.5	−3.6	−21.1	−.9	−2.5	4.8
Apparel	−3.7	−2.3	−11.7	−.6	.6	−11.1	−1.0	−1.2	−3.1
Rubber	−.4	1.2	−15.8	−11.1	−2.7	−45.3	2.3	1.6	0
Leather	−6.4	1.1	−38.6	−.7	−2.6	11.5	−3.6	.1	−32.9
Paper and allied products	−2.7	2.0	−11.7	.8	1.7	−2.0	−1.8	.7	−7.6
Printing and publishing	3.1	3.5	.9	−1.2	.5	−7.9	1.8	4.6	−9.1
Chemicals and allied	3.9	2.0	5.7	3.3	4.3	1.5	−1.2	.9	−4.9
Food and beverage	−2.1	.4	−10.0	−2.6	.5	−8.4	0	−1.0	1.2
Tobacco	4.8	5.6	27.9	.9	8.7	−3.1	−1.3	−4.9	−3.5

[1] Excludes petroleum and coal products industry.
[2] ULC=Unit labor costs.
[3] GBI=Gross business income per unit.

In each recession since 1949, unit labor costs in the durable goods industries *rose* by larger amounts.   Conversely gross business incomes per unit *declined* by larger amounts.   The increasing magnitude of the rise in unit labor costs, and its converse—the fall in gross margins—stemmed only in part from the fact that the rise in wage and salary rates was larger in the later recessions.   In large part this phenomenon was due to the fact that salaried costs—which are a relatively fixed item of expense—rose as a proportion of total labor costs throughout the postwar period.   The relatively sharp cutbacks in durable goods production which characterized even the mild recessions of the postwar period, thus generated increasingly sizable advances in average unit labor costs.   During the 1958 recession output fell by more than during the prior two recessions, tending to raise unit labor costs and depress gross business incomes more substantially.

In the nondurable goods industries, changes in prices, unit labor costs, and gross business incomes per unit were quite small during the recessions of 1954 and 1958.   Prices and gross margins (equals gross business incomes per unit) did decline more substantially in the 1949 recession.   The major reason for the relatively small changes in

nondurable prices and costs during the 1954 and 1958 recessions was the fact that demand and output fell very slightly. In 1949, on the other hand, output of nondurables fell by a somewhat larger amount.

Perhaps the most significant feature of the behavior of prices and costs in manufacturing during recessions is the fact that increases in unit labor costs are not fully absorbed in gross margins. Particularly in the durable goods industries, the increases in unit labor costs—associated in part with the reductions in output—are partially reflected in higher value added prices, despite the rather sharp cutbacks in the demand for durable products. Moreover the rise in durable goods unit labor costs during recessions is largely attributable to increases in "overhead" labor costs. With a growing proportion of total labor costs accounted for by salaried labor, a given cutback in production tends to increase labor costs by a larger amount. The fact that such increases in fixed unit costs are even partially passed on in higher prices in the face of declining demand for output, strengthens the evidence that pricing policies are strongly cost-oriented during periods of demand decreases. Markups are clearly not rigid; gross margins do decline. Nevertheless, in most industries prices are raised in the face of declining demands if costs increase, even when those cost increases are largely attributable to the decline in output itself.

Table 17 has already presented the behavior of prices and the various unit cost components during three postwar recessions. As we noted, unit labor costs tend to rise in recessions, largely because a substantial part of unit labor costs represent a relatively fixed cost. If this explanation is correct, we should expect to find that a period when unit labor costs had *risen* during a recession would be followed by a period when unit labor costs would *fall* during the recovery. Table 18 classifies each industry according to whether or not its compensation per unit of output followed this pattern during the two completed cycles in the postwar period. In the 1949–50 cycle, 11 industries conformed to the pattern and 4 did not; another 4 had no decline in output and hence could not be put in either group. In the 1953–55 cycle 10 conformed, 4 did not, and 5 could not be classified because output did not fall. It is of some interest to compare these results with a similar classification of industries according to the behavior of capital consumption allowances. Since depreciation, the principal element of capital consumption allowances, is in the short run largely a function of the lapse of time rather than of output, capital consumption per unit of output should rise when output falls and fall when output recovers. Table 18 shows that in 1949–50 13 of the 15 industries having output dips showed this pattern and 2 did not. In 1953–55, however, only 4 of the 14 with output dips showed this pattern while 10 did not. Why did so many industries appear to contradict the expected pattern in 1953–55? For 4 of the 10 whose capital consumption allowance rose continuously over the period, heavy plant and equipment expenditures were bunched in 1954 and 1955. This increase in plant and equipment led to an immediate jump in depreciation. Probably more important, the rapid amortization of defense facilities and the changes in the tax laws in 1954 which permitted faster depreciation generally, also helped to explain the failure of capital consumption per unit to fall with the recovery in the 1953–55 cycle.

TABLE 18.—*Behavior of labor cost and capital consumption per unit during declines and recoveries in output*

| | Unit labor cost rose and fell with decline and recovery in output | | | | | | Capital consumption per unit rose and fell with decline and recovery in output | | | | | |
| | 1949–50 | | | 1953–55 | | | 1949–50 | | | 1953–55 | | |
	Conformed	Did not conform	No output dip	Conformed	Did not conform	No output dip	Conformed	Did not conform	No output dip	Conformed	Did not conform	No output dip
Primary metals	✓			✓			✓			✓		
Fabricated metals, ordnance	✓			✓			✓				✓	
Nonelectrical machinery	✓			✓			✓				✓	
Electrical machinery		✓		✓			✓				✓	
Transportation equipment			✓	✓					✓	✓		
Stone, clay, glass	✓			✓			✓				✓	
Lumber and products	✓				✓		✓				✓	
Furniture and fixtures		✓				✓		✓				✓
Miscellaneous manufacturing	✓			✓			✓				✓	
Instruments		✓		✓			✓				✓	
Textiles	✓				✓		✓				✓	
Apparel		✓		✓			✓			✓		
Rubber	✓				✓		✓				✓	
Leather	✓					✓		✓				✓
Paper and allied products	✓					✓	✓					✓
Printing and publishing			✓			✓			✓			✓
Chemicals and allied products	✓			✓			✓			✓		
Food and kindred products			✓			✓			✓			✓
Tobacco			✓		✓				✓		✓	
Total	11	4	4	10	4	5	13	2	4	4	10	5

The general impression gained from table 18 is that at least where short run dips in production are concerned, it is very likely that labor cost per unit will behave more like an overhead cost rather than a variable one.

SUMMARY OF CONCLUSIONS

The behavior of output in the manufacturing industries examined was quite diverse over the period 1948–56. A significant part of the diversity can be explained by the increase and subsequent cutback in the demand for military hard goods, and the continuation of the long run trend toward greater fabrication per unit of materials input.

Turning to prices and costs, we found that unit prices of gross product originating within manufacturing had risen 23 percent over 1948–56. Labor cost per unit contributed by far the greatest part of this increase; however, the contribution of labor cost to the increase was only about its proportionate share of total costs. Capital consumption per unit was the one cost per unit which contributed more than its proportionate share to the rise in total costs per unit, while net business income per unit contributed less than its share to the rise. The combination of these two costs, gross business income per unit, contributed just about its proportionate share to the price rise. As in output, the behavior of prices or unit costs for different industries was quite diverse.

The *direction* of changes in relative prices and in gross margins in most manufacturing industries appeared to conform to what would have been expected on the basis of given changes in unit labor costs and demands. There were some exceptions to this conformity, however. Behavior of labor cost per unit was far from uniform for all industries, ranging from large relative declines to large relative increases. The diversity of experience in the behavior of unit labor costs for most industries appeared to be best explained by variation in productivity gains rather than variation in wage rate increases. In industries where productivity increased most rapidly, labor costs per unit of output rose more slowly than in industries where productivity rose at a slower rate. There were, however, five significant exceptions—tobacco, primary metals, textiles, apparel, and leather— in which the variation in wage rate increases rather than productivity gains played the larger role in explaining the relative behavior of unit labor costs. Another factor which influenced the behavior of unit labor costs was the substitution of salaried employees for wage employees.

Increases in the unit labor cost for the manufacturing industry as a whole may come about because of increases in unit labor costs within individual industries or because of a shift in the composition of output from industries with low labor cost per unit to industries with high labor cost per unit. It is clear that the increase in labor cost per unit for all manufacturing is almost entirely due to actual changes in unit labor costs *within* individual two-digit industries and not to shifts in the composition of manufacturing output among these industries.

A commonly advanced hypothesis is that prices have become more likely to increase during recessions than in the past. This pattern is exhibited in both the consumer price index and the wholesale price index. For the product originating *within* manufacturing it is true that prices have risen in each postwar recession, but in this respect,

these prices have tended to rise *less* in the two more recent recessions. The changes in the behavior of the wholesale and consumers price indexes are therefore largely due to changes in the behavior of raw materials prices, not prices of the value added within manufacturing industries.

Over the complete business cycle, it is apparent that labor cost per unit behaves more like a fixed cost than a variable one. In fact, in this regard, it conforms to the expected behavior of a fixed cost more consistently than capital consumption per unit. Part of the explanation for this characteristic of labor cost behavior is the increasing proportion of compensation per unit going to salaried employees instead of wage employees.

In closing, it should be noted that the data presented in this study have by no means been fully exploited. There are many problems for which they might be used which have not been considered in this paper. For example, nothing is presented regarding the timing of changes in one type of cost relative to changes in other costs. It is hoped that the presentation here of the detailed cost data will permit further research to be carried on by others interested in price and cost behavior.

APPENDIXES

SOURCES OF DATA AND DERIVATION OF BASIC SERIES FOR COST INDEXES

This appendix describes the sources and treatment of data used to obtain the basic annual series for the cost indexes presented in this study. Appendix B describes how these series were adjusted for the fact that three of them are based on data which is reported on a company basis rather than an establishment basis.

The necessary series for each industry are (1) wages and salaries, (2) net business income, (3) capital consumption allowances, (4) indirect business taxes, and (5) an index of physical output. Each of the first four must be industry totals on an annual basis and in current dollar values. The output index must be consistent with the other four and is used with them to obtain the cost indexes as described in the text of the study.

The basic data source for this study was "U.S. Income and Output," published by the Department of Commerce, November 1958. For the year 1958, the continuation of tables found in "Income and Output" in the Survey of Current Business, July 1959, was used.

WAGES AND SALARIES

Wages and salaries are reported by industry in table VI-2, "Income and Output." The only problem in this series arises from a change in the industrial classification made in 1948. This reclassification affected lumber and wood products, furniture and fixtures, chemicals, petroleum and coal products, primary metals, fabricated metals and ordnance, instruments, miscellaneous manufacturing, nonelectrical machinery, and electrical machinery. Estimates for the affected industries were published for 1948 under the old classification as well as the new. The percent changes in the data on the old classification, from 1947 to 1948, were applied to the 1948 data on the new classification to get estimates for 1947 on the new basis. These estimates were then adjusted to conform to certain given totals. It was apparent that some error existed in the final estimates. Therefore 1947 estimates for the affected industries are not as accurate as those for subsequent years.

Wages and salaries are reported on an establishment basis and therefore need no further adjustment before being used to obtain the cost indexes.

NET BUSINESS INCOME

Net business income was obtained by indirect methods. Table I-10, "Income and Output," provides estimates of national income originating in each industry. The national income originating in an industry is the sum of net incomes originating within the industry. For manufacturing industries, the incomes originating within an industry are wages and salaries, corporate profits, income of unincorporated business, and interest. We have combined the last three and called them net business income. Therefore to obtain net business income, wages, and salaries were simply subtracted from the reported national income.

The same reclassification problem exists in 1947 for national income as for wages and salaries. The method used to obtain 1947 estimates was the same as that described in the section above on wages and salaries.

Since profits and interest are reported on a company basis, rather than on an establishment basis, the series obtained by subtracting wages and salaries from national income must be adjusted before it can be used in the construction of the cost indexes. Appendix B describes this adjustment.

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CAPITAL CONSUMPTION ALLOWANCES

Capital consumption allowances are made up of three parts: depreciation, accidental damage, and capital outlays charged to current expense. Data on these three items are not very reliable, and the final series on capital consumption allowances must therefore be considered to be the least reliable of the four basic components of gross product originating in each industry.

Corporate depreciation figures are published in table VI-18, "Income and Output," but they were available only through 1956. Figures for 1957 and 1958 were obtained by extrapolating the 1956 figures by the relative movements of depreciation figures published in the Quarterly Financial Report of the Federal Trade Commission and the Securities and Exchange Commission. The estimates were then adjusted to conform to the totals for all manufacturing given in "Income and Output." Noncorporate depreciation for each industry was estimated by multiplying corporate depreciation by the ratio of noncorporate sales to corporate sales; these estimates were then adjusted to conform with published totals on noncorporate depreciation for all manufacturing.

Depreciation series were affected by the industry reclassification in 1948, and the 1947 estimates were obtained as described in the section on wages and salaries above.

Accidental damage to fixed capital is reported for all business in table V-1, "Income and Output." These figures were in turn obtained for all manufacturing by Schultze for the study, "Prices, Costs and Output in the Postwar Period" (Committee for Economic Development, Washington, D.C., 1960). The totals for all manufacturing were distributed to individual manufacturing industries by the percentage of net depreciable assets which each manufacturing industry had of the total net depreciable assets of all manufacturing. The figures for net depreciable assets were calculated from annual issues of the Statistics of Income, U.S. Treasury Department. Since the Statistics of Income were available only to 1956, and further, before 1954 depreciable assets were lumped with depletable assets, the figures on depreciable assets were not very reliable. The use of depreciable assets to determine the share of accidental damage is at best a very rough estimating method. These shortcomings suggest that the final accidental damage figures are not reliable. Fortunately, they are not a significantly large share of costs.

Capital outlays charged to current expense are also given in table V-1, "Income and Output," but only for all business. The totals for all manufacturing were obtained by Schultze for his broader study (see above), and these totals were distributed within manufacturing by using the percentage for each industry of total annual expenditures on new plant and equipment within manufacturing. The plant and equipment expenditures were provided by the Department of Commerce. The use of these percentages was a purely arbitrary way of distributing a total figure. The basic series published in "Income and Output" is known to be relatively poor. Hence the figures for the capital outlays charged to current expense were probably the least reliable data used in this study. The saving grace, however, is their small size and relative unimportance.

The sum of depreciation, accidental damage, and capital outlays charged to current expense is the capital consumption allowance. Since all the data involved in the estimates of these figures are reported on a company basis, the final series must be adjusted to put the figures on an establishment reporting basis. See appendix B for this step.

INDIRECT BUSINESS TAXES

Indirect business taxes levied within manufacturing consist of certain Federal excises, property taxes, and some other State and local taxes.

The Federal excises may be identified according to the type of product on which they are levied and the level at which they are levied. The source of information on these taxes was the Annual Report of the Secretary of the Treasury, 1958. Some excises such as liquor and tobacco, pose no problems and are assigned to the appropriate industry quite easily. Others such as excises on electric, gas, and oil appliances, must be distributed between industries, and to a large extent this was done on a personal judgment basis. Fiscal year data were shifted to calendar years by averaging 2 fiscal years. The later year was weighted three-fourths and the earlier year one-fourth because collections are reported with a lag of about one quarter after they are actually made.

Property tax totals are reported for all business in table III-2, "Income and Output." These totals were broken down for all manufacturing by Schultze for his broader study (see above). The distribution of the total for manufacturing

between manufacturing industries was made by using the percentage which each industry owned of the total of certain types of assets for all manufacturing. The assets used for this purpose were the sum of net depreciable assets, net depletable assets, land, and one-half of total inventories. Inventories were included at only half value because a few States do not tax inventories at all and in several others inventories are taxed less heavily than other types of property. The asset figures were taken from Statistics of Income, with 1957 and 1958 figures obtained by graphic extrapolation.

The major part of other indirect taxes levied on manufacturing industries are general business taxes. A total series of these taxes for manufacturing was obtained by Schultze for his broader study (see above). Since many of these taxes are levied on the basis of gross income, the totals for manufacturing were distributed within manufacturing by using the percentage each industry had of total manufacturing sales. Sales data for this purpose came from table VI–17, "Income and Output," and from unpublished information provided by the Department of Commerce.

Since Federal excises apply to commodities rather than companies, no adjustment need be made for the reporting basis of the excises. Property taxes and other general taxes, however, will need to be adjusted to put them on an establishment reporting basis. See appendix B for this step.

INDEX OF PHYSICAL OUTPUT

The basic output data required are output series indexes for each industry. The four current dollar value series, when adjusted, will be data aggregated on an establishment basis, classified according to the 1954 Standard Industrial Classification Manual, and will represent value added within each industry. The output index must therefore be constructed on the basis of establishments classified according to the 1954 SIC, and each establishment's output should be weighted according to its value added. Appropriate output indexes have been made available by the Federal Reserve Board. Since they were constructed on a different basis from the Board's regularly published series, they were made available for calculation purposes, but not for subsequent publishing.

APPENDIX B

THE ADJUSTMENT OF AGGREGATES TO CONVERT FROM A COMPANY REPORTING BASIS TO AN ESTABLISHMENT REPORTING BASIS

In appendix A the sources and methods for obtaining the five basic series needed for the construction of the cost series were described. The data for two of these series and a component of a third are reported on a company basis while the remainder are based on establishment data. In order for the five series to be consistent with each other, an adjustment must be made in one group or the other. Conceptually establishment data are more desirable than company data because industry aggregates based on establishment data are closer to industries defined according to the production of a given set of commodities than are aggregates based on company data. Therefore the adjustments were made to shift the series based on company data to an establishment basis rather than vice versa.

Data reported on a company basis are all included in the industry to which the largest share of the company's output belongs. Thus data for establishments which should be classified in other industries will be included in the one industry to which the company is assigned. The problem, then, is to identify what part of a given industry aggregate belongs to establishments which should be classified in other industries, and to which industries this share should be transferred. The three series which need this correction are capital consumption allowances, net business income, and the property and general State and local tax component of indirect business taxes. Unfortunately, no information is available for any of these series on an establishment basis. Therefore some other variable which is correlated with these series and which is available on both an establishment and company basis must be used to correct the series to an establishment basis. The one set of data available for this purpose is employment. The U.S. Bureau of the Census published this type of employment data in U.S. Censuses of Business, Manufactures, and Mineral Industries: 1954, Bulletin CS–1, "Company Statistics," (Washington, D.C., 1958). Table 3 of this bulletin provides employment

data cross-classified by industry of establishments and industry of companies for the year 1954. With this table it is possible, for the year 1954, to determine how many employees reported in an industry on a company basis should be transferred to other industries to arrive at totals based on an establishment classification system.

The use of the census employment data to adjust for the company reporting problem involves two assumptions which should be made explicit at the outset. The first is that for any given industry, the net business income per employee, capital consumption allowance per employee, and indirect business taxes per employee are the same for all employees who are classified in the industry on an establishment basis. If this is true, and if the three items per employee can be estimated, the total amounts of each to be added or subtracted from the series for a given industry will simply be the appropriate ratio times the number of employees transferred into or out of the industry. The method for estimating the necessary per employee ratios is explained below. The second assumption is that the proportion of employees to be reclassified from one industry to another was constant over the entire period under study. The validity of these two assumptions is certainly open to question. It was felt, however, that corrections made on the basis of these assumptions were far better than none at all. Such corrections will indeed be rough, but they should be in the right direction and of the correct magnitude.

The steps by which the corrections were made are as follows:

1. The ratios of net business income per employee, capital consumption per employee, and the appropriate indirect business taxes per employee were estimated by dividing each of the unadjusted series for an industry by the total employment in the industry on an establishment basis. (Logically these ratios should be estimated on the basis of the *adjusted* series. However, since the adjusted series are not available at the start, the unadjusted ones must be used as the best possible approximation.) This procedure provides an estimate of the per employee figures for each year for each series.

2. The numbers of employees to be transferred from each industry to each other industry were calculated from table 3 of Bulletin CS-1. (Some figures were omitted from the published table in order to avoid disclosure of individual firm data. The Bureau of the Census kindly furnished the necessary figures in such a way as to prevent disclosure but still be satisfactory for the adjusting method used here.)

3. The number of employees to be transferred *into* a given industry was multiplied by the estimated per employee figures of capital consumption, etc. These amounts were then added to the gaining industry and subtracted from the losing industry. The resulting series were the adjusted capital consumption allowance, net business income, and indirect business tax series.

The steps outlined above indicate the general procedure used. The corrections were usually not applied, however, where the employment to be transferred was less than one-half of 1 percent of the employment in the receiving industry. There were also some corrections made by a different method in the primary metals industry for the mining properties owned by companies classified in this industry. Mining properties provide depletion allowances which cannot be corrected for by the employment figures. The petroleum and coal products industry data are particularly affected by mining property owned by companies classified in the industry. There are practically no large petroleum refining companies which do not own extensive crude oil-producing properties. It proved to be impossible to eliminate the effects of this type of property from the industry, and is was therefore dropped from the cost behavior analysis.

Table B-1 indicates the extent that adjustments were made in each industry. This table shows the sum of the subtractions from each industry expressed as a percent of the unadjusted gross product originating in the industry, and the additions as a percent of gross product originating, both for the year 1954. Rubber products required the greatest adjustment with a subtraction of 8.7 percent. This industry has an important volume of business in the chemical, transportation equipment, and retailing industries. Other industries requiring extensive adjustments were chemicals and allied products, primary metals, instruments, and electrical machinery. Manufacturing as a whole (excluding petroleum and coal products) had a net subtraction of 0.42 percent. The bulk of the establishments involved in this net subtraction were in wholesale trade, retail trade, mining, and railroads.

TABLE B–1.—*Percent of gross product originating subtracted from and added to each industry to shift the basic series from company reporting basis to establishment reporting basis, 1954*

Industry	Percent of unadjusted 1954 gross product originating subtracted from—	Percent of unadjusted 1954 gross product originating added to—	Industry	Percent of unadjusted 1954 gross product originating subtracted from—	Percent of unadjusted 1954 gross product originating added to—
Food and kindred products___	0.67	_____	Stone, clay, and glass products_____	_____	0.78
Tobacco_____	_____	_____	Primary metals_____	2.04	1.50
Textile mill products_____	.89	0.35	Fabricated metals, ordnance__	.64	2.21
Apparel_____	_____	.19	Instruments_____	2.87	3.08
Lumber and wood products___	_____	.24	Miscellaneous manufacturing_	_____	2.65
Furniture and fixtures_____	_____	.67	Nonelectrical machinery_____	.75	1.93
Paper and allied products____	_____	1.26	Electrical machinery_____	4.20	.67
Chemicals and allied products_	2.10	2.50	Transportation equipment___	2.31	.29
Rubber products_____	8.68	_____			
Leather and leather products_	1.45	_____	All manufacturing [1]____	1.41	.99
Printing and publishing_____	.21	_____			

[1] Excludes petroleum and coal products.