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Cyclical Diversities
in the Fortunes of
Industrial Corporations

THOR HULTGREN

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T. H.

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WHEN ARE RISING PROFITS MOST COMMON ?

A modern private enterprise economy passes alternately through periods in which the general level of economic activity rises and periods in which it falls. We call these waves of activity business cycles. There are broadly similar waves in the profits of industrial corporations. Net earnings of all corporations combined rise in a business expansion and fall in a contraction. But not every corporation participates at every stage in these broad swings. Even when profits in the aggregate grow, those of some companies at times diminish. When aggregate profits decline, those of some companies meanwhile rise. At what point in a business cycle is the number of companies with rising profits largest? At what point smallest? In this paper we endeavor to answer these and cognate questions.

Quarterly reports needed; more and more available

To arrive at an answer, we ought to have profit data for a large number of corporations. In each instance, they should cover at least one full business cycle. They should be monthly or quarterly. Annual profit figures are not very helpful in dealing with the questions we have in mind. Suppose, for example, that a company's earnings in the year 1937 were very high and its earnings in the year 1938 very low in comparison with other nearby years. We may infer that the company suffered a contraction of profits more or less corresponding to the general decline in business activity from the second quarter of 1937 to the second quarter of 1938. But we cannot tell whether its profits began to decline before or after the second quarter of 1937; they may have been at their highest in the first quarter, for example, or in the fourth. Fortunately the National City Bank of New York has compiled extensive

quarterly data on profits of individual companies, and has graciously made them available to us. We use them in conjunction with some additional data collected by Harold Barger.¹

Thirty years ago very few corporations publicly reported their earnings as often as once every three months. Since 1920, however, the custom has been growing; at present hundreds of companies issue quarterly statements. If we compile a separate sample of companies for each business cycle, therefore, we can form larger samples for the more recent cycles and so gradually broaden the statistical basis of our investigation. Business cycles can be thought of as running either from trough to trough or from peak to peak; we have compiled samples on both conceptions (Table 1). While our earliest sample pertains to only 17 companies, our latest covers 244.²

¹*The Commercial and Financial Chronicle* and *Moody's Investors' Service* reproduce the profit and loss statements of numerous companies. From these sources the bank, beginning with 1923, compiled the final net profit figures — net income available for dividends. From the same sources, Barger collected figures for some additional companies, and for 1920-22; see his *Outlay and Income in the United States, 1921-38* (NBER, 1942), Appendix B, pp. 235 ff. After editing the figures to some extent to make them more comparable with income tax returns (pp. 242-4), he used the bank's and his own supplementary data to estimate the aggregate profits of each industry, and hence of all industry. Aggregates for a large group of companies had been compiled and published by various authorities for railroads, the communications industry, and other public utilities. Consequently he had no occasion to collect data for individual companies in those industries, and the figures we use do not include such enterprises. The great majority of the companies we deal with were manufacturing or mining corporations. The others were engaged in water or other transportation, restaurant operations, the moving picture business, or miscellaneous activities.

In some instances our data on the profits of a company may show an increase merely because it absorbed another company. Suppose, for example, that company A had profits of \$600,000 per quarter and B profits of \$200,000 per quarter before A absorbed B, and that after absorbing B, A earned \$700,000 per quarter. A would figure in our tabulations as having rising profits, although the profits after merger, excluding those derived from the business formerly conducted by B, might be less than \$600,000. It did not seem feasible to eliminate such illusory growth from the figures. But mergers are sporadic and many would not alter the direction of change in profits.

²Our earliest samples are smaller than the National City Bank sample because we confine ourselves to companies whose profits are available for the full cycle.

TABLE I
 Characteristics of Samples of Quarterly Profits; Assets of Sample and Other Companies

CHARACTERISTICS	S A M P L E N U M B E R							
	1	2	3	4	5	6	7	8
Period covered	1Q 1920	1Q 1921	1Q 1923	1Q 1924	1Q 1926	1Q 1927	1Q 1929	1Q 1933
First quarter	4Q 1923	4Q 1924	4Q 1926	4Q 1927	4Q 1929	4Q 1933	4Q 1937	4Q 1938
Last quarter								
Ref. turn to which sample corresponds*		Peak	Trough	Peak	Trough	Peak	Trough	Peak
Level of business		2Q 1923	3Q 1924	3Q 1926	4Q 1927	2Q 1929	1Q 1933	2Q 1937
Date								
No. of cos. in sample	10	17	39	57	80	82	91	121
Producers of durables	7	14	32	44	73	73	94	123
Other companies	17	31	71	101	153	155	185	244
All companies	17	30	65	91	135	137	165	219
Mining or mfg. cos.	0	1	6	10	18	18	20	25
Cos. in other industries								
ASSETS (millions of dollars) ^b								
(1) All companies in sample	3867	4363	7399	8663	13412	12051	13621	14466
(2) Mfg. & mining cos. in sample	3867	4327	7268	8385	12579	11364	13017	13807
(3) Mfg. & mining cos. in U.S. ^c	d	d	76899	77147	82114	66760	64869	62337
(4) General Motors Corp.	593	593	921	1098	1325	1184	1567	1598
(5) U.S. Steel Corp.	2421	2414	2454	2434	2286	2103	1919	1711
(6) G.M. + U.S.S.C. (4) + (5)	3014	3007	3375	3532	3611	3287	3486	3309
(7) All others in sample (1) - (6)	853	1356	4024	5131	9801	8764	10135	11157
(8) Third largest company ^d	137	136	646	652	802	658	804	811
RATIOS								
(9) (2) ÷ (3)	d	d	.095	.109	.153	.173	.201	.221
(10) (6) ÷ (1)	.779	.689	.456	.408	.269	.273	.256	.229
(11) (8) ÷ (7)	.161	.100	.161	.127	.082	.075	.079	.073

Notes are at bottom of page 4.

Seasonal adjustments needed and made

The earnings of most of our companies were obviously affected by seasonal influences. From quarter to quarter they often followed a marked pattern of rise and fall, recurring year after year. As reported, such figures tell us little about the relation between profits and business cycles. Adjusted for seasonal variation, however, they may tell us more. We made such adjustments, company by company, wherever they seemed necessary, and the following discussion is based on seasonally adjusted data.

FEWER COMPANIES WITH RISING PROFITS IN LATE BUSINESS EXPANSION, MORE IN LATE CONTRACTION

Quarter by quarter changes

The seasonally adjusted data reveal a great diversity of profit experience that can be summarized in several ways. We shall begin with what is perhaps the simplest and most obvious procedure. In each quarter we can count the number of companies whose profits were higher than in the preceding quarter. (We count an enterprise that suffered a deficit in one quarter, but a larger deficit in the preceding quarter, as having increasing profits.) The number with rising profits can then be expressed as a percentage of all companies in the sample. In the second quarter of 1930, for instance, 59 of the 185 companies in our 1929-37 sample had higher profits (or smaller losses) than in the first quarter of 1930. The percentage with profits higher than in the preceding quarter was

NOTES TO TABLE 1

*From Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (NBER, 1946), p. 78.

^bCompiled from Moody's *Manuals*, except as noted. At end of period covered by sample.

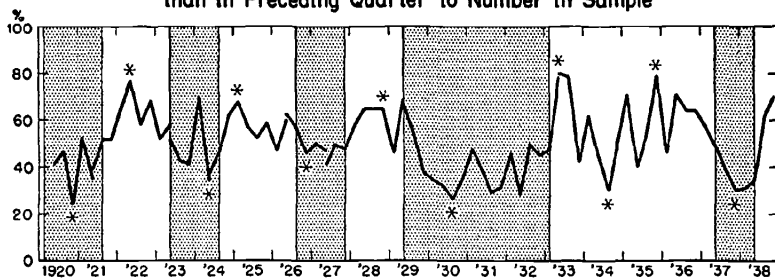
^cFrom Bureau of Internal Revenue, *Statistics of Income*, various years. Companies filing balance sheets.

^dNot available.

^eRepublic Steel, 1923, 1924; Bethlehem Steel, 1926, 1927, 1929; Shell Union Oil, 1933; E. I. Dupont de Nemours, 1937, 1938.

therefore 100 times $59 \div 185$, i.e., 32. When such percentages for the various quarters are plotted, they form a curve in which, although it is highly irregular, we discern major waves (Chart 1). We mark the crest of each wave (the quarter in which rising profits were most common) and the trough of each wave (the quarter in which rising profits were least common) with an asterisk. The quarter in which the fewest companies had rising profits usually preceded the trough in business by a long interval. The quarter in which the largest percentage of companies had rising profits came well before the business peak.³

Chart 1
Percentage Ratio, Number of Companies with Profits Higher than in Preceding Quarter to Number in Sample



Shaded periods are reference contractions.

The location of these turning points in the percentage of companies suggests a typical sequence of events. When economic activity at large begins to rise, the number of companies with improving profits is rising and continues to rise during the earlier stages of the business expansion. Long before the decline in economic activity at large, however, the number of companies with improving profits begins to diminish. The fall in the number continues to the end of the expansion in business and on into the earlier stages of the following contraction. Long before economic activity revives, however, the

³Because of the overlap in our samples, percentages like those in Chart I can be computed, for any year except 1920 and 1938, from either of two or in some cases any of three samples. For each year we used the largest and latest sample. Thus the percentages for the fourth quarter of 1933 were computed, not from the 1927-33 sample of 155 companies or the 1929-37 sample of 185 companies, but from the 1933-38 sample of 244 companies.

number of companies with growing profits again begins to increase.

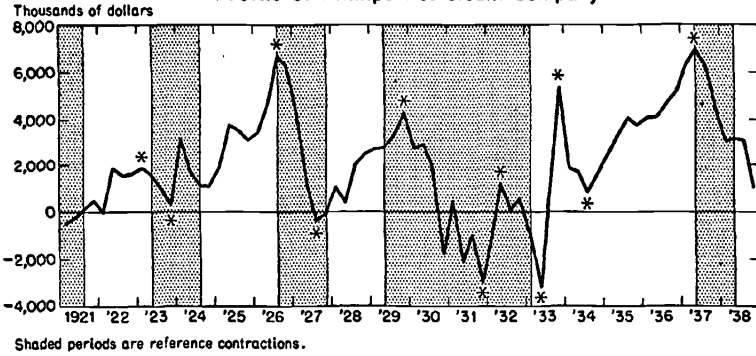
Broader movements

This method of classifying companies recognizes every fluctuation, every minor irregularity, in a company's profits. By another method, we can ignore the minor fluctuations and concentrate attention on the larger upswings and downswings. The second method requires a little explanation. Our first step is to chart the seasonally adjusted profits of each company. When we examine such a chart we usually find that the company's history can be divided into periods of rising and periods of falling profits. Months of outstandingly high earnings we call peaks, months of conspicuously low earnings, troughs. We now say that a company's profits were 'in expansion' in every quarter between a trough and the next peak. We say they were 'in contraction' in every quarter between a peak and the next trough. In marking peaks and troughs we follow a set of rules, one of which is that peaks must be at least fifteen months apart, and so must troughs.⁴ In other words, each full cycle (measured from peak to peak or from trough to trough) must be at least fifteen months long. For this and other reasons, many minor fluctuations do not win recognition as expansions or contractions.

When the peaks and troughs, if any, in the profits of a company have been marked, we classify that company, in each quarter, according to whether its profits were expanding or at a peak, on the one hand, or contracting or at a trough, on the other. This is the second method of classification, and it produces somewhat different results than the first. In the profits of the Phillips Petroleum Company, for example, an expansion runs from a trough in the fourth quarter of 1923 to a peak in the third quarter of 1926 (Chart 2). But profits fell in certain quarters — in the second, third, and fourth quarters of 1924 and the third and fourth of 1925. By the first method the company would be classified as having falling profits in these five quarters; by the second method, it would be classified as having expanding profits.

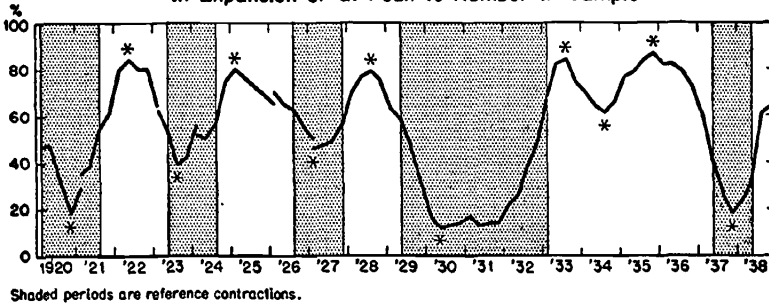
⁴For the rules, see pp. 56-66 of the volume mentioned in Table 1, note a.

Chart 2
Profits of Phillips Petroleum Company



When all companies have been classified by the second method, the percentage with expanding or peak profits can be computed for each quarter. Plotting the resulting percentages (Chart 3), we obtain a curve smoother than the curve on Chart 1. High and low points (marked by asterisks) are easier to designate on the new curve. The story it tells however, is similar to the earlier one. At the beginning of a business expansion, the number of companies with profits in expansion or at peak is rising. It continues to rise during the earlier stages of the business expansion, but declines during the later stages. The number continues to decline during the earlier stages of the following business contraction, but rises during the later stages of that contraction.⁵

Chart 3
Percentage Ratio, Number of Companies with Profits
in Expansion or at Peak to Number in Sample



⁵Computations for each quarter based on latest and largest sample; see note 3.

TURNING POINTS IN PROFITS OF INDIVIDUAL COMPANIES
CLUSTERED ABOUT TURNS IN BUSINESS

When the number of companies with expanding or peak profits increases from one quarter to the next, the number with profits at trough in the first quarter must have exceeded the number at peak.⁶ If the number with profits in expansion or at peak increases for a long period, troughs must have exceeded peaks for an almost coinciding period. Conversely, if the number with profits contracting or at trough increases for a considerable period, peaks must have exceeded troughs for a similar period. Chart 3 therefore tells us that in each of several quarters before and after a business peak, some companies arrived at the peak of their profits, and that profit peaks were more common than troughs both before and after the business peak. Profit troughs were similarly clustered about the business trough.

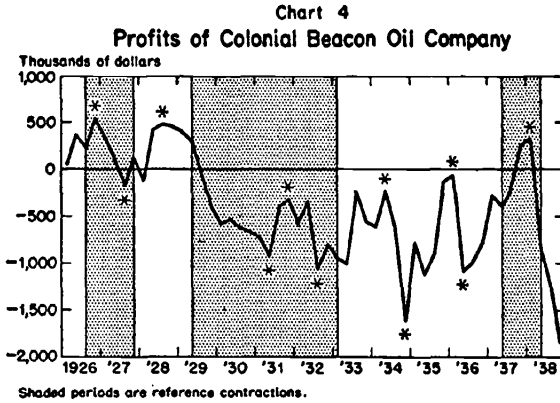
But sometimes a company has two or more peaks near a business peak, or two or more troughs near a business trough. In such cases it might be preferable to regard one of the turns as corresponding to the business turn and ignore the others. Colonial Beacon Oil Company, for example, had a trough in the second quarter of 1931, another in the third quarter of

⁶If we classify companies by their status in any one quarter, then subclassify them by their status in the next quarter we get the following exhaustive subclassification. A moment's consideration will show that the change in the number in expansion or at peak equals $(A+B+C+D) - (C+D+E+F)$ or $(A+B) - (E+F)$.

	FIRST QUARTER	SECOND QUARTER
A	At trough	In expansion
†B	At trough	At peak
C	In expansion	In expansion
D	In expansion	At peak
E	At peak	In contraction
†F	At peak	At trough
G	In contraction	In contraction
H	In contraction	At trough

†Instances in these categories are very rare, almost impossible.

1932, a third in the fourth quarter of 1934, and still another in the second quarter of 1936 (Chart 4). In such cases, we re-



gard the turning point in profits nearest in time to the turning point in business as corresponding to the latter. We count Colonial as having a trough corresponding to the reference trough I33 in the third quarter of 1932. Occasionally, two turns in profits were equally near the business turn. American Safety Razor Corporation, for example, had a trough in IV26, four quarters earlier than the reference trough IV27, and another in IV28, four quarters later than the reference turn (Chart 5). In this case we regarded the deeper trough, in 1926, as 'corresponding'.

Turns in profits occurred in numerous quarters both be-

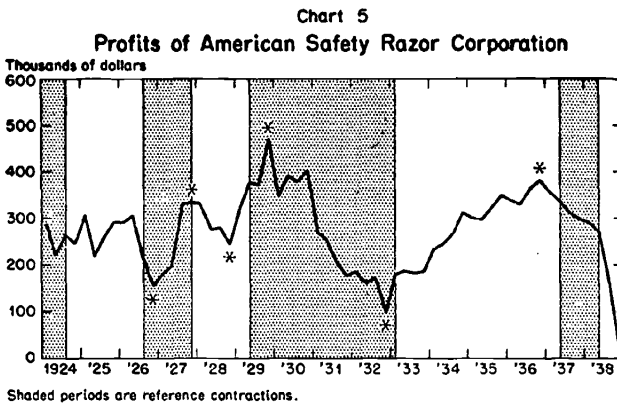
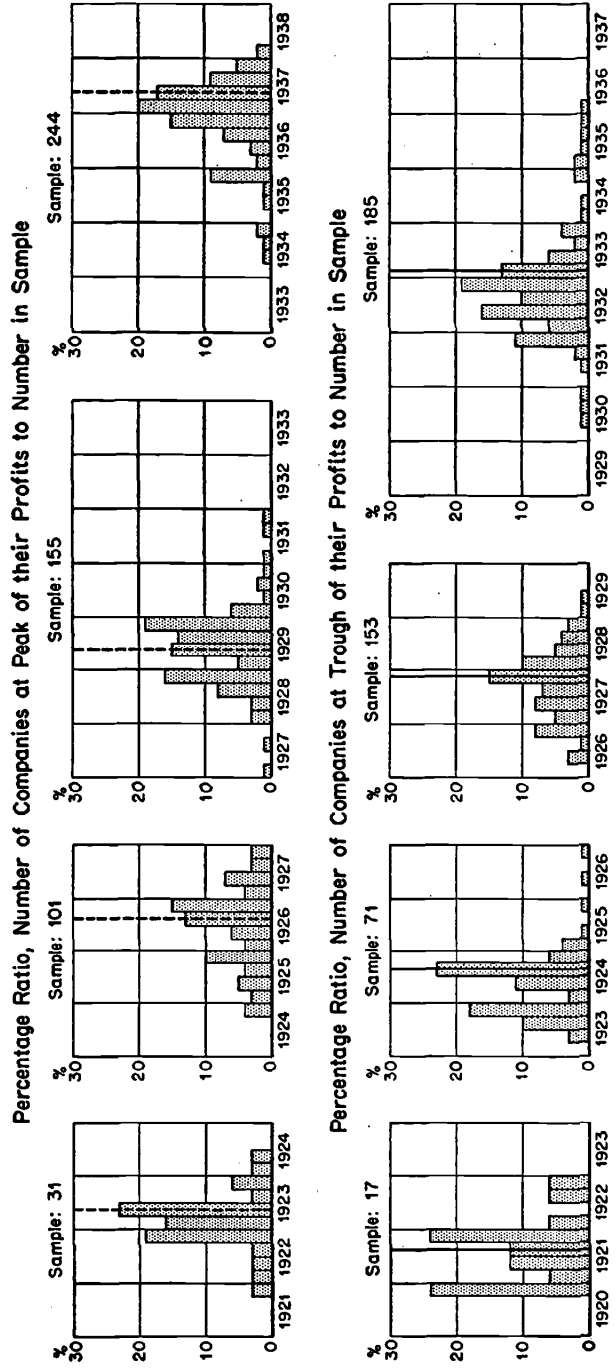


Chart 6
Scattering of Turns in Profits



Broken lines indicate reference peaks, solid lines troughs.
Only corresponding turns are counted (see text).
Companies without turns are counted in divisor.

fore and after the business turn to which they 'correspond' (Chart 6). Nevertheless there was a noticeable concentration around the business turns. Peaks in the profits of individual companies were much more common near a reference peak than near a reference trough; and troughs in profits were much more common near the reference low points. In a very rough way, turning points in profits became more and more frequent up to the quarter of the turn in business, then became less and less frequent as the business turn receded into the past. If we had larger samples we might find a smoother change in frequency.⁷

ALWAYS SOME EXCEPTIONAL COMPANIES

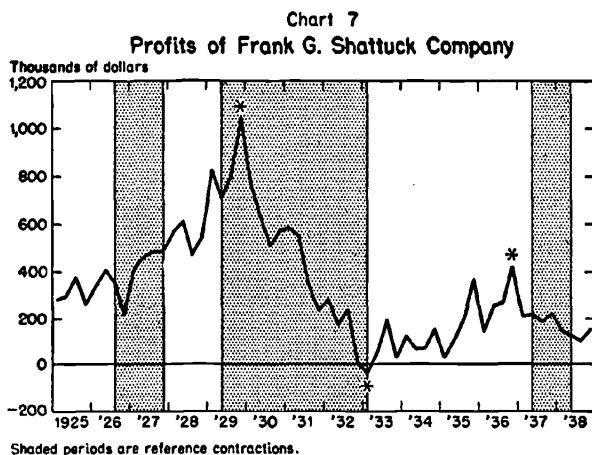
At every stage of the business cycle the fortunes of some companies, temporarily at least, ran counter to the main stream. The quarter by quarter data indicate that in the quarter with fewest rises during the great 1929-37 depression, 26 percent of the corporations had rising profits. In the quarter of the 1920's most favorable to profits, 23 percent had diminishing earnings.⁸ When we disregard minor fluctuations exceptions are fewer but there are still some. In every quarter of the 1920's the profits of at least 16 percent of the companies were contracting or at a trough. In every quarter of the 1930's the profits of at least 12 percent were expanding or at a peak.

In the case of every business turn except 1933 some firms had no corresponding turn in their net income. About one-fifth did not have any turn corresponding to the 1926 business peak, and almost one-third missed the business trough in

⁷Quite a few of the fourth-quarter percentages on Chart 6 jut beyond their neighbors. Corporations sometimes make year-end accounting corrections that affect the fourth-quarter figures. Our seasonal adjustments apparently fail to neutralize these effects (which are highly irregular) completely. If the adjustments had been more successful the rise in frequency of profit turns before, and the decline in frequency after, a business turn might have been smoother.

⁸A company's profits seldom remained constant. The interval from the curve up to the 100 percent line, therefore, approximately measures the percentage of companies in each quarter whose profits were smaller than in the preceding quarter.

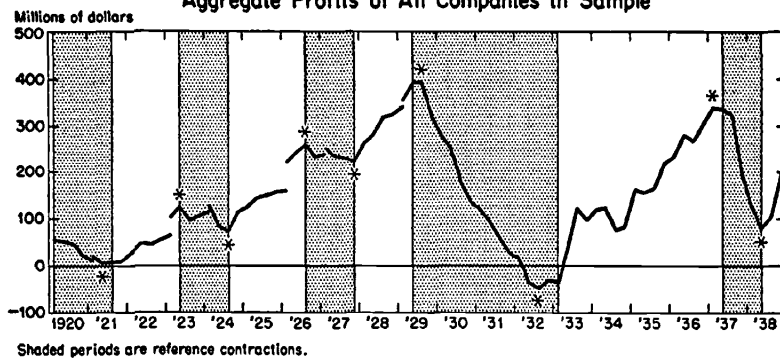
1927 (Table 5, lines 19 and 20). Sometimes the absence of a turn means that the profits of a company grew in both contraction and expansion. The earnings of Frank G. Shattuck Company, for example, increased in both 1926-27 and 1927-29 (Chart 7). In other instances the lack of a turn may mean that earnings declined in both expansion and contraction. In still others it may mean the movement was so irregular that we are unwilling to designate a 'corresponding' turn.



NO CONSISTENT LEAD OR LAG IN AGGREGATE PROFITS

Although numerous companies experienced declining profits while business activity was still in its ascendant phase, the aggregate profits of all the companies studied continued to grow practically up to the end of the business expansion (Chart 8). The increases in the profits of the remaining companies exceeded the decreases in the profits of the companies whose earnings were waning. In contraction, similarly, aggregate profits diminished up to the end, even though a gradually increasing number of companies were becoming more prosperous. The turning point in aggregate profits coincided with the reference turn in five instances, preceded it by one quarter in 1921 and 1937 and two quarters in 1932-33, followed it by one quarter in 1929. There was no consistent lead, no consistent lag.

Chart 8
Aggregate Profits of All Companies in Sample



All our samples include two very large corporations — General Motors and United States Steel. They held at first an overwhelming and even later a large percentage of the assets belonging to all the companies included (Table 1, line 10). In our calculations regarding the number of companies in expansion or at peak, or at a 'corresponding' turn, a large company, of course, counts for no more than a small one. In considering the dates of turns in aggregate profits it may be appropriate to exclude the earnings of the two giants. In our worksheets we have a chart, similar to Chart 8, pertaining to the profits of all sample companies except these two. Its peaks and troughs differ somewhat from those on Chart 8 but they do not differ systematically from the reference turns. They lead the latter four times, coincide with them four times, and follow them once. There was one interval of three quarters, another of two, the rest were only one quarter long (Table 2, col. 4 and 5).

Although aggregate profits continued to grow after the number of companies with rising profits began to decline, the subsequent growth was less rapid, except in 1932-37 (Table 3). The fall in the aggregate was, likewise, less rapid after the number of companies with growing profits began to increase, except in 1937-38.

TABLE 2
Turning Points in Profits

NATURE OF TURN	NO. OF COMPANIES WITH		DATE OF TURN IN		BUSINESS REFERENCE (REFERENCE & CHRONOLOGY)	NO. OF QUARTERS BETWEEN DATES IN COLUMNS					
	Profits higher than in preceding quarter	Profits in expansion or at peak	Incl. G.M. & U.S.S.C.	AGGREGATE PROFITS Excl. G.M. & U.S.S.C.		(1) & (3)	(2) & (4)	(1) & (3)	(2) & (4)	(1) & (5)	(2) & (5)
Trough	4Q 1920	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Peak	2Q 1922	4Q 1920	2Q 1921	4Q 1920	3Q 1921	2	2	0	0	3	3
Trough	2Q 1924	2Q 1922	2Q 1923	4Q 1922	2Q 1923	4	4	2	2	4	4
Peak	1Q 1925	3Q 1923	3Q 1924	3Q 1924	3Q 1924	1	4	1	4	1	4
Trough	4Q 1926	1Q 1925	3Q 1926	2Q 1926	3Q 1926	6	6	5	5	6	6
Peak	4Q 1928	1Q 1927	4Q 1927	4Q 1927	4Q 1927	4	3	4	3	4	3
Trough	3Q 1930	3Q 1928	3Q 1929	3Q 1929	2Q 1929	3	4	3	4	2	3
Peak	4Q 1935	2Q 1930	3Q 1932	1Q 1933	1Q 1933	8	9	10	11	10	11
Trough	4Q 1937	4Q 1935	1Q 1937	1Q 1937	2Q 1937	5	5	5	5	6	6
		4Q 1937	2Q 1938	2Q 1938	2Q 1938	2	2	2	2	2	2

TABLE 3

Aggregate Profits: Change per Quarter in Earlier and in Later Quarters of Each Business Phase

DATE	CYCLICAL STATUS OF		COS. IN SAMPLE		CHANGE FROM PRECEDING DATE (\$'000)	QUARTERS FROM PRECEDING DATE	CHANGE PER QUARTER (\$'000)
	Aggregate profits	No. of cos. in expansion or at peak	No.	Agg. profits (\$'000)			
2Q 1921	At Trough	Rising	31	4928			
2Q 1922	Rising	At Peak	31	49245	44317	4	11079
2Q 1923	At Peak	Falling	31	75714	26469	4	6617
2Q 1923	At Peak	Falling	71	124955			
3Q 1923	Falling	At Trough	71	96650	-28305	1	-28305
3Q 1924	At Trough	Rising	71	66613	-30037	4	-7509
3Q 1924	At Trough	Rising	101	71630			
1Q 1925	Rising	At Peak	101	124232	52602	2	26301
3Q 1926	At Peak	Falling	101	196010	71778	6	11963
3Q 1926	At Peak	Falling	153	261444			
1Q 1927	Falling	At Trough	153	239613	-21831	2	-10916
4Q 1927	At Trough	Rising	153	213868	-25745	3	-8582
4Q 1927	At Trough	Rising	155	222450			
3Q 1928	Rising	At Peak	155	321850	99400	3	33133
3Q 1929	At Peak	Falling	155	380675	58825	4	14706
3Q 1929	At Peak	Falling	185	394633			
2Q 1930	Falling	At Trough	185	249617	-145016	3	-48339
3Q 1932	At Trough	Rising	185	-48700	-298317	9	-33146
3Q 1932	At Trough	Rising	185	-48700			
4Q 1935	Rising	At Peak	185	197229	245929	13	18918
1Q 1937	At Peak	Falling	185	311082	113853	5	22771
1Q 1937	At Peak	Falling	244	340016			
4Q 1937	Falling	At Trough	244	194812	-145204	3	-48401
2Q 1938	At Trough	Rising	244	81054	-113758	2	-56879

POSSIBLE EXPLANATIONS OF EARLY CYCLICAL CHANGES

Encroachment of costs on prices

Wesley C. Mitchell expressed the view in 1913 that during the course of a business expansion the cost of doing business sooner or later begins to increase more or less generally throughout industry. The rise in cost, he thought, is not necessarily accompanied by a general decline in profits. Quite possibly, profits in the aggregate might be at their highest just before business activity begins to recede. But not all enterprises, he reasoned, would be able to offset rising costs by raising the prices they charge for their products. Some would be prevented by law, governmental regulation, custom,

or high sensitivity of buyers to advances in prices. Their profits must begin to decline even though the aggregate profits of all are still growing. Their difficulties would make their banking and commercial creditors more reluctant than before to accommodate them. Distrust of the future, curtailment of capital expenditures and other adverse developments, spreading along the many lines of interdependence among enterprises, might lead to a general recession. Conversely, during the later stages of a business contraction, Mitchell believed, costs tend to fall. The decline in cost would not in all cases be translated into correspondingly lower prices received; the profits of some firms would begin to rise. In one way or another, the companies with improving fortunes might presently become focal points in a business revival.⁹

Our findings support those of Mitchell's surmises on which they have a direct bearing. The number of companies with diminishing profits does begin to rise before the end of expansion. Despite the increasing number of firms with falling profits, the aggregate profits of all the firms studied continue to rise until the end. In contractions, too, the sequence of events is about what Mitchell expected.

Scatter of turning points in production

The early declines we find in the profits of some companies, however, do not necessarily reflect a squeeze between costs and prices. An early rise in cost per unit of goods sold, unaccompanied by an equal or larger rise in the price received for it, will, to be sure, reduce profit per unit and may reduce the aggregate profits of a company. On the other hand, an early decline in the physical volume of goods a company sells will reduce its aggregate profit even if there is no change in unit profit and may reduce the aggregate even if profit per unit increases. We know that in every expansion the sales of some industries reach peaks at various early dates, then decline. The scattering of turning points in the sales of individual enterprises is doubtless more pronounced. The early declines

⁹Wesley C. Mitchell, *Business Cycles* (University of California Press, 1913), pp. 457-514, 562-9, or *Business Cycles and their Causes* (reprint of Part III of the same volume, 1941), pp. 8-74, 139-47.

in the profits of some corporations may reflect early declines in production sold, pressure of cost against prices, or both. (In enterprises with heavy overhead cost, the effect of declining volume would often be reenforced by an accompanying decline in unit profit.) One explanation may fit the facts (which we do not have) about prices, costs, and volume in some instances, another explanation may fit them in other instances. Conversely, the early rise we observe in the profits of some corporations during business contractions may signify a more favorable relation of prices received to unit costs, a rise in volume, or both.

PROFITS IN DURABLES DID NOT LEAD PROFITS IN OTHER INDUSTRIES

It might be illuminating to know whether the companies with early turns in their profits have other characteristics in common — whether, for example, the profits of some branches of industry usually decline before those of others. Unfortunately our data do not permit us to explore such questions in detail. The number of companies for which we have figures in a particular industry, such as the manufacture of foods or of hardware and tools, is too small to support a generalization about profits in that industry. We have, however, classified every company broadly either as a producer of durable goods primarily or as a producer of nondurable goods (producers of services are assigned to the latter group). There was no consistent difference between the two classes. In some cycles producers of durables had earlier turns than producers of nondurables; but in other cycles it was the latter who had the earlier turns (Table 4; Table 5, lines 21 and 22; Table 6).

CAN PROFITS FORECAST BUSINESS CYCLES?

The consistent leads on Charts 1 and 3 raise a hopeful question: can one forecast turning points in general business activity by following the fortunes of a group of companies and counting, quarter by quarter, the number with rising profits? In fact the predictive value of such information is rather limited.

TABLE 4
Date of Most Common Turning Point in Profits of Producers
of Durables and of Nondurables

REFERENCE TURN		QUARTER IN WHICH LARGEST NO. OF COS. HAD CORRESPONDING TURN IN PROFITS ^a		LEADER	LENGTH OF LEAD (QUARTERS)
Date	Kind	Durables	Nondurables		
3Q 1921	Trough	4Q 1921	4Q 1920	Nondurables	4
2Q 1923	Peak	2Q 1923	4Q 1922	Nondurables	2
3Q 1924	Trough	3Q 1924	4Q 1923	Nondurables	3
3Q 1926	Peak	4Q 1925, 4Q 1926 ^b	4Q 1926	Durables?	4?
4Q 1927	Trough	4Q 1927	1Q 1928	Durables	1
2Q 1929	Peak	4Q 1928	4Q 1929	Durables	4
1Q 1933	Trough	4Q 1932	1Q 1933	Durables	1
2Q 1937	Peak	1Q 1937	4Q 1936, 1Q 1937 ^b	Nondurables?	1?

^aAs indicated by two charts in our files, one for each class of company, similar in design to Chart 6 pertaining to all companies.

^bNumber same in both quarters.

A possible forecasting procedure

If a predictive effort were made it would probably be better to employ the method underlying Chart 1 than the method underlying Chart 3. The latter involves determining in each quarter the specific cycle status of each company. This can be done only if peaks and troughs in its profits have been designated. As we have noted, the profits of individual companies are often highly irregular. A quarter cannot confidently be recognized as a peak (or trough) until several later quarters have elapsed. But if one must wait to determine the status of individual companies, one must wait also to count the number in expansion or at peak. The event to be predicted might be upon us before the 'prediction' was made. It must be conceded, however, that the smoother curve produced by the method of Chart 3 is likely to contain fewer minor irregularities that might be mistaken for major turns.

Even if the method of Chart 1 were adopted, the problem of recognizing turns promptly would still have to be faced, though in only one series of figures: the percentage of companies with profits higher than in preceding quarter. A simple if arbitrary rule might be: in a business expansion, let the first quarter showing a rise in the percentage, followed immediately by a decline, be taken as the peak in the percentage; in a contraction, let the first quarter showing a decline, followed

TABLE 5: Frequency of Turning Points in Early, Median, and Late Quarters
Producers of Durables and of Nondurables

(1) (2)	Kind of turn Median quarter*	N U M B E R O F C O M P A N I E S				Peak 4Q 1929	Trough 2Q 1932	Peak 1Q 1937
		Trough 3Q 1921	Peak 1Q 1923	Trough 2Q 1924	Peak 3Q 1926			
Producers of durables								
With turn in								
(3)	Earlier quarters	3	2	9	27	30	32	53
(4)	Median quarter	2	3	7	7	16	16	22
(5)	Later quarters	4	9	16	14	15	31	16
(6)	Some quarter (3) + (4) + (5)	9	14	32	48	61	79	91
(7)	No quarter	1	3	7	9	19	3	0
(8)	In sample (6) + (7)	10	17	39	57	80	82	91
Producers of nondurables								
With turn in								
(9)	Earlier quarters	4	8	15	9	9	23	35
(10)	Median quarter	0	2	1	6	7	7	14
(11)	Later quarters	3	3	11	18	20	41	45
(12)	Some quarter (9) + (10) + (11)	7	13	27	33	46	71	94
(13)	No quarter	0	1	5	11	27	2	0
(14)	In sample (12) + (13)	7	14	32	44	73	73	94
Durables & nondurables								
With turn in								
(15)	Earlier quarters	7	10	24	36	49	55	88
(16)	Median quarter	2	5	8	13	23	23	36
(17)	Later quarters	7	12	27	32	35	72	61
(18)	Some quarter (15) + (16) + (17)	16	27	59	81	107	150	185
(19)	No quarter	1	4	12	20	46	5	0
(20)	In sample (18) + (19)	17	31	71	101	153	155	185
RATIO OF EARLY TO ALL TURNS								
(21)	Durables (3) ÷ (6)	.333	.143	.281	.562	.492	.405	.582
(22)	Nondurables (9) ÷ (12)	.571	.615	.556	.273	.413	.324	.372
(23)	All corporations (15) ÷ (18)	.438	.370	.407	.444	.458	.367	.476

*Less than half of all the companies (durables plus nondurables) with corresponding turns had them before this quarter; more than half had them before or in this quarter.

TABLE 6

Peaks and Troughs in (A) the Number of Companies with Profits Higher than in Preceding Quarter, (B) the Number with Expanding or Peak Profits, 1921-38: Producers of Durables and of Nondurables

LEVEL OF NUMBER	QUARTER IN WHICH NO. OF COMPANIES REACHED LEVEL*		LEADER	LENGTH OF LEAD (QUARTERS)
	Durables	Nondurables		
NUMBER WITH PROFITS HIGHER THAN IN PRECEDING QUARTER				
Trough	2Q 1921	4Q 1920	Nondurables	2
Peak	2Q 1922	1Q 1922, 2Q 1922 ^b	Nondurables?	1?
Trough	4Q 1923	2Q 1924	Durables	2
Peak	1Q 1925	2Q 1926	Durables	5
Trough	1Q 1927	2Q 1927	Durables	1
Peak	3Q 1928	2Q 1928	Nondurables	1
Trough	3Q 1931	2Q 1932	Durables	3
Peak	4Q 1935	4Q 1935	Neither	0
Trough	4Q 1937	1Q 1938	Durables	1
NUMBER WITH EXPANDING OR PEAK PROFITS				
Trough	4Q 1920, 1Q 1921 ^b	4Q 1920	Nondurables?	1?
Peak	4Q 1922	1Q 1922	Nondurables	3
Trough	4Q 1923	2Q 1923	Nondurables	2
Peak	1Q 1925	2Q 1926	Durables	5
Trough	1Q 1927	3Q 1927	Durables	2
Peak	3Q 1928	4Q 1928	Durables	1
Trough	2Q 1930	4Q 1930	Durables	2
Peak	4Q 1935	4Q 1935	Neither	0
Trough	4Q 1937	4Q 1937	Neither	0

'Extra' peaks and troughs in 1933 and 1934 are not included.

*As indicated by separate charts for durables and nondurables, similar in design to Charts 1 and 3.

^bNumber same in both quarters.

by a rise, be taken as the trough. Suppose that an economic analyst, compiling and plotting the data underlying Chart 1 as they became available from quarter to quarter, had adhered to this rule, beginning in 1920; how would he have fared?

Before one can answer the question, one must note that it is difficult to say how he would have proceeded in 1933-37. He would have found a peak in the percentage of companies in the second quarter of 1933, just as we do in retrospect. But we know that it was an 'extra' peak; there was no business peak reasonably soon after it. Business conditions were, however, mixed; one might say there was a quasi-contraction

shortly after the second quarter of 1933. Assume the analyst recognized a quasi-contraction; where would he have placed his next peak in the percentage of companies? It would depend upon where he placed the quasi-trough. Most likely he would have found a peak in the number of companies in the first quarter of 1935. The other decisions he would have made are summarized in Table 7, column (1). With two exceptions his turning points would have been the same as those on Chart 1.

TABLE 7
Hypothetical Forecasts of Business Turns

NATURE OF TURN	HYPOTHETICAL DATE OF		NO. OF QUARTERS BY WHICH HYPOTHETICAL DATE PRECEDED BUSINESS TURN	
	Turn in number of companies	Forecast	Date in (1)	Date in (2)
	(1)	(2)	(3)	(4)
Trough	4Q 1920*	2Q 1921	3	1
Peak	2Q 1922	4Q 1922	4	2
Trough	4Q 1923	2Q 1924	3	1
Peak	1Q 1925	3Q 1925	6	4
Trough	4Q 1926	2Q 1927	4	2
Peak	4Q 1928	2Q 1929	2	0
Trough	3Q 1930	1Q 1931	10	8
Peak	1Q 1935	3Q 1935	9	7
Trough	4Q 1937	2Q 1938	2	0

Dates of business turns are given in Table 2, Col. 5.

For nature of hypothesis, see text.

*Doubtful; if data were available for the first quarter of 1920 and if they showed a higher percentage of companies than in the second quarter, the latter would be the hypothetical date.

Variable leads

The interval between the date the analyst would have designated in the number of companies and the actual date of the following business turn was highly variable, as the accom-

Length of lead, in quarters	2	3	4	5	6	7	8	9	10
Number of instances	2	2	2	0	1	0	0	1	1

panying summary from Table 7, column (3), indicates. The turning point in the percentage of companies with rising profits may tell us that a turn in business is coming; but this, in an economy in which business cycles are known to prevail, is hardly news. It does not tell us with any precision when a turn in business is coming.

On the other hand, a prediction that a business turn would occur at some time during the year after the date of the forecast would have been correct in six of nine instances. Perhaps a range of twelve months and a record of two successes out of three may be useful for some purposes.

Delayed availability

For certain kinds of events there is an inevitable lag between the time they occur and the time it becomes known that they have occurred. Our analyst could not decide that a quarter was a peak until he had a figure for the next quarter; and figures for earnings in a quarter are not published until the quarter has closed. The analyst could not name his turn in the number of companies and forecast an approaching turn in business until two quarters after the turn in the number of companies. In 2 instances out of 9 he would have made his 'forecast' in the quarter in which the business turn occurred: in 2 others he would have anticipated the business turn by only one quarter (Table 7, col. 4).

In defense of the forecasting procedure it might be replied that there is a lag in the recognition of high and low points in business also. They are identified only in retrospect. Therefore, even when the evidence of a turn in the number of companies first becomes available in the quarter in which business itself turns, that evidence might make it possible to identify the business turn more promptly. This defense would be valid if the lead were fairly constant from cycle to cycle. But it is not. When it became apparent to our imaginary analyst, in the second quarter of 1938, that a trough in the percentage of companies had occurred in the last quarter of 1937, his experience did not tell him how soon to expect a trough in business. It might still be two years away.

Profits one piece of evidence

Changes in the percentage of companies with rising profits, then, do not forecast business conditions with respectable precision. But people who are obliged to make decisions in which the prospective course of business is a factor might nevertheless weigh information of this character together with other evidence. Further research, too, may yield an explanation of variations in the length of lead. If it does, the forecasting or identifying value of data on the distribution of changes in profits among companies will be enhanced.¹⁰

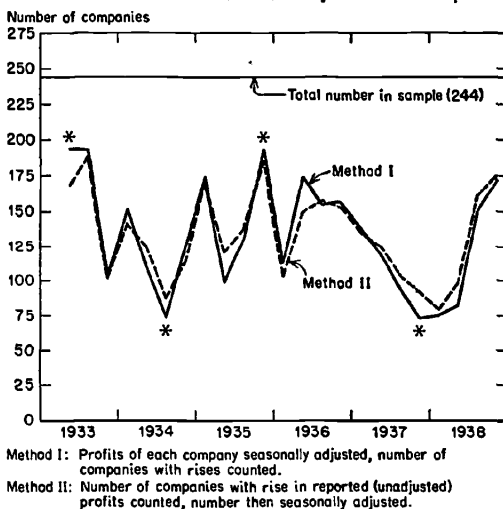
A simplified approach to the seasonal problem

The procedure we followed may be unnecessarily complex and expensive for forecasting. We adjusted the reported profits of each company for seasonal variation, then counted the number whose adjusted profits increased. Instead, we could count the number of companies whose profits, as reported, increased for seasonal or other reasons; we could express that number as a percentage of all companies for which we had data; and finally we could adjust that percentage itself for seasonal variation. We did this for the firms in our largest sample (244 corporations, 1933-38). The result-

¹⁰An analyst of current business conditions who watched the kind of evidence we have discussed would want to know as promptly and definitely as possible how any forecast he ventured was turning out. He would need to recognize the turn in 'business' soon after it occurred. In this paper we have used the 'reference' turns of Burns and Mitchell who, in fixing their turns, considered the evidence of economic events following by a considerable interval the dates on which they eventually decided, and survey a wide range of economic activities. If our analyst wished a quicker determination, he could make his forecast apply to some single, important, measurable aspect of economic activity, such as car-loadings, factory employment, or an index of industrial production. Such a measure should have turning points that never come early and never late in the procession of turns in many kinds of activity. No single series of figures will meet this requirement. A group of activities would be better. Its components would often have their respective turns in different quarters. The business turn could be defined as the median turn for the group. If there were seven activities and one reached a trough in March, two in April, one in July, and the others later or not at all, July would be the business trough. Geoffrey H. Moore, in *Statistical Indicators of Cyclical Revivals and Recessions* (NBER, *Occasional Paper* 31, 1950), discusses more fully the reasons for preferring a group, and presents one.

ing curve (Chart 9) is similar in general contour to the part of the curve on Chart 1 that pertains to the same years. Both forecast the 1938 business trough, although the new curve leads it by only one quarter instead of two. Both show two 'extra' turns in 1933-34 (on the new curve, however, the first extra turn is somewhat uncertain, for lack of earlier data, and it apparently came one quarter later than its analogue on Chart 1).

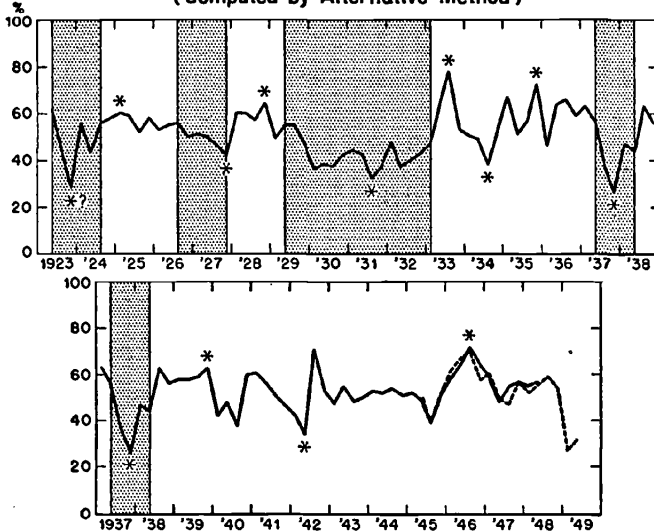
Chart 9
 Number of Companies (out of 244) with Profits
 Higher than in Preceding Quarter
 Two Methods of Seasonal Adjustment Compared



The new procedure makes it possible to broaden the base of our calculations. We held down the size of our earlier samples by requiring that data must be available for a corporation over at least one entire business cycle. Although adopted for another purpose, this requirement was almost necessary to provide enough information to compute proper seasonal adjustment factors. For our present purpose we can drop it, since we are no longer adjusting each company's earnings. We now accept, as part of the data on change from any quarter to the next, data for any company whose profits, for those two quarters, appear in the National City Bank file. We count the number of companies with higher profits in the

second quarter and the number for which there are data on both quarters. We express the first number as a percentage of the second, and seasonally adjust the series of percentages so obtained.¹¹ From 1923 to 1938 peaks or troughs in the seasonally adjusted percentage usually preceded those in business (Chart 10). The new method therefore indicates the same relation as the old. But it falls down in one instance: in the fourth quarter of 1927 the new trough in the percentage of companies with rising profits coincided with the trough in business.

Chart 10
 Percentage Ratio, Number of Companies with Profits Higher than in Preceding Quarter to Number in Sample
 (Computed by Alternative Method)



Shaded periods are reference contractions.
 For explanation of broken line, 1945-49, see text.

¹¹The total number of companies varies from one pair of quarters to the next. Some companies inevitably drop out of the Bank file from time to time and are replaced by others. Whenever this happens, the number of companies available for a pair of quarters is reduced. In 1923-29 the total number available ranged from 119 to 195; thereafter it always exceeded 190. We do not think the comparability of the percentages is seriously affected. The alternative would be to reduce our sample drastically, as in our earlier procedure.

Old sequence disturbed during war

Since 1938 profits have been subject to many unusual, powerful, and abruptly changing influences. A large part of industry converted from peaceful to warlike activities, then converted back. Rapidly rising prices created inventory profits.¹² Severe strikes occurred from time to time. Heavy surtaxes were added in successive steps to corporate income taxes. An excess profits tax was imposed, stepped up several times, then removed entirely. Renegotiation of contracts and tax refunds in connection with carry-over of losses complicated the tax picture. Some corporations included reserves for various contingencies in their deductions from income as reported to stockholders; some of these reserve entries were afterwards reversed, swelling the final income figures for later periods. Changes in the percentage of companies with rising profits were highly irregular (Chart 10). We find three 'specific' turns in the curve, but in doing so we pass over the crater in 1940, the sharp temporary rise to the third quarter of 1942, the low point in the third quarter of 1945, and other pronounced irregularities.

In the middle of this era, however, there was a period of relative stability. Production and employment indexes show that industrial activity was at a high and fairly steady level in 1943, 1944, and the first half of 1945 (with perhaps a mild decline in the last year and a half). Large increases in profits after taxes were impossible because of the high tax level. The percentage of companies with rising profits fluctuated unusually little, and the number with rising was about the same as the number with falling profits.

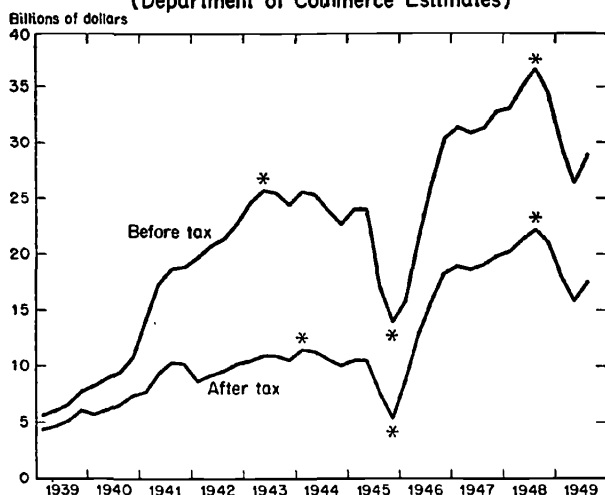
The first two of the three designated 'specific' turns since 1938 can hardly be regarded as corresponding to turns in business. Students of cycles may eventually agree that there was a business peak near the beginning of 1944 and a trough near the beginning of 1946. (Some major industries, however, expanded their production in this period.) But what

¹²Some companies minimized such profits by 'last-in first-out' accounting, but many did not.

would it mean to link the 1939 peak in the percentage of companies with a business peak four or five years later? The 1942 trough in the percentage was followed more immediately by the business quasi-peak than by the putative business trough.

The history of aggregate profits after 1939 was more or less similar to that of industrial activity (Charts 11 and 12).¹³ The sharp rise in tax rates effective January 1, 1942, however, virtually halted at a relatively early date the growth of profits after taxes for the duration of the war.¹⁴ Through

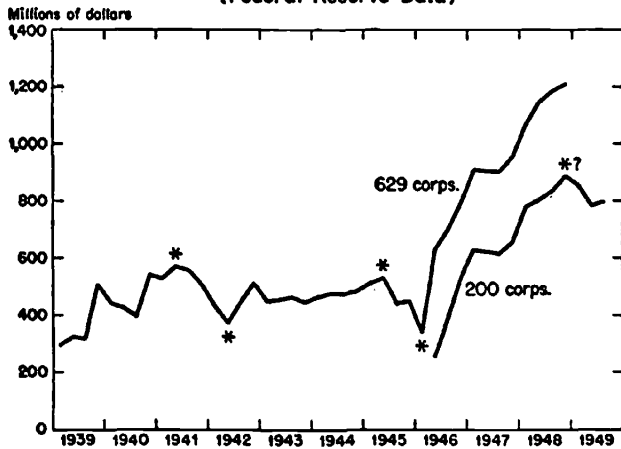
Chart 11
Profits of All Corporations
Seasonally Adjusted Annual Rates
 (Department of Commerce Estimates)



¹³The data for Chart 11 are from the *Survey of Current Business*, July 1949 and later issues. The data for Chart 12 are those compiled from corporate reports by the Board of Governors of the Federal Reserve System and published in the *Federal Reserve Bulletin*. They pertain to profits after taxes. The Board has recently discontinued the larger sample, 629 corporations. Of these, 555 were classified as engaged in manufacturing or mining. All 200 in the new sample are in manufacturing. We have seasonally adjusted the Reserve Board data.

¹⁴The change in tax rates obviously explains the mild 1941-42 decline in profits of all corporations after taxes. It doubtless explains also a large part of the somewhat similar decline in the earnings of the 629 companies. We think the former decline too mild to be called a contraction, but recognize a contraction in the latter.

Chart 12
Earnings of Large Industrial Corporations
(Federal Reserve Data)



1945 the turning points in the percentage of companies (Chart 10) were about as poorly related to the turning points in aggregate profits as they were to the changes in business activity.

Sequence reestablished?

On the other hand, the third turn in the percentage of companies, i.e., the 1946 peak, might be regarded as heralding the peaks in business and profits which apparently occurred late in 1948. But the interval, about two years, is uncommonly long.

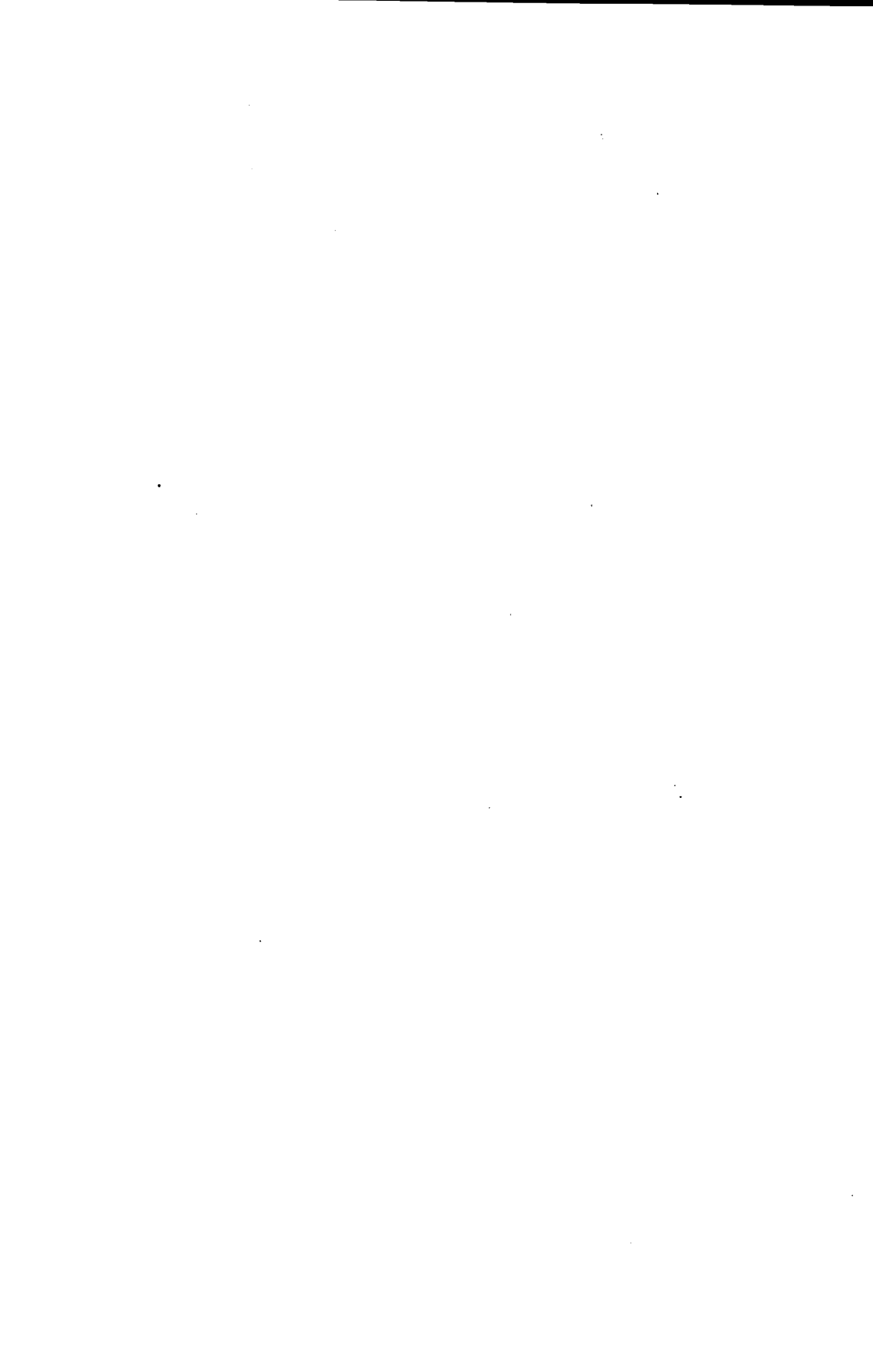
The National City Bank recently discontinued its 200-company sample as such and replaced it by a 400-company sample beginning in 1945. As before, to maintain a constant number of companies in the group, substitutions were necessary. Continuous information for 341 companies, however, is included. We counted, in each quarter, the number of companies whose profits (as reported, not seasonally adjusted) rose from the preceding quarter, divided by 341, and seasonally adjusted the series of percentages thus obtained. The broken line on Chart 10 indicates the result. In the period of overlap it resembles the solid line based on a smaller and changing list of companies.

It falls abruptly in the first quarter of 1949, when only 27 percent of the companies had rising profits — apparently one of the lowest percentages in the entire period 1920-49.

The percentage rose to 32 in the recent quarter of 1949. Incomplete data suggest the recovery continued. If so, a trough in the first quarter heralds the end of the business decline.

DIVERSITY AND NEW INVESTMENT

The growing diversity of profit experience in the later stages of a business expansion may have consequences that are worth mentioning, although data needed for their investigation are not presently and readily available. Declining profits on existing investment may lead corporate executives to revise downward their expectations of the additional profits to be gained from additional investment in plant and equipment. Even if long run expectations are not affected, declining profits reduce the funds available from current operations; such funds are an important means of financing new investment. Declining profits, furthermore, may impair the credit rating of a company and its ability to issue new securities on terms considered attractive by its managers. It is true that the gradual spread of declining profits from company to company does not interfere with the growth of aggregate profits. But new investment near the middle of a business expansion may be concentrated in some enterprises that have unusual long run opportunities to widen the market for their products or to improve their efficiency. It might nevertheless happen that the profits of many such enterprises began to decline early in a particular expansion. If so, the decline in their profits might help to bring about a decline in the aggregate new investment of all corporations even though aggregate profits continued for a time to increase.



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Thor Hultgren

*Inventories and Business Cycles, with Special Reference to
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Wesley C. Mitchell

**The Depression as Depicted by Business Annals* (Bulletin 43,
September 19, 1932)
Willard L. Thorp

* <i>Gross Capital Formation, 1919-1933</i> (Bulletin 52, November 15, 1934) Simon Kuznets	.50
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<i>Production during the American Business Cycle of 1927-1933</i> (Bulletin 61, November 9, 1936) Wesley C. Mitchell and Arthur F. Burns	.50
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<i>Commodity Flow and Capital Formation in the Recent Recovery and Decline 1932-1938</i> (Bulletin 74, June 25, 1939) Simon Kuznets	.25
* <i>A Significance Test for Time Series and Other Ordered Observations</i> (Technical Paper 1, September 1941) W. Allen Wallis and Geoffrey H. Moore	.50
<i>Railway Freight Traffic in Prosperity and Depression</i> (Occasional Paper 5, February 1942) Thor Hultgren	.25
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* <i>Economic Research and the Keynesian Thinking of Our Times</i> (Twenty-sixth Annual Report, June 1946) Arthur F. Burns	
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<i>Cyclical Diversities in the Fortunes of Industrial Corporations</i> (Occasional Paper 32, 1950) Thor Hultgren	.50
<i>New Facts on Business Cycles</i> (Thirtieth Annual Report, April 1950) Arthur F. Burns	
* <i>Out of print.</i>	

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1. The object of the National Bureau of Economic Research is to ascertain and to present to the public important economic facts and their interpretation in a scientific and impartial manner. The Board of Directors is charged with the responsibility of ensuring that the work of the National Bureau is carried on in strict conformity with this object.

2. To this end the Board of Directors shall appoint one or more Directors of Research.

3. The Director or Directors of Research shall submit to the members of the Board, or to its Executive Committee, for their formal adoption, all specific proposals concerning researches to be instituted.

4. No report shall be published until the Director or Directors of Research shall have submitted to the Board a summary drawing attention to the character of the data and their utilization in the report, the nature and treatment of the problems involved, the main conclusions and such other information as in their opinion would serve to determine the suitability of the report for publication in accordance with the principles of the National Bureau.

5. A copy of any manuscript proposed for publication shall also be submitted to each member of the Board. For each manuscript to be so submitted a special committee shall be appointed by the President, or at his designation by the Executive Director, consisting of three Directors selected as nearly as may be one from each general division of the Board. The names of the special manuscript committee shall be stated to each Director when the summary and report described in paragraph (4) are sent to him. It shall be the duty of each member of the committee to read the manuscript. If each member of the special committee signifies his approval within thirty days, the manuscript may be published. If each member of the special committee has not signified his approval within thirty days of the transmittal of the report and manuscript, the Director of Research shall then notify each member of the Board, requesting approval or disapproval of publication, and thirty additional days shall be granted for this purpose. The manuscript shall then not be published unless at least a majority of the entire Board and a two-thirds majority of those members of the Board who shall have voted on the proposal within the time fixed for the receipt of votes on the publication proposed shall have approved.

6. No manuscript may be published, though approved by each member of the special committee, until forty-five days have elapsed from the transmittal of the summary and report. The interval is allowed for the receipt of any memorandum of dissent or reservation, together with a brief statement of his reasons, that any member may wish to express; and such memorandum of dissent or reservation shall be published with the manuscript if he so desires. Publication does not, however, imply that each member of the Board has read the manuscript, or that either members of the Board in general, or of the special committee, have passed upon its validity in every detail.

7. A copy of this resolution shall, unless otherwise determined by the Board, be printed in each copy of every National Bureau book.

*(Resolution adopted October 25, 1926 and revised
February 6, 1933 and February 24, 1941)*