

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Cost, Prices, and Profits: Their Cyclical Relations

Volume Author/Editor: Thor Hultgren, assisted by Maude R. Pech

Volume Publisher: NBER

Volume ISBN: 0-870-14098-1

Volume URL: <http://www.nber.org/books/hult65-1>

Publication Date: 1965

Chapter Title: Manufacturing: Relations among Profit Factors during Cycles in Sales Revenue

Chapter Author: Thor Hultgren

Chapter URL: <http://www.nber.org/chapters/c1633>

Chapter pages in book: (p. 78 - 97)

## MANUFACTURING: RELATIONS AMONG PROFIT FACTORS DURING CYCLES IN SALES REVENUE

For some industries and many individual companies there are quarterly figures on sales (i.e., the value of the goods sold) and on margins, but no data on quantity sold. In such industries we cannot tell what happened to costs, prices, and margins during cycles in quantity, but we can tell what happened to margins during sales cycles. In the fifteen industries studied in the last chapter, however, we can compare what happened in cycles of quantity sold with what happened in cycles of sales. The comparison should contribute toward a better understanding of the more abundantly available sales and margin data.

In many instances, an expansion in the sales of an industrial group coincided in time with an expansion in the quantity it sold; a contraction in sales coincided with a contraction in quantity. In many other instances, an upswing or downswing in sales corresponded approximately to a similar fluctuation in quantity, but the troughs, the peaks, or both, did not occur in exactly the same quarter. There were a few phases in sales with no close equivalent in quantity, and vice versa.

### *Prices Rose and Fell More Often With Sales Than With Quantity*

When sales revenue expands but quantity contracts, prices received must be rising; otherwise the revenue would fall with the quantity. Periods of opposite movement associated with rising

prices are included in sales but not in quantity expansions. Consequently prices tend to rise more of the time in sales expansions than in quantity expansions. Conversely, when sales contract but quantity expands, prices must be falling. Consequently, prices tend to fall more of the time during sales contractions than during quantity contractions. These differences are observable in almost every segment of expansions and contractions (Table 43).

*Cost Rose and Fell More Often  
With Sales Than With Quantity*

Cost falls more often when quantity is rising than when it is falling (Table 43). Consequently, cost tends to rise more of the time during sales expansions, which includes some periods of falling quantity, than during quantity expansions. Conversely, cost tends to fall more of the time during sales contractions, which include some periods of rising quantity, than during quantity contractions. These differences are very consistent from segment to segment.

*Margin Changes in Sales Cycles Similar to Those in  
Quantity Cycles*

The greater frequency of price rises during sales expansions than during quantity expansions tends to produce more numerous rises in margins during sales expansions. On the other hand, the greater frequency of rising costs makes for fewer rises in margins during sales expansions. Likewise in contraction, the difference in prices tends to offset the difference in cost. The upshot is that the two kinds of cycles do not differ from each other very consistently with respect to margins. The figure for percentage rising or falling in the sales columns of Table 43 is sometimes higher, sometimes lower, than the corresponding figure in the quantity columns. Each column suggests a somewhat irregular cycle, with the highest frequency early in expansion and the lowest somewhere in contraction. In both, the margin at the peak is usually higher than at the preceding trough; it is almost always lower at the trough than at the preceding peak.

TABLE 43  
*Sales Cycles and Quantity Cycles Compared: Direction of Change in Three Profit Variables,  
 Fifteen Manufacturing Industries, 1947-61*

		PER CENT OF OBSERVATIONS INDICATING RISE <sup>a</sup>											
From Stage	To Stage	Number of Observations			Price Indexes			Cost Per Unit			Margins		
		Sales Cycles	Quantity Cycles	Quantity Cycles	Sales Cycles	Quantity Cycles	Sales Cycles	Quantity Cycles	Sales Cycles	Quantity Cycles	Sales Cycles	Quantity Cycles	
I	II	43	46	41	63	41	28	22	84	65			
II	III	43	46	63	74	63	51	39	81	80			
III	IV	43	46	74	86	74	79	67	57	57			
IV	V	43	46	80	79	80	81	74	42	50			
V	VI	37	40	85	59	85	43	85	30	55			
VI	VII	37 <sup>b</sup>	40	78	49	78	65	90	27	20			
VII	VIII	37 <sup>b</sup>	40	45	30	45	49	65	16	18			
VIII	IX	37 <sup>b</sup>	40	35	24	35	41	45	14	30			
I	V	46 <sup>c</sup>	48 <sup>c</sup>	73	85	73	72	56	83	79			
V	IX	59 <sup>c</sup>	60 <sup>c</sup>	70	42	70	69	90	2	5			

<sup>a</sup>All other observations indicate declines except as noted.

<sup>b</sup>One observation indicates no change in price.

<sup>c</sup>Includes phases too short for division into five stages.

*Margins Rise When Sales Expand,  
Fall When Sales Contract*

Although we have quantity, price, and cost estimates for only fifteen industries, there are data on margins for twenty-two FTC-SEC groups. Our further discussion of margins and profits will be founded on this larger body of information. There is no longer any reason to merge the two primary metals industries; we prefer the greater refinement and diversity obtainable from including them separately. We include furniture, although the portion of the industry included varies, because the sales data are comparable with the margin data. In the twenty-two industries, there were sixty-seven sales expansions (Table 44). In fifty-seven of these, there was a net rise in margin. When the sales expansions are arranged in successive groups by the methods explained in Chapter 2, rising margins are found to preponderate in all. We have data on eighty-five contractions. In these, there was an even stronger preponderance of declines; in eighty-two the margin was lower at the end than at the beginning of the sales contraction. In a broad sense, sales and margins rise and fall together.

Before 1947 we have no comprehensive quarterly data on sales and profits for any major manufacturing group or for manufacturing in the aggregate.<sup>1</sup> We do have annual data derived from a publication of the Bureau of Internal Revenue, *Statistics of Income*. Although we show ratios for these data up to the latest date for which they are available in Chart 10, we regard the quarterly data from 1947 onward as superior for cyclical analysis. These, however, do not cover the full expansion in sales that ended in 1948. Consequently, we shall use the annual data to learn something about 1946-48 as well as earlier expansions and contractions.

The annual figures give us data on five additional full expansions in sales: 1921-23, 1924-29, 1932-37, 1938-44, and 1946-48. In every one, the ratio of profits to sales was higher at the peak than at the trough. They also give us data on five addi-

<sup>1</sup>Data on profits only are discussed in my *Cyclical Diversities in the Fortunes of Industrial Corporations*, New York, NBER, OP 32, 1950.

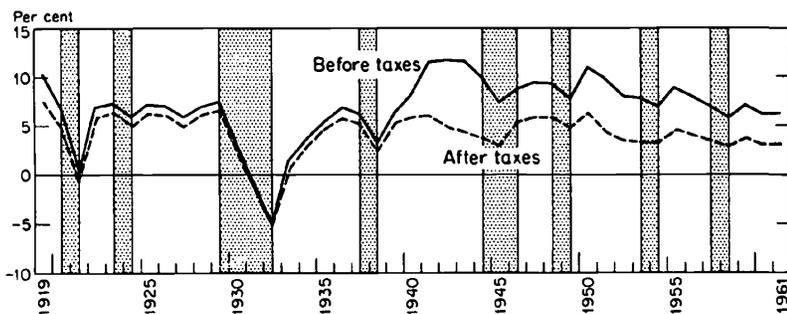
tional contractions: 1920-21, 1923-24, 1929-32, 1937-38, and 1944-46. In every one, the profit ratios were smaller at the trough than at the peak. The experience over the period from 1920 to 1948 was similar, therefore, to the experience from 1948 onward.

Corresponding data for the twenty-two statistical subdivisions of manufacturing are not available. We can, however, assemble separate figures for durable and nondurable manufactures over the whole period (Chart 11). Between 1920 and 1948, sales of durables had five expansions and five contractions; the profit ratios had a net rise in all of the former and a net fall in all of the latter. Sales of nondurables had four expansions and four contractions before 1948; profit margins again rose and fell with

TABLE 44  
*Margins: Direction of Net Change During Sales Expansions and Contractions,  
Twenty-Two Manufacturing Industries, 1947-61*

Industry	Number of Sales Expansions with		Number of Sales Contractions with	
	Net Rise in Margin	Net Fall in Margin	Net Rise in Margin	Net Fall in Margin
Food and beverages	0	1	1	1
Tobacco	1	0	0	2
Textiles	4	0	0	5
Apparel	2	0	0	3
Lumber and products	3	1	0	5
Furniture and fixtures	4	0	0	5
Paper and products	3	1	0	5
Printing and publishing	1	0	0	2
Chemicals	4	0	0	5
Petroleum refining	1	0	0	2
Rubber	2	1	0	3
Leather and products	2	1	0	3
Stone, clay, glass	4	0	0	5
Primary iron and steel	4	0	0	5
Primary nonferrous metals	4	0	0	4
Fabricated metals	3	1	0	5
Machinery	3	0	0	4
Electric equipment	2	2	0	5
Motor vehicles	5	0	0	6
Other transportation equipment	1	1	1	2
Instruments	1	1	1	2
Miscellaneous	3	0	0	3
Total number	57	10	3	82
Percentage of total for expansions or contractions	85	15	4	96

*CHART 10*  
*Margin, Before and After Taxes: All Manufacturing Corporations,*  
*1919-61*



NOTE: Shaded areas are contractions in sales of all manufacturing corporations.

sales. One of the expansions was somewhat long for comparison with the kind of expansions we deal with in this study; annual sales increased continuously from 1938 to 1948.

For reasons explained in Chapter 1, the foregoing discussion pertains to margins before, rather than after, taxes. The substantial difference between the two that has developed since the beginning of World War II, however, should not be ignored. We therefore show on the charts the ratio of profits after taxes to sales as well as the before-tax margin.

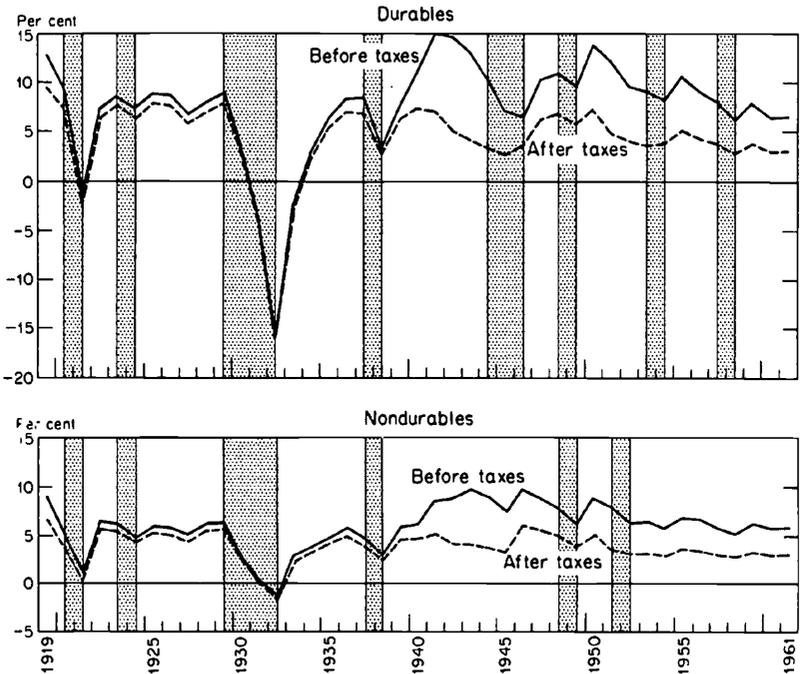
With few exceptions, however, the direction of year-to-year change is the same in both ratios. From 1936 to 1937 the pre-tax margin for durables increased slightly while the post-tax margin decreased slightly. Because of steeper wartime taxation, margin before taxes increased, while margin after taxes decreased, for the durables group from 1940 to 1941, for all manufacturing and the nondurables group from 1941 to 1942, and for the nondurables group from 1942 to 1943. Although the pre-tax margin of the durables group fell from 1945 to 1946 and from 1953 to 1954, removal of the excess profits tax and perhaps other tax changes permitted the post-tax margin to rise on both occasions.

Corporations derive income from other sources as well as the commodities and services they sell. They have income from rent,

royalties, investments in stocks and bonds, and interest on money in the bank. Most of these other kinds of income involve little expense; the gross income from them is almost the same as the net. (This, however, is not true in many cases of income from rents and royalties.) We subtracted total deductions allowed by the income tax laws from sales, including "gross revenue from operations," to get what we call profits from sales. It is equal to total net profit from all sources less gross income from other sources than sales. The ratio to sales of profits from sales is lower than the pre-tax curves on the charts. Although they differ in level, the two ratios invariably move in the same direction from year to year.

There are no quarterly data on margins for groups of manu-

**CHART 11**  
*Margin, Before and After Taxes: Corporations Manufacturing Durables and Nondurables, 1919-61*



NOTE: Shaded areas are contractions in sales.

facturing industries before 1947, but many large companies published quarterly income statements reporting their own sales and profits. We have tried to exploit such material as a subsidiary source of information. The history of profits during the war was somewhat peculiar because of price fixing by the government, renegotiation of contracts, emergency amortization of facilities, and so forth. In view of the effort that would be required, and the peculiarities of the period, we have collected no systematic data on profits of individual companies during the war. We did look at all individual industrial corporations with assets of more than \$50 million at the end of 1941, to see whether they published quarterly statements; and for those who did, we traced the records backward in time as far as they went. It is a comparatively new practice, however, for companies to report sales as well as earnings quarterly; so, as we went farther and farther back, more and more corporations dropped out of our list. We found only twenty-two with satisfactory records covering even one full business cycle, 1933-38. For some, however, we were able to trace the record back farther, in a few cases to 1919. (For companies and time periods, see the appendix.)

The sales and profit margin of each company were charted; and peaks and troughs were determined in the same manner as for industrial groups after the war. In the sales of one company or another, at one time or another, there were thirty-seven expansions and forty-six contractions. The margin was higher at the peak than at the trough in thirty-four of the expansions, and lower at the trough than at the peak in all of the contractions. The prewar experience of these companies was therefore similar to the postwar experience of industrial groups: the margin rose and fell with sales.

#### MARGINS RISE MOST FREQUENTLY IN EARLY EXPANSION

In postwar manufacturing, rising margins outnumbered falling margins in all segments of expansion (Table 45), except fourth segments, in which declines were somewhat more frequent than rises. The percentage of observations with rising margins diminishes steadily from eighty-three for first segments to forty-six for

fourth segments. Falling margins outnumbered rising margins heavily in every portion of contractions.

In the observations for individual companies between wars, rising margins predominate in every segment of expansion (Table 45). The percentage of rising margins is highest in the first segment of expansion, and falls with some irregularity to the fourth. Falling margins predominate in every segment of contraction.

During upswings in the sales of manufacturing industries, the most common pattern of change was an initial rise and later fall (Table 46). It occurred during twenty-nine, or 43 per cent, of the upswings. During downswings, the most common pattern was a straight fall; this pattern occurred during thirty-three, or 39 per cent, of the downswings.

TABLE 45  
*Margins: Direction of Change from Stage to Stage of Sales Cycles*

From Stage	To Stage	Number of Observations			Percentage	
		With Rise	With Fall	Total	Rising	Falling
22 MANUFACTURING INDUSTRIES, 1947-61						
I	II	52	11	63	83	17
II	III	47	16	63	75	25
III	IV	37	26	63	59	41
IV	V	29	34	63	46	54
V	VI	15	38	53	28	72
VI	VII	14	39	53	26	74
VII	VIII	14	39	53	26	74
VIII	IX	10	43	53	19	81
I	V	57	10	67 <sup>a</sup>	85	15
V	IX	3	82	85 <sup>a</sup>	4	96
22 COMPANIES, 1919-41						
I	II	30	5	35	86	14
II	III	27	8	35	77	23
III	IV	28	7	35	80	20
IV	V	22	13	35	63	37
V	VI	5	30	35	14	86
VI	VII	3	32	35	9	91
VII	VIII	9	26	35	26	74
VIII	IX	12	23	35	34	66
I	V	34	3	37 <sup>a</sup>	92	8
V	IX	0	46	46 <sup>a</sup>	0	100

<sup>a</sup>Includes phases too short for division into five stages.

In the sales expansions of individual companies, the rise-fall pattern is slightly less common than the continuous rise pattern (Table 46). In their sales contractions, as in those of the postwar industries, a continuous fall was most common, occurring in nineteen, or 41 per cent.

Profit margins for all manufacturing fell during the last year of three sales expansions, 1932-37, 1938-44, and 1946-48 (Chart 10). The margin continued to rise in the last year of 1921-23, although at a diminished rate. In 1924-29 it fell in the middle, then rose again. It is possible that quarterly data for this period would show a sales contraction in the middle, corresponding to the 1926-27 business contraction; consequently the fall in margin is difficult to interpret. Only two sales contractions lasted more

TABLE 46  
*Margins: Patterns of Change During  
Expansions and Contractions of Sales*

Pattern	Expansions			Contractions		
	Long Phases	Short Phases <sup>a</sup>	Total	Long Phases	Short Phases <sup>a</sup>	Total
22 MANUFACTURING INDUSTRIES, 1947-61						
Continuous rise	9	2	11	0	0	0
Rise, fall	28	1	29	11	2	13
Rise, fall, rise	13	0	13	2	0	2
Rise, fall, rise, fall	2	--	2	2	--	2
Continuous fall	0	0	0	15	18	33
Fall, rise	7	1	8	6	10	16
Fall, rise, fall	4	0	4	15	2	17
Fall, rise, fall, rise	0	--	0	2	--	2
Total	63	4	67	53	32	85
22 COMPANIES, 1919-41						
Continuous rise	11	1	12	0	0	0
Rise, fall	11	0	11	1	4	5
Rise, fall, rise	7	1	8	2	0	2
Rise, fall, rise, fall	1	--	1	2	--	2
Continuous fall	0	0	0	15	4	19
Fall, rise	4	0	4	9	3	12
Fall, rise, fall	1	0	1	5	0	5
Fall, rise, fall, rise	0	--	0	1	--	1
Total	35	2	37	35	11	46

<sup>a</sup>Too short for division into five stages.

than a year; in one of them, 1929-32, the margin fell throughout; in 1944-46, however, it turned up in the second year. Annual figures for the three one-year contractions tell us nothing about the time-pattern within a contraction.

Annual profit margins of corporations making durable goods diminished during the later years of the war expansion, 1938-44, but not toward the end of any of the other four complete expansions in the 1920-48 period (Chart 11). Two of the contractions, 1929-32 and 1944-46, lasted more than one year; the profit ratios fell throughout those contractions.

Profit ratios of corporations making nondurables fell in the last year of all four complete expansions before 1948. Only one contraction, 1929-32, lasted more than one year; ratios fell throughout (Chart 11).

In general the annual data suggest rise-fall sequences during expansions, like the quarterly data, but are inadequate as to contractions.

### *Profits More Closely Related Than Margins to Sales*

Profits equal the product of sales and margins. When sales are expanding, profits can rise even though margins fall, provided sales expand fast enough. When sales are contracting, profits can fall even if margins are rising, provided sales fall fast enough. Profits therefore tend to rise even more often than margins during expansions, and to fall even more often than margins during contractions.

In most cases, profits rise more often than margins in expansions and segments of expansions, and less often than margins in contractions and segments of contractions (Table 47). In a few cases the figures are equal. This is not inconsistent with the reasoning in the preceding paragraph. Although the change in sales may be large enough to more than offset a contrary change in margin, and hence to raise profits, it will not necessarily be that large. The data for twenty-two companies from stage VII to stage VIII, however, appear to contradict that reasoning, which applies only if the margin in at least one of the stages is positive. If two successive margins are -10 and -12 per cent, for example, the

change is counted as a fall in margin. Absolute profits are necessarily negative in both cases. But the algebraically lower margin, in conjunction with smaller sales, may mean a smaller absolute loss; this is counted as a rise in profits. Such a situation occurred in two observations, which explains the apparent paradox.

The most common pattern of change in profits when sales were expanding was a continuous rise, which occurred in twenty-five, or 37 per cent, of the industry expansions and twenty-two, or 59 per cent, of the company expansions (Table 48). The most common pattern when sales were contracting was a continuous fall, which occurred in forty-one, or 48 per cent, of the group con-

TABLE 47  
*Profits Before Taxes: Direction of Change from  
Stage to Stage of Sales Cycles*

From Stage	To Stage	Profits: Number of Observations			Profits: Per Cent		Margins: <sup>a</sup> Per Cent	
		With Rise	With Fall	Total	Rising	Falling	Rising	Falling
22 MANUFACTURING INDUSTRIES, 1947-61								
I	II	56	7	63	89	11	83	17
II	III	56	7	63	89	11	75	25
III	IV	44	19	63	70	30	59	41
IV	V	44	19	63	70	30	46	54
V	VI	10	43	53	19	81	28	72
VI	VII	14	39	53	26	74	26	74
VII	VIII	14	39	53	26	74	26	74
VIII	IX	6	47	53	11	89	19	81
I	V	66	1	67 <sup>b</sup>	99	1	85	15
V	IX	1	84	85 <sup>b</sup>	1	99	4	96
22 COMPANIES, 1919-41								
I	II	30	5	35	86	14	86	14
II	III	31	4	35	89	11	77	23
III	IV	29	6	35	83	17	80	20
IV	V	31	4	35	89	11	63	37
V	VI	3	32	35	9	91	14	86
VI	VII	2	33	35	6	94	9	91
VII	VIII	10	25	35	29	71	26	74
VIII	IX	7	28	35	20	80	34	66
I	V	36	1	37 <sup>b</sup>	97	3	92	8
V	IX	0	46	46 <sup>b</sup>	0	100	0	100

<sup>a</sup>From Table 45.

<sup>b</sup>Includes phases too short for division into five stages.

**TABLE 48**  
*Profits Before Taxes: Patterns of Change*  
*During Expansions and Contractions of Sales*  
 (number of phases)

Pattern	Expansions			Contractions		
	Long Phases	Short Phases <sup>a</sup>	Total	Long Phases	Short Phases <sup>a</sup>	Total
22 MANUFACTURING INDUSTRIES, 1947-61						
Continuous rise	23	2	25	0	0	0
Rise, fall	18	1	19	7	2	9
Rise, fall, rise	14	0	14	2	0	2
Rise, fall, rise, fall	1	--	1	1	--	1
Continuous fall	0	0	0	20	21	41
Fall, rise	7	1	8	3	7	10
Fall, rise, fall	0	0	0	19	2	21
Fall, rise, fall, rise	0	--	0	1	--	1
Total	63	4	67	53	32	85
22 COMPANIES, 1919-61						
Continuous rise	21	1	22	0	0	0
Rise, fall	3	0	3	0	2	2
Rise, fall, rise	5	1	6	2	0	2
Rise, fall, rise, fall	1	--	1	0	--	0
Continuous fall	0	0	0	19	6	25
Fall, rise	4	0	4	5	3	8
Fall, rise, fall	0	0	0	8	0	8
Fall, rise, fall, rise	1	--	1	1	--	1
Total	35	2	37	35	11	46

<sup>a</sup>Too short for division into five stages.

tractions and twenty-five, or 54 per cent, of the company contractions.

### *Margins and Profits of Individual Industries or Companies*

Eleven manufacturing groups and three companies had eight or more expansions and contractions of sales during the periods covered by our statistics. As previously noted, we consider this a long enough record to support generalizations about each. The groups are textiles, lumber, furniture, paper, chemicals, stone, iron and steel, primary nonferrous metals, fabricated metals, electric equipment, and motor vehicles. The companies are Her-

cules Powder, Skelly Oil, and Studebaker. For each industry or company, there was a net rise in both margin and profits during most upswings in sales and a net fall in both during most downswings in sales. In other words, the margins and profits of these groups and companies conformed positively to sales (conformity was defined and explained in Chapter 3). Conformity scores ranged from +56 to +100.

#### INDUSTRIES DIVERGE AS AGGREGATE SALES APPROACH A PEAK OR TROUGH

An expansion in sales begins in some industries and spreads to others. At first the rising sales in a few industries are outweighed by the continuing declines in most, and aggregate sales of all industries continue to fall. Eventually, however, the rises in the growing number of industries whose sales are picking up outweigh the declines in the dwindling number of industries whose sales continue to fall, and aggregate sales increase. Troughs in the number of industries with rising sales therefore tend to precede troughs in aggregate sales, and peaks in the number tend to precede peaks in the aggregate. This order of events can be observed repeatedly from 1947 to 1961 (Chart 12), with an exception in the very short (two-quarter) contraction of 1957-58.

As the speculative demand inspired by the outbreak of the Korean War was gradually satisfied, sales of many industries began to decline, one after another. During the 1949-53 upswing in aggregate sales, therefore, we find two waves instead of one in the curve showing the frequency of participation.

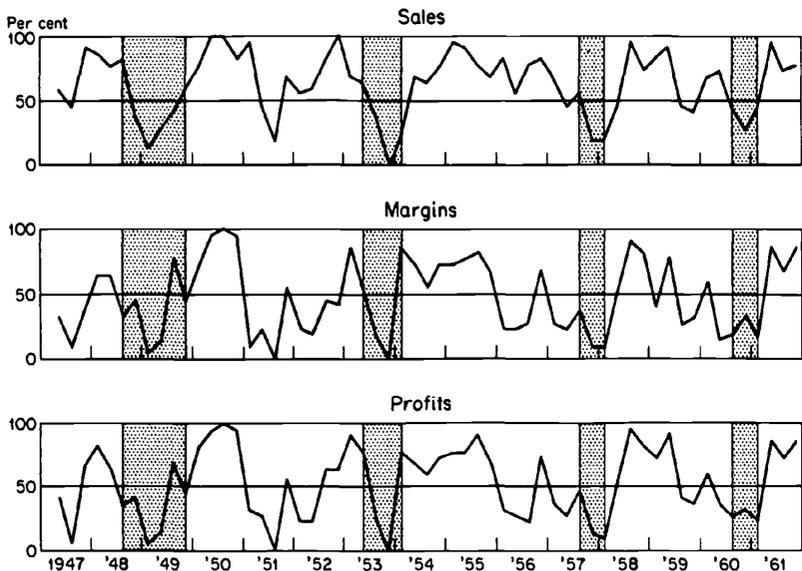
Since the margin earned by an industry has some tendency to fall toward the end of an expansion in the sales of that industry, and usually falls when an industry's sales are falling, one might expect that, when the percentage of industries with rising sales begins to diminish before the composite peak, the percentage with rising margins would also diminish. In fact, the frequency of rising margins did begin to decline at an early date in all three expansions of aggregate sales. Since an industry's margin usually widens when its sales begin to rise, and since the percentage of industries with growing sales begins to increase before the aggregate sales of all industries reach their trough, the percentage of

industries with rising margins should also begin to increase before that trough. It did begin to increase at an early date in the first two contractions of aggregate sales. Like the sales percentage, it did not increase before the end of the 1957-58 contraction.

There are similar waves in the frequency of rising profits. The sharp dip in all three variables in the last half of 1959 reflects the steel strike during the first and part of the second quarter.

Similar divergences occurred among companies. (Since we have data for less than ten companies before 1927, we begin Chart 13 in that year.) Although there are no quarterly figures on the sales of all manufacturing corporations in the period to which the company data refer, peaks and troughs in sales probably did not differ much in time from those in business at large. Rising sales tended to become more frequent during the later portions of a business contraction and the earlier portions of an expansion.

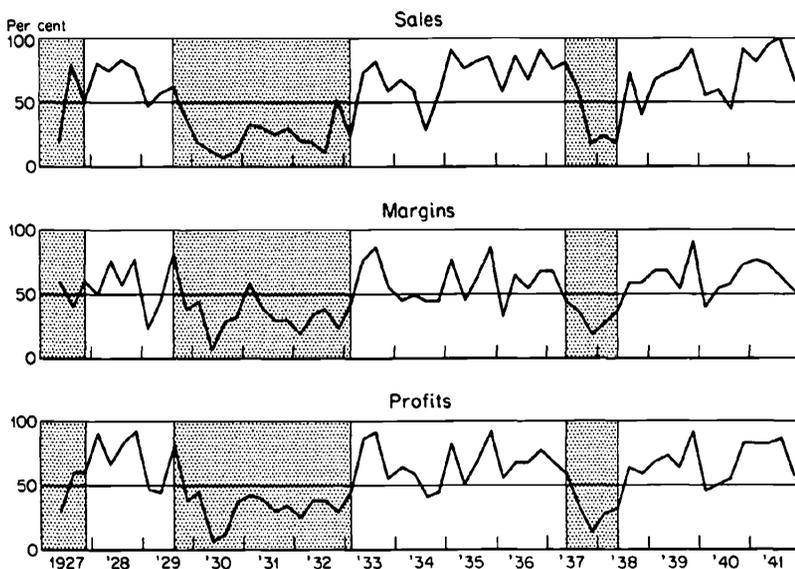
*CHART 12*  
*Percentage of Industries with Sales, Margins, or Profits*  
*Higher Than in Preceding Quarter,*  
*Twenty-Two Manufacturing Industries, 1947-61*



NOTE: Shaded areas are contractions in sales.

They tended to become less frequent during the later portions of an expansion and the earlier portions of a contraction. There was no net rise in frequency, however, during the later quarters of the 1937-38 contraction.

*CHART 13*  
*Percentage of Companies with Sales, Margins, or Profits Higher Than in Preceding Quarter, Twenty-Two Companies, 1927-41*



NOTE: Shaded areas are contractions in business.

At the beginning of the 1933-37 upswing, as at a somewhat later stage of the one in 1949-53, there was a special speculative influence at work. Expectations of higher costs and prices as a result of New Deal legislation stimulated sales. Even in the first quarter after the 1933 trough, 82 per cent of the twenty-two companies had rising sales. Probably as a reaction to the initial speculation, the percentage fell in late 1933 and early 1934. The outbreak of World War II caused a temporary drop in the sales of some companies. The fluctuations in sales are reflected broadly in the curves for frequency of rising margins and profits.

SALES, MARGINS, AND PROFITS. ALL  
MANUFACTURING

Aggregate sales of all manufacturing corporations combined were rising in 1947 when the statistics begin (Chart 14). The expansion reached a peak in the third quarter of 1948. Four full contractions and three full expansions followed. Another expansion began at the trough in the first quarter of 1961 and was still in progress during the last quarter covered by our statistics at the time of writing.

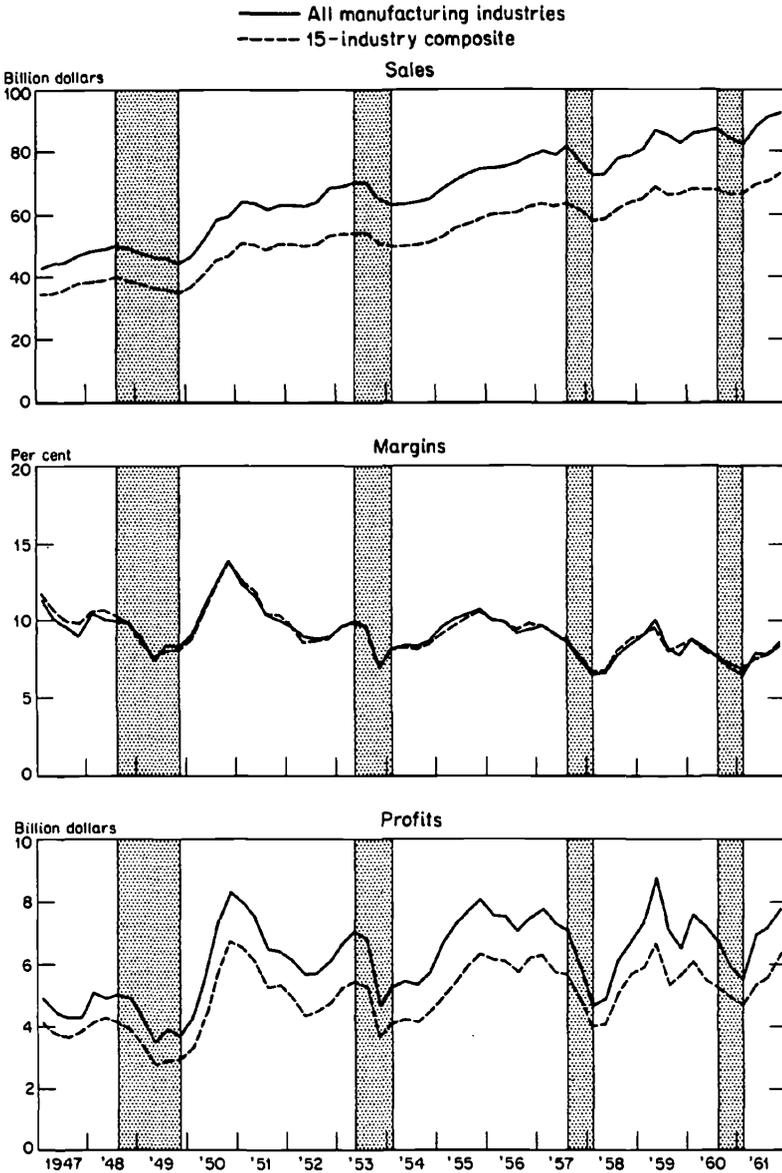
At each peak in sales the profit margin was higher than at the preceding sales trough; at each sales trough the margin was lower

TABLE 49  
*Sales, Margins, and Profits: Averages for Stages of Sales Cycles,  
All Manufacturing Industries, 1947-61*

Stage of Cycle in Sales	First Quarter Included	Sales (million dollars)	Margins (per cent of sales)	Profits (million dollars)
V	3Q 1948	50,346	10.0	5,035
VI	4Q 1948	49,799	9.9	4,930
VII	1Q 1949	47,202	8.2	3,875
VIII	3Q 1949	46,444	8.5	3,948
IX / I	4Q 1949	44,664	8.3	3,707
II	1Q 1950	54,399	11.6	6,390
III	1Q 1951	63,558	10.9	6,919
IV	2Q 1952	66,312	9.2	6,073
V	2Q 1953	70,446	10.0	7,045
a	3Q 1953	70,334	9.7	6,822
a	4Q 1953	65,823	7.1	4,673
IX / I	1Q 1954	63,942	8.2	5,243
II	2Q 1954	65,670	8.8	5,806
III	2Q 1955	74,169	10.3	7,654
IV	3Q 1956	79,038	9.4	7,431
V	3Q 1957	82,084	8.7	7,141
a	4Q 1957	77,803	7.6	5,913
IX / I	1Q 1958	73,071	6.5	4,750
II	2Q 1958	77,096	7.7	5,930
III	1Q 1959	84,741	9.1	7,746
IV	4Q 1959	85,580	8.3	7,108
V	3Q 1960	87,478	7.7	6,736
a	4Q 1960	84,785	7.0	5,935
IX	1Q 1961	83,258	6.6	5,495

<sup>a</sup>Contraction too short for division into five stages. Full quarterly detail shown instead.

**CHART 14**  
*Sales, Margins, and Profits: All Manufacturing Industries, 1947-61*



SOURCE: Appendix Table B-1.  
 NOTE: Shaded areas are contractions in sales.

than at the preceding sales peak (Table 49). There was a net rise in the margin during each expansion in sales for which we have a complete record, a net fall in each complete contraction.

In the 1949-53 expansion of sales, the margin followed a rise-fall-rise pattern from stage to stage. In the 1954-57 and 1958-60 expansions it followed a rise-fall pattern, the most common pattern in sales expansions of the separate industries (Table 46). In the contraction of 1948-49 there was a fall-rise-

TABLE 50  
*Sales, Margins, and Profits: Averages for Stages of Business Cycles,  
All Manufacturing Industries, 1947-61*

Stage of Business Cycle	First Quarter Included	Sales (million dollars)	Margins (per cent of sales)	Profits (million dollars)
V	4Q 1948	49,799	9.9	4,930
VI	1Q 1949	47,879	8.9	4,261
VII	2Q 1949	46,524	7.5	3,489
VIII	3Q 1949	46,444	8.5	3,948
IX / I	4Q 1949	44,664	8.3	3,707
II	1Q 1950	54,399	11.6	6,390
III	1Q 1951	63,558	10.9	6,919
IV	2Q 1952	66,312	9.2	6,073
v	2Q 1953	70,44	10.0	7,045
VI	3Q 1953	70,334	9.7	6,822
VII	4Q 1953	64,882	7.6	4,958
VIII	2Q 1954	63,970	8.5	5,437
IX / I	3Q 1954	64,174	8.4	5,391
II	4Q 1954	69,871	9.8	6,850
III	4Q 1955	75,299	10.3	7,754
IV	3Q 1956	79,038	9.4	7,431
v	3Q 1957	82,084	8.7	7,141
a	4Q 1957	77,803	7.6	5,913
a	1Q 1958	73,071	6.5	4,750
IX / I	2Q 1958	73,328	6.7	4,913
II	3Q 1958	78,980	8.2	6,439
III	1Q 1959	84,741	9.1	7,746
IV	4Q 1959	84,976	8.3	7,060
v	2Q 1960	86,790	8.3 <sup>b</sup>	7,204
a	3Q 1960	87,478	7.7	6,736
a	4Q 1960	84,785	7.0	5,935
IX	1Q 1961	83,258	6.6	5,495

<sup>a</sup>Contraction too short for division into five stages. Full quarterly detail shown instead.

<sup>b</sup>Higher than preceding stage before rounding.

fall; a fall-rise in 1953-54, and a fall in 1957-58 and 1960-61. These were the three most common patterns in sales contractions of individual industries (Table 46). The patterns in composite profits were the same as those in margins.

The early declines in the sales of some industries, accompanied by declines in their margins, help to explain why the all-manufacturing margin fell during the last two segments of the 1954-57 and 1958-60 expansions of all-manufacturing sales. These falling margins were earned, to a large extent, by industries whose own sales were already falling.

Cycles in total manufacturing sales correspond to those in the National Bureau chronology of business cycles, although the dates of peaks and troughs differ somewhat. There was a net rise in the margin and profits during each business expansion, and a net fall during each contraction (Table 50).

The fluctuations in the composite of fifteen industries for which we have quantity data were similar to those in all manufacturing (Chart 14).