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Volume Author/Editor: Frederick C. Mills

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Chapter Author: Frederick C. Mills

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III Changes in the Components of Selling Price, Manufactured Goods, 1939-1947

Elements of the Cost Structure

From the viewpoint of the man who buys materials, hires labor, and utilizes capital equipment in the production of goods the important price relations are those that enter into his cost structure—material costs, labor costs, overhead costs—and determine the profit margins that are of such central importance in an enterprise economy. Factors other than unit prices and hourly wages are here involved, of course. Productivity is a major determinant of labor costs; unit overhead costs are a function of volume of output. The price and cost factors that enter into the business man's calculations thus consist of direct payments for materials, supplies and labor, and overhead charges of diverse sorts, all modified by the effectiveness with which productive effort is utilized and by the volume of business done. The resulting components of selling price do not, in general, correspond to quoted market prices of commodities and services, but major movements in these components may be estimated. We pass to a review of certain of these elements.

The indexes in Table 6 and Chart 5 define estimated changes in selling prices and in various cost factors in manufacturing industries, all reduced to 'per unit of product' terms. The records for different manufacturing industries vary, of course, in cost and selling price changes. These estimates are designed to indicate average changes for all industries; their sources are noted in the table.

The eight years covered brought major shifts in the structure of manufacturing costs and notable changes in the conditions under which manufacturers operate. That the present postwar situation is one of flux, with major shifts still in process, is indicated by the magnitude of the changes between 1946 and 1947.

We consider first the movements of the two main categories of costs—direct costs, which include outlays for materials and labor, and the composite of overhead charges, taxes, and profits. In the years since 1939 advances in direct costs were substantially larger than those in the supplementary charges here called overhead costs, taxes, and profits. By 1946 direct costs had increased 51 percent, per unit of goods produced; supplementary charges advanced only 24 percent. Both components have jumped sharply in 1947; direct costs were 90 percent higher than in 1939, while overhead charges,

TABLE 6

Estimated Changes in Average Selling Price of Manufactured Goods and in Its Major Components, 1939-1947

	INDEX PER UNIT OF MANUFACTURED PRODUCT		
	1939	*1946*	*1947*
Selling price	100	144	178
Direct costs	100	151	190
Cost of materials	100	148	190
Labor costs	100	166	190
Overhead costs, taxes, and profits	100	124	145
Overhead (excl. income and excess profits taxes and profits)	100	104	103
Federal and state income and excess profits taxes	100	381	547
Profits, after taxes	100	134	200

The measure of change in the selling prices of manufactured goods is derived from the index of the National Bureau of Economic Research, adjusted to improve comparability with indexes of cost elements derived from monetary aggregates and production indexes. The index of material costs is based on a National Bureau index of the prices of producer goods at wholesale, with adjustment to take account of the time lag between the purchase of materials and the sale of the finished product. ('Materials' here include raw materials proper and semifinished goods bought for further processing.) The other indexes of the cost and profit components of selling price are estimates based on relevant records of the physical volume of production and the dollar value of sales of manufactured goods, payrolls and profits, and taxes paid by manufacturing industries. The measures of unit cost and profit changes thus derived are consistent with reported statistics of sales, aggregate output, payrolls, and profits, but each is subject to an appreciable error of estimate.

The following sources were used in making these estimates.

Production of manufactured goods: Board of Governors of the Federal Reserve System.

Sales of manufactured goods: Corporate sales from Department of Commerce adjusted to include estimated sales of noncorporate manufacturing enterprises.

Payrolls: Bureau of Labor Statistics.

Profits and income and excess profits taxes: Corporate data from Department of Commerce adjusted to include estimates for noncorporate manufacturing enterprises.

taxes, and profits were some 45 percent higher. The increases in direct costs exceeded those in the selling prices of manufactured goods; the chief lifting force on the prices of finished products was exerted by the expenses that fluctuate directly and immediately with the volume of business done—expenses that constitute some 75 percent of the value of product for manufacturing industries in the aggregate.

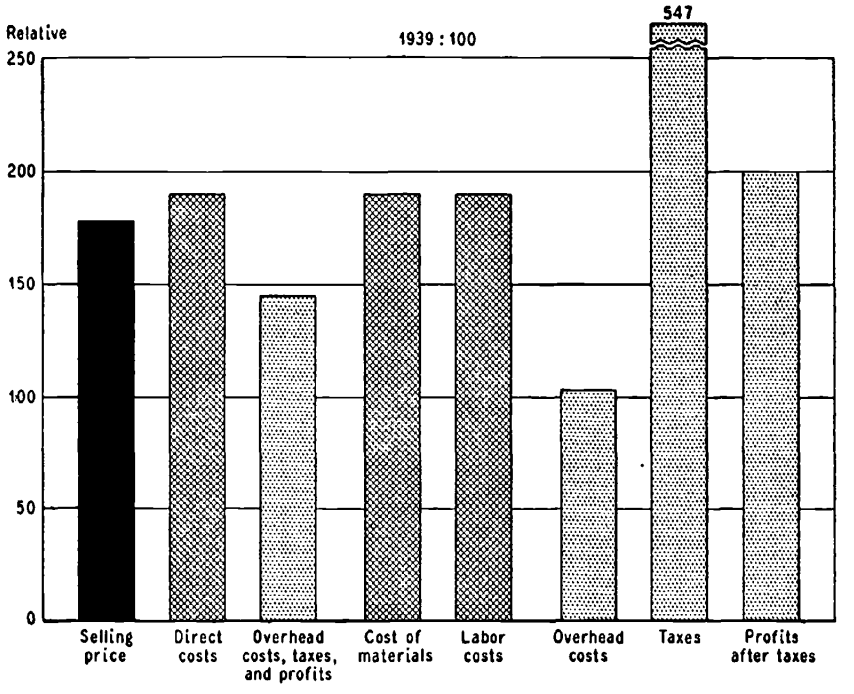
Between 1939 and 1946 labor costs per unit of product advanced more rapidly than material costs. The increases that followed the end of price control in 1946 carried materials up sharply, and in 1947 the two components of direct costs stood at the same level, with reference to the 1939 base. The advances in both elements of direct costs exceeded the average increase in unit selling prices.

The relation of changes in labor costs to changes in the unit selling prices of manufactured goods since 1939 is of exceptional interest. Historically, unit labor costs have lagged behind selling

CHART 5

Estimated Changes in Average Selling Price of Manufactured Goods and in its Major Components 1939 - 1947

Index per Unit of Manufactured Product



prices during periods of major change in the price level.[11] In the present case the advance in labor costs has exceeded that in selling prices, for manufacturing industries as a whole. The explanation is to be found, partly, in labor shortages and in the strong bargaining position of labor during the period of the present survey. This accretion of power helped to offset any tendency toward lagging wage adjustments; indeed, in some industries it reversed the lag. A second factor is the character of the price rise. It was a rise that carried foods and other consumer goods up most sharply in price. The effects were felt immediately by wage earners, and there was consequent immediate pressure for relief through higher wage rates.

Material costs, as averaged for all manufacturing industries, kept general pace with selling prices until 1946. (Materials of manu-

[11] In six of seven comparisons (based on Census data) of advances in the average unit selling prices of manufactured goods and in average labor costs per unit of product, covering 1899-1939, the increase in selling prices exceeded that in estimated labor cost. However, the margin of difference was slight in the last half of this period.

facture include semiprocessed goods; the prices received for these goods by some manufacturers constitute costs for other manufacturers.) This average situation conceals a divergence already noted (in Tables 3 and 4). Materials that enter into perishable and semidurable goods for human consumption rose sharply between 1939 and 1946; the heavy materials that enter into capital equipment and durable consumer goods lagged well behind in the general advance. When controls were abrogated in 1946 the prices of both classes of materials increased (consumption goods more rapidly) and the general index of material costs per unit of manufactured product rose relatively more than selling prices. Indeed, in this latest stage of the price advance, material costs caught up with labor costs (which in 1946 were at higher levels, relatively to 1939).

The index that measures changes in the composite of services represented by 'overhead, taxes, and profits' defines the resultant of three quite divergent movements. Federal and state income and excess profits taxes, per unit of product, were in 1946 almost four times as high as in 1939; in 1947 they were more than five times as high. Unit profits after taxes rose some 34 percent to 1946, 100 percent to 1947. The sharp recent advance in profits was scored despite the relatively large increases in both elements of direct costs. The explanation lies in the behavior of overhead charges proper—charges for rent, interest, depreciation, salary payments, etc.—which are not directly related to the volume of business done, and which lag, typically, in their response to changes in the purchasing power of money. (This is notably true of depreciation when charged on the basis of original cost.) During the last eight years, while direct costs and taxes have been increasing sharply, the aggregate of overhead costs has made more modest advances; large volume has reenforced conditions making for relatively low unit overhead costs.[12] This fortunate conjuncture rendered business exceptionally profitable, although wages and the prices of materials were high and productivity gains in recent years were low in comparison with past records.[13]

In interpreting this profit record one somewhat fortuitous factor is to be noted. Rising prices have brought advances in inventory

[12] Overhead costs of this nature made up about 20 percent of the total value of manufactured products in 1939, in 1946 about 15 percent, and in 1947 some 12 percent.

[13] In 1939 profits (after payment of federal and state income and excess profits taxes) of manufacturing corporations aggregated $2,958 million, as compared with $4,403 million in 1929 and $1,418 million, the annual average for the decade 1929-38. Profits in

valuations that exceed the gains in the physical volume of inventories. Such gains from inventory valuation adjustments amounted to almost $3 billion for manufacturing corporations in 1946.[14] Gains in 1947 were lower, but still substantial. If we take account of *operating* profits alone, for manufacturing corporations (deducting from given profit figures estimates of inventory valuation gains) the index of profits per unit of product for 1946 (1939:100) becomes 92, indicating a drop of some 8 percent. For 1947 the index of operating profits per unit of product is 163, somewhat less than the index of selling prices of manufactured goods. In so far as inventory valuation gains are realized by manufacturers, and not canceled by subsequent price declines, the indexes of unit profits in Table 6 are appropriate measures. If profits from operations alone are in question, account must be taken of inventory valuation adjustments.

Prices of Raw Materials and Manufactured Goods

In the preceding section we have presented an index of estimated changes in material costs per unit of manufactured product. Direct

TABLE 7

Prices of Raw and Manufactured Goods, 1939-1948

	9/1938-8/1939	*June 1946*	*Feb. 1948*	*% change June 1946-Feb. 1948*
INDEXES OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH				
Raw materials	100	180	253	+41
Producer goods, raw	100	176	256	+45
Manufactured goods	100	135	195	+44
American farm products				
Raw	100	212	284	+34
Processed	100	154	228	+48
American nonfarm products				
Raw	100	147	221	+50
Processed	100	121	168	+39
INDEXES OF THE BUREAU OF LABOR STATISTICS				
Raw materials	100	181	251	+39
Semimanufactured goods	100	141	208	+48
Manufactured goods	100	134	192	+43

Note 13 concluded:

1939 were 5.2 percent of sales as compared with 6.3 percent in 1929 and 2.9 percent, the average for 1929-38. When 1939 is used as a standard of reference for the aggregate of all manufacturing enterprises, these relations may be borne in mind. Profits for that year, in absolute amount and as a percentage of sales, fell below the 1929 peak levels, but were well above the average for the decade 1929-38. It does not follow that 1939 would necessarily be a representative year for any individual corporation.

[14] See National Income, *Survey of Current Business*, Supplement, July 1947, p. 34.

comparison of the prices of raw materials and processed goods yields additional evidence on this aspect of manufacturing operations. Shifts in raw-processed price relations are, of course, one of the factors making for changes in manufacturing margins and in unit costs of production.

Price advances since 1939 among the materials of industry have greatly exceeded those in manufactured goods (Table 7). The prices of farm products have risen more than those of nonfarm products, but the margin of difference between the movements of the prices of raw and processed goods between 1939 and February 1948 is about the same in the two groups.[15] For the major categories of goods here represented raw material costs rose more than the prices of processed goods. Between June 1946 and February 1948, however, the prices of processed farm products rose more rapidly than the prices of raw farm products. Recent changes in the prices of nonfarm products conformed to the pattern of earlier movements.

To escape from possible transitory conditions during the twelve months, September 1938-August 1939, we go back 20 years for a standard of reference in defining price changes affecting manufacturing margins. The indexes in Table 8 show somewhat smaller 1948

TABLE 8

Prices of Raw and Manufactured Goods, 1924-27 to 1948

	1924-27	*June 1946*	*Feb. 1948*
INDEXES OF THE NATIONAL BUREAU OF ECONOMIC RESEARCH			
Raw materials	100	127	179
Producer goods, raw	100	128	186
Manufactured goods	100	109	157
American farm products			
Raw	100	136	182
Processed	100	119	176
American nonfarm products			
Raw	100	118	179
Processed	100	101	140
INDEXES OF THE BUREAU OF LABOR STATISTICS			
Raw materials	100	126	175
Semimanufactured goods	100	104	152
Manufactured goods	100	110	158

[15] Relative price changes among raw and processed goods classified somewhat differently are shown by the following summary. The prices of raw materials rose most sharply since 1939, and diverged most widely from the prices of processed goods, for crop products. But for animal products and minerals gaps also have been created.

	Index numbers, Sep. 1938-Aug. 1939:100				% change,	
	June 1946		Feb. 1948		June 1946-Feb. 1948	
	Raw	Mfd.	Raw	Mfd.	Raw	Mfd.
Crops	250	158	316	219	+26	+39
Animal products	178	145	259	235	+46	+62
Minerals	129	117	187	158	+45	+35

differences between the prices of raw materials and of processed goods, on the earlier base, but the general relations are the same. The prices of manufactured goods rose less than the unit prices of primary products entering into them. The relative changes among the major classes of goods are different, however, on the two bases. On the earlier base the differential is much wider for nonfarm than for farm products. A considerable part of the recent rise in the prices of raw farm products represented recovery from a relatively depressed condition in 1938-39. But as of 1948 the prices of primary products were high, in relation to the prices of processed goods, for both farm and nonfarm products whether the base of comparison be 1938-39 or 1924-27.[16]

Wages and Productivity

The last eight years, as we have seen, brought advances in unit labor costs that closely paralleled advances in material costs and somewhat exceeded the rise in the unit selling price of manufactured goods. The two factors affecting labor costs are the price of labor per manhour and the number of manhours per unit of output. For certain manufacturing industries indexes relating to these factors are available (Table 9).

We have noted in an earlier section the approximate doubling of average hourly earnings in manufacturing between 1939 and 1947. The relative gains were slightly greater in industries producing nondurable goods than in the heavy industries. (Average hourly earnings in dollars are still somewhat lower in the former group, however.) In general, there is a heavy clustering of industries around the average figure for all manufacturing, but the range between the lowest figure (+65 percent for malt liquors) and the highest (+166 for cotton manufactures) is considerable.

The estimates of changes in output per manhour stand on a much lower level. They indicate modest over-all gains in manufacturing, averaging about 1 percent a year. The rate of gain is below those that prevailed in the 'thirties, in the 'twenties, and in the decade

[16] The price history of 1914-1939 is characterized by one striking reversal of the record for 1890-1914. In the earlier period the rise in prices of raw materials exceeded that of manufactured goods; during the twenty-five years 1914-39 raw materials were progressively cheapened, relatively to manufactured goods. Persistent agricultural difficulties, rising productivity in the extractive industries, and marked increases in wage rates in manufacturing industries were some of the factors in this reversal, a reversal that has its surprising features because of the great gains in manufacturing productivity. The recent sharp advance in the prices of primary products represents a shift back to earlier price relations, a relative cheapening of manufactured goods in terms of raw materials.

TABLE 9

Changes in Average Hourly Earnings and in Output per Manhour in Selected Manufacturing and Mining Industries, 1939-1947

	% Change, 1939-IV 1947	
	Average hourly earnings	Output per manhour
All manufacturing	+100	+7
Durable goods	+93	+5
Nondurable goods	+104	+9
Cotton manufactures	+166	−19
Canning and preserving	+134	
Wool manufactures	+125	+23
Lumber and timber basic products	+118	
Sawmills	+120	−30
Furniture and finished lumber products	+114	
Confectionery	+110	+14
Boots and shoes	+109	+2
Paper and pulp	+108	−12
Butter	+105	
Leather	+104	+22
Tobacco manufactures	+102	+37
Flour	+99	−13
Chemicals and allied products	+98	
Paints	+86	−15
Stone, clay, and glass products	+95	
Glass products	+86	−5
Cement	+77	+13
Rubber products	+92	
Nonferrous metals and their products	+92	
Iron and steel and their products	+90	
Slaughtering and meat packing	+89	+8
Printing, publishing, and allied industries	+79	
Newspapers and periodicals	+78	+10
Automobiles	+66	
Petroleum refining	+66	+2
Malt liquors	+65	−26
Canned milk		−42
Mining	+98	+9
Quarrying and nonmetallic mining	+114	
Bituminous coal	+106	+13
Metal mining	+94	
Iron ore	+85	−15
Anthracite coal	+91	−7
Crude petroleum	+76	+37

Sources: Hourly earnings data are from the Bureau of Labor Statistics. In interpreting the percentages of change from 1939 to 1947 the reader will note that some of the advances (e.g., for construction and petroleum refining) were from relatively high levels in 1939, some (e.g., for cotton textiles) from relatively low levels.

The estimates of productivity changes for all manufacturing and for the durable and nondurable categories are derived from production indexes of the Board of Governors of the Federal Reserve System and employment records of the Bureau of Labor Statistics. These over-all indexes must be regarded as approximative only. Indeed, since some of the production indexes for individual industries are derived by the Federal Reserve Board from estimated manhours data, the productivity index for all manufacturing in Table 9 rests, in part, on the productivity estimates of the Federal Reserve Board. For individual industries, productivity changes are derived from production index numbers of the Bureau of Labor Statistics and the Board of Governors of the Federal Reserve System and from manhours data of the Bureau of Labor Statistics. The productivity estimates depend, for their significance, on the accuracy and comparability of the two basic series for each industry. A considerable margin of error attaches to each of the derived industry figures, but the series of estimates as a whole indicate the general movement of manhour productivity and suggest the diversity of industrial experience during this period.

preceding the first World War.[17] A check to productivity gains is to be expected during the extensive industrial shifts that war and postwar readjustment entail. However, if we repeat the record of the years following the first World War we shall experience a substantial gain in productivity when readjustment to a peace basis is possible. War-bought gains in technical knowledge, in modes of organization, and in equipment provide the bases for such an advance; high labor costs spur management into utilizing improved productive procedures. Such an acceleration of productivity advances, of which, indeed, there are encouraging signs in the early summer of 1948, would greatly enhance our ability to operate under the present cost structure and to meet the problems of the years immediately ahead.

Hourly earnings and manhour output data that seem reasonably comparable, on an industry basis, have been placed side by side in Table 9. The relative values are indicative, of course, of the character of changes in labor costs per unit of product. When the average advance in earnings has exceeded the gain in productivity, unit labor costs have risen. The recorded changes in earnings and productivity point to a highly variegated labor cost structure among manufacturing industries today. In all cases unit labor costs have risen with the general price advance since 1939. The indicated advance in unit costs has been greatest in cotton goods, least in tobacco manufactures (among the manufacturing industries here represented). In general unit labor costs have kept pace with, or have slightly exceeded, the rise in selling prices.

Profits

In studying profits as a component of the selling price of goods we must also use indirect methods. We may derive indexes of changes in profits per unit of goods sold from records of aggregate profits and total output, or approximate changes in profits per unit of goods sold from aggregate sales and aggregate profits, when unit price figures are available for the 'deflation' of sales. The second method enables us to check the results obtained by the first method. The final indexes do not have the accuracy of direct price quotations but they are useful indicators of the general magnitudes involved. Changes between 1939 and 1947 are measured by the entries in Table 10.

[17] The rate of gain in output per manhour in manufacturing industries as a whole was about 3.1 percent a year between 1931 and 1939, 5.6 percent between 1921 and 1929, and 2.5 percent between 1899 and 1914.

TABLE 10

Corporate Profits and Selling Price per Unit of Product, Selected Manufacturing and Mining Industries,[a] 1939-1947

	INDEX PER UNIT OF PRODUCT					
	Corporate Profits after Tax			Selling Price		
	1939	*1946*	*1947*	*1939*	*1946*	*1947*
Manufacturing industries	100	132	197	100	145	182
Durable goods						
Lumber and timber basic products	100	440		100	191	
Iron and steel and their products	100	224		100	115	
Furniture and finished lumber products	100	176		100	131	
Nonferrous metals and their products	100	132		100	128	
Nondurable goods						
Textile mill products	100	470		100	146	
Paper and allied products	100	326		100	145	
Leather and leather products	100	245		100	144	
Rubber products	100	196		100	123	
Food and kindred products	100	173		100	186	
Petroleum and coal products	100	172		100	131	
Chemicals and allied products	100	95		100	133	
Tobacco manufactures	100	69		100	120	
Mining	100	119	150	100	131	163
Bituminous coal	100[b]	1,224		100	136	
Crude petroleum	100	149		100	138	
Metal mining	100	62		100	122	

The indexes of profits per unit of product are derived from the data on corporate profits compiled by the Department of Commerce (*Survey of Current Business,* Supplement, July 1947) and the indexes of the physical volume of output, for corresponding industries, constructed by the Board of Governors of the Federal Reserve System. Because the industrial classifications underlying the Commerce and Federal Reserve groupings are not the same in all respects, the derived indexes of unit profits are to be regarded as approximative only. The resulting figures for 1946 and 1947, which are derived directly from data on profits and output, differ somewhat from the figures in Table 6, which were somewhat differently derived.

[a] In listing individual industries those with negative earnings in the base year, or in the later years named, are necessarily excluded, since relative numbers would not be meaningful. The indexes for the total of all manufacturing industries, which do take account of losses, are thus not averages of, nor are they necessarily consistent with, the indexes for the small number of individual industries listed.

[b] This base is affected by a strike which reduced earnings in 1939.

For the composite of manufacturing industries the average advance in profits per unit of goods turned out was over 30 percent between 1939 and 1946[18]—somewhat lower than the average increase in selling prices (about 45 percent). The range of variation

[18] A check on this general result is possible by utilizing records of changes in total sales of manufacturing corporations (Department of Commerce compilations) and in the average selling price of manufactured goods. From these, measures of relative change in output may be estimated for comparison with indexes of total profits of manufacturing corporations. The resulting measure of profits per unit of product indicates an advance of 41 percent from 1939 to 1946. Though somewhat greater than the more directly derived index, it confirms the indication of the latter concerning the general magnitude of the increase.

in the experience of individual industries is, however, very wide. For tobacco manufacturers unit profits appear to have declined 31 percent; for textile mill owners unit profits increased 370 percent.[19] Among the industrial groups listed in Table 10 profits per unit of product advanced less than selling price for foods, tobacco, chemicals; they increased conspicuously more for textile mills, lumber, paper and pulp, leather and leather products, and iron and steel.

For the last year we have somewhat less adequate records of corporate profits. Figures compiled by the Department of Commerce permit an estimate of profits per unit of product for all manufacturing corporations for 1947. The index, which stands at 197 (1939:100), points to a very sharp advance in unit profits in manufacturing between 1946 and 1947. This gain is somewhat greater than the indicated increases between 1946 and 1947 in the average unit labor cost and the average selling price of manufactured goods.

[19] In interpreting relative measures of profits we must recall that profits, as a residual share, are subject to very wide swings, and may, indeed, be negative at times. This point is particularly relevant to the selection of a base of comparison. In the accompanying tabulation the absolute magnitude of corporate profits in 1939, the present base, is compared with the amounts realized in 1929, and in the average for the three years 1936, 1937, and 1938. Absolute figures for 1946 and (where available) for 1947 are also given.

CORPORATE PROFITS AFTER FEDERAL AND STATE INCOME AND EXCESS PROFITS TAXES
(millions of dollars)

	1929	*1936-38*	*1939*	*1946*	*1947*
Manufacturing industries	4,403	2,323	2,958	6,338	10,365
Durable goods					
Lumber and timber basic products	79	32	36	182	
Iron and steel and their products	719	212	249	738	
Furniture and finished lumber products	33	18	39	94	
Nonferrous metals and their products	194	116	124	227	
Nondurable goods					
Textile mill products	123	61	131	844	
Paper and allied products	95	71	87	360	
Leather and leather products	39	17	32	91	
Rubber products	10	24	50	195	
Food and kindred products	428	316	430	1,026	
Petroleum and coal products	614	190	204	550	
Chemicals and allied products	376	291	416	837	
Tobacco manufactures	124	105	111	112	
Mining	416	289	272	407	578
Bituminous coal	9	—2	5	82	
Crude petroleum	110	135	93	190	
Metal mining	238	144	159	77	

Source: Department of Commerce, National Income Unit.

Corporate profits in 1939 were below their 1929 level, but above the average of the three years 1936-38. For all manufacturing industries, indeed, earnings in 1939 were higher than in any year between 1930 and 1938. Comparison of earnings in 1939 and in other years, for individual industries, will help the reader interpret the movements from the 1939 base shown in Table 10.

The evidence here reviewed points to some general conclusions concerning the present state of manufacturing industries:

1) Between 1939 and 1947 labor costs, material costs, and profits, per unit of manufactured product, rose by approximately the same relative amounts. (Profits from rising values of inventories are here added to operating profits.)

2) One important factor contributing to profits in 1947 was the relatively modest advance of overhead costs. Such costs declined substantially as a fractional part of the value of product. Large volume combined with the lagging advance of fixed charges made high profits possible in 1947.

3) A stepping up of depreciation charges on the basis of present cost levels will increase overhead charges and correspondingly reduce profit margins. Advances in overhead charges are to be expected when depreciation charges, rents, and other lagging items have been adjusted to present price levels.

4) The present cost and price structure of manufacturing industries is heavily dependent on large volume. A situation in which material costs, labor costs, and profits, per unit of goods produced, are all higher than selling prices (relatively to the 1939 base) seems anomalous. It would be so, of course, without the great increase (about 75 percent) in the number of units of goods produced and sold. The present industrial system, while highly productive, is more exposed to strain when sales and output decline than was the cost and price structure of the years immediately preceding the war. (In those years the level of output at which profitable operation was possible was, for many plants, lower than it now is.)

IV Some Historical Comparisons

Major Changes in the Structure of Prices, 1924-27 to 1948

The reference of measurements of price, wage, and cost changes to 1939 is desirable if we are concerned with shifts during the eight years after the outbreak of war in Europe. But such comparisons are affected by the relations among elements of the price system that prevailed in 1939. These relations, in part fortuitous, in part reflecting cyclical conditions of the base period, in part reflecting established cost structures and established terms of exchange, do not necessarily constitute a 'normal' state of affairs to which the price system may be expected to return. Any base period suffers from