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

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Volume Publisher: UMI

Volume ISBN: 0-870-14098-1

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

Publication Date: 1965

Chapter Title: PUBLIC UTILITIES, CONSTRUCTION, AND TRADE

Chapter Author: Thor Hultgren

Chapter URL: <http://www.nber.org/chapters/c1635>

Chapter pages in book: (p. 124 - 151)

PUBLIC UTILITIES, CONSTRUCTION, AND TRADE

The margin and related figures for manufacturing and railroads are more detailed and instructive than the available statistics for most other divisions of economic activity. Too often the data for other parts of the economy pertain to a minor industry, or a hodge-podge of industries, cover too short a stretch of time, are not comparable from one interval to the next, or are published in annual form only. For the large and homogeneous telephone and electric utilities, however, there are monthly figures over a fairly long period. Trade and construction are such important sectors that even the annual figures deserve some examination.

Telephone Companies

The telephone industry has been almost free of those contractions in the physical and dollar volume of sales that occur more or less concurrently in so many other industries. Monthly physical measures of sales—the number of local and toll calls—begin with January 1948. We see no contraction in local calls (Chart 19). Annual statistics on local calls, 1920–48, show a decline from 1930 to 1933. Customers of the A and B (i.e., all but the smallest) phone companies made 30,028 million local calls in the earlier and 25,860 million in the later year. This decline of 13.9 per cent was a loss of business much smaller than that experienced by most other industries in the Great Depression. There was also a very slight decline (0.2 per cent) from 1943 to 1944.

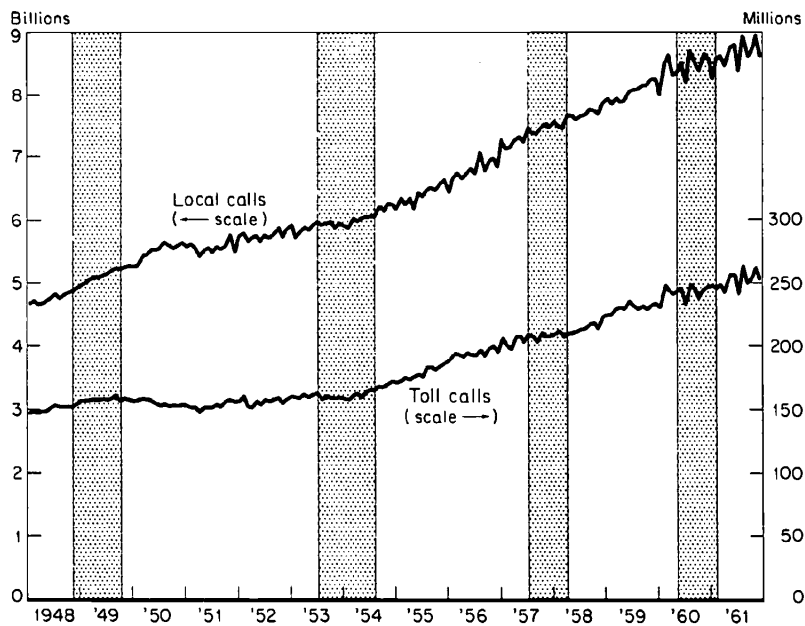
The monthly figures for toll calls show a small decline from November 1949 to April 1951. Beginning in 1950, however, the telephone companies enlarged local dialing areas considerably,

and many calls that would formerly have been counted as toll were now counted as local. The decline is probably just a statistical illusion. Annual data indicate real declines from 1929 to 1933 (37.3 per cent), and from 1937 to 1938 (1.7 per cent).

Toll calls appear to have been somewhat more sensitive than local calls to business conditions. The first decline in the former began a year earlier than the corresponding decline in the latter, and was much larger percentagewise. Only toll messages declined in 1937-38.

Although diminishing prosperity seldom caused people to curtail their use of telephones, it nevertheless retarded the growth of the service (Tables 69 and 70). The number of local calls, for example, increased at the rate of 35.6 million per month in the

CHART 19
Telephone Companies: Local and Toll Calls, 1948-61



SOURCE: Appendix Table B-11.

NOTE: Shaded areas are contractions in business.

1954-57 business expansion, but only 24.2 million in the following contraction. The number of toll calls increased by 1,120,000 per month in the former, but only 310,000 in the latter.

Even retardation did not always occur. We can, however, measure the regularity of its occurrence, which turns out to be quite high. If the number of messages increased in an expansion but fell in an adjacent contraction, or increased in both but more rapidly in the expansion, we may say that the rate of change "conformed positively" to business. If the direction of change in messages was opposite to that in business or if the growth was faster in the contraction, we may say that the rate of change "conformed inversely." Using both monthly and annual data, and comparing each phase with the preceding one, we find fourteen cases of positive and four of inverse conformity in the rate of growth for local calls (Tables 69 and 70). The difference, ten, is

TABLE 69
Telephone Calls, Local and Toll: Change and Rate of Change
During Business Expansions and Contractions, 1948-61

Turn in Business Date	Level	Months from Preced- ing Date	Number of Calls ^a (millions)	CHANGE FROM PRECEDING DATE			Conformity of Rate of Change ^b
				Total	Per Month		
					To Peak from Trough	To Trough from Peak	
LOCAL CALLS							
Nov. 1948	Peak	--	4,890	--	--	--	--
Oct. 1949	Trough	11	5,244	354	--	32.2	--
July 1953	Peak	45	5,919	675	15.0	--	Inverse
Aug. 1954	Trough	13	6,113	194	--	14.9	Positive
July 1957	Peak	35	7,360	1,247	35.6	--	Positive
Apr. 1958	Trough	9	7,578	218	--	24.2	Positive
May 1960	Peak	25	8,385	807	32.3	--	Positive
Feb. 1961	Trough	9	8,491	106	--	11.8	Positive
TOLL CALLS							
Nov. 1948	Peak	--	153.6	--	--	--	--
Oct. 1949	Trough	11	159.2	5.6	--	.51	--
July 1953	Peak	45	160.3	1.1	.02	--	Inverse
Aug. 1954	Trough	13	166.4	6.1	--	.47	Inverse
July 1957	Peak	35	205.6	39.2	1.12	--	Positive
Apr. 1958	Trough	9	208.4	2.8	--	.31	Positive
May 1960	Peak	25	242.6	34.2	1.37	--	Positive
Feb. 1961	Trough	9	247.0	4.4	--	.49	Positive

^aThree-month averages.

^bBased on comparison with preceding line, alternate column.

TABLE 70
Telephone Calls, Local and Toll: Change and Rate of Change
During Business Expansions and Contractions, 1920-49

Date	Turn in Business Level	Years from Preceding Date	Number of Calls ^a (millions)	CHANGE FROM PRECEDING DATE			Conformity of Rate of Change ^b
				Total	Per Year		
					To Peak from Trough	To Trough from Peak	
LOCAL CALLS							
1920	Peak	--	11,652	--	--	--	--
1921	Trough	1	12,290	638	--	638	--
1923	Peak	2	15,005	2,715	1,358	--	Positive
1924	Trough	1	16,097	1,092	--	1,092	Positive
1926	Peak	2	18,243	2,146	1,073	--	Inverse
1927	Trough	1	19,192	949	--	949	Positive
1926	Peak	--	25,706	--	--	--	--
1927	Trough	1	26,417	711	--	711	--
1929	Peak	2	30,029	3,612	1,806	--	Positive
1932	Trough	3	27,887	-2,142	--	-714	Positive
1929	Peak	--	29,916	--	--	--	--
1932	Trough	3	27,588	-2,328	--	-776	--
1937	Peak	5	29,258	1,670	334	--	Positive
1938	Trough	1	29,868	610	--	610	Inverse
1937	Peak	--	29,255	--	--	--	--
1938	Trough	1	29,920	665	--	665	--
1944	Peak	6	38,675	8,755	1,459	--	Positive
1946	Trough	2	48,125	9,450	--	4,725	Inverse
1948	Peak	2	58,005	9,880	4,940	--	Positive
1949	Trough	1	61,022	3,017	--	3,017	Positive
TOLL CALLS							
1920	Peak	--	486	--	--	--	--
1921	Trough	1	495	9	--	9	--
1923	Peak	2	614	119	60	--	Positive
1924	Trough	1	672	58	--	58	Positive
1926	Peak	2	867	195	98	--	Positive
1927	Trough	1	954	87	--	87	Positive
1926	Peak	--	952	--	--	--	--
1927	Trough	1	1,032	80	--	80	--
1929	Peak	2	1,237	205	102	--	Positive
1932	Trough	3	851	-386	--	-129	Positive
1929	Peak	--	1,224	--	--	--	--
1932	Trough	3	842	-382	--	-127	--
1937	Peak	5	892	50	10	--	Positive
1938	Trough	1	877	-15	--	-15	Positive
1937	Peak	--	890	--	--	--	--
1938	Trough	1	877	-13	--	-13	--
1944	Peak	6	1,589	712	119	--	Positive
1946	Trough	2	2,054	465	--	232	Inverse
1948	Peak	2	2,188	134	67	--	Inverse
1949	Trough	1	2,151	-37	--	-37	Positive

^a1920-27 segment: Bell system. 1926-32: Class A, B, and C companies.
1929-38: Class A and B companies. 1937-49: Class A companies.
^bBased on comparison with preceding line, alternate column.

56 per cent of the observations. We call this percentage an index of conformity. For toll calls, the corresponding index also is 56.

One of the exceptions, in both kinds of calls, is found when we compare the postwar contraction, 1944-46, with the wartime expansion, 1938-44. Defense regulations greatly restricted the growth of telephone plant and of the number of phones in service during the war. After hostilities ended, the phone companies hastened to accommodate their waiting customers by installing many more phones. This particular comparison is not a real exception to the rule that business contraction at least retards the growth of service.

Telephone revenue has had even less actual decline than the number of calls. Monthly figures on operating revenue are available from October 1915 to date. In that long period we can see only one contraction in sales; they fell from May 1930 to March 1933. Averages for the usual three-month periods are \$100.0 million and \$77.7 million, indicating a decline of 22.3 per cent.

Developing depression, however, retarded the growth of revenue a little more consistently than the growth of telephone conversation. Twenty comparisons of adjoining phases can be made (Table 71). Only three fail to indicate decline or retardation in contraction. The rate-of-change conformity score is therefore 70.

In the telephone industry, as in the railroad industry, the investment in plant and equipment is large relative to sales. The kinds of costs that are associated with fixed physical investment—depreciation, property taxes, interest on long-term obligations—make up a high proportion of all cost (Table 72).

Unfortunately, property taxes are not segregated from other taxes, such as payroll taxes, which fluctuate more or less like labor and material expense; we are obliged to use the data with this defect.

We can compute profits before all three plant-associated deductions. Since this is not usually done, we had to invent a name for the resulting figure: operating profit (line k of Table 72). We call its percentage ratio to operating revenue (line a) the operating margin.

A figure regularly computed in the official statistics is net operating income (line f). It is equivalent to profits after deducting

TABLE 71
Telephone Operating Revenue: Change and Rate of Change During
Business Expansions and Contractions, 1918-61

Date	Turn in Business Level	Months from Preced- ing Date	Total Operating Revenue (million dollars)	CHANGE FROM PRECEDING DATE			Conformity of Rate of Change ^b
				Total	Per Month		
					To Peak from Trough	To Trough from Peak	
Aug. 1918	Peak	--	28.9	--	--	--	--
Mar. 1919	Trough	7	31.2	2.3	--	.33	--
Jan. 1920	Peak	10	38.1	6.9	.69	--	Positive
July 1921	Trough	18	45.6	7.5	--	.42	Positive
May 1923	Peak	22	53.8	8.2	.37	--	Inverse
July 1924	Trough	14	58.4	4.6	--	.33	Positive
Oct. 1926	Peak	27	75.7	17.3	.64	--	Positive
Nov. 1927	Trough	13	82.3	6.6	--	.51	Positive
Aug. 1929	Peak	21	96.8	14.5	.69	--	Positive
Mar. 1933	Trough	43	77.7	-19.1	--	.44	Positive
Aug. 1929	Peak	--	91.0 ^c	--	--	--	--
Mar. 1933	Trough	43	73.5	-17.5	--	-.41	--
May 1937	Peak	50	91.2	17.7	.35	--	Positive
June 1936	Trough	13	90.6	-0.6	--	-.05	Positive
Feb. 1945	Peak	80	162.4	71.8	.90	--	Positive
Oct. 1945	Trough	8	172.0	9.6	--	1.20	Inverse
Nov. 1948	Peak	37	238.2	66.2	1.79	--	Positive
Oct. 1949	Trough	11	264.0	25.8	--	2.35	Inverse
July 1953	Peak	45	387.5	123.5	2.74	--	Positive
Aug. 1954	Trough	13	422.3	34.8	--	2.68	Positive
July 1957	Peak	35	556.1	133.8	3.82	--	Positive
Apr. 1958	Trough	9	581.1	25.0	--	2.78	Positive
May 1960	Peak	25	692.6	111.5	4.46	--	Positive
Feb. 1961	Trough	9	722.4	29.8	--	3.31	Positive

^aThree-month averages. 1918-33 segment based on ICC data; 1933-61 segment based on FCC data.

^bBased on comparison with preceding line, alternate column.

^cEstimated FCC basis, see appendix.

TABLE 72
Income Account of Telephone Companies, 1959
(million dollars)

a. Operating revenues	7,789
b. Operating expenses (fuel, labor, materials, etc.)	3,734
c. Depreciation	988
d. Federal taxes on income	1,106
e. Other operating taxes	665
f. Net operating income, a-(b+c+d+e)	1,296
g. Other income	172
h. Interest deductions	241
i. Other deductions	24
j. Net income, f+g - (h+i)	1,203
k. Operating profit, a - b	4,055
l. Net income before taxes on income, d + j	2,309
m. Operating margin, 100 k/a	52.1
n. Before-tax margin, 100 l/a	29.6
o. After-tax margin, 100 f/a	16.6

depreciation and all taxes (including the highly variable income tax) but before deducting interest (and before allowing for income from sources other than operations). We shall call its percentage ratio to revenue the operating income ratio.

Since data on the operating margin begin in 1933, we cannot compare its changes with fluctuations in operating revenue, the

TABLE 73
Telephone Companies, Operating Margin (1933-61), Before-Tax
Margin, and After-Tax Margin (1948-61):
Change During Business Expansions and Contractions

Turn in Business		Margin ^a	Change from Preceding Date	
Date	Level		To Peak from Trough	To Trough from Peak
OPERATING MARGIN				
Mar. 1933	Trough	46.46	--	--
May 1937	Peak	48.03	1.57	--
June 1938	Trough	46.97	--	-1.06
Feb. 1945	Peak	47.22	0.25	--
Oct. 1945	Trough	42.50	--	-4.72
Nov. 1948	Peak	30.92	-11.58	--
Oct. 1949	Trough	35.71	--	4.79
July 1953	Peak	39.60	3.89	--
Aug. 1954	Trough	41.17	--	1.57
July 1957	Peak	46.33	5.16	--
Apr. 1958	Trough	48.93	--	2.60
May 1960	Peak	52.70	3.77	--
Feb. 1961	Trough	52.63	--	-0.07
BEFORE-TAX MARGIN				
Nov. 1948	Peak	11.17	--	--
Oct. 1949	Trough	14.31	--	3.14
July 1953	Peak	21.37	7.06	--
Aug. 1954	Trough	22.85	--	1.48
July 1957	Peak	24.86	2.01	--
Apr. 1958	Trough	26.55	--	1.69
May 1960	Peak	29.86	3.31	--
Feb. 1961	Trough	29.57	--	-0.29
AFTER-TAX MARGIN				
Nov. 1948	Peak	7.70	--	--
Oct. 1949	Trough	9.38	--	1.68
July 1953	Peak	10.90 ^b	1.52	--
Aug. 1954	Trough	11.88 ^b	--	0.98
July 1957	Peak	13.17	1.29	--
Apr. 1958	Trough	13.84	--	0.67
May 1960	Peak	15.49	1.65	--
Feb. 1961	Trough	15.44	--	-0.05

^aThree-month averages, except as noted.

^bTwo-month average; July 1954 omitted because of erratic fluctuation.

only contraction in which occurred between May 1930 and March 1933. We can, however, observe how it changed during business cycles (Table 73). Although operating revenue increased more rapidly in business expansions than in business contractions, the operating margin displays no consistent relation to business cycles. It rose in all expansions except one, but it also rose in all contractions except three. The conformity index for its direction of change is only +33.

The record of the operating income ratio is much longer (Table 74). During the one actual downswing in revenue, from May 1930 to March 1933, it fell as we might expect from our experience

TABLE 74
Telephone Companies, Operating Income Ratio:
Change During Business Expansions and Contractions, 1918-61

Turn in Business		Operating Income Ratio ^a	Change from Preceding Date	
Date	Level		To Peak from Trough	To Trough from Peak
Aug. 1918	Peak	20.60	--	--
Mar. 1919	Trough	19.45	--	-1.15
Jan. 1920	Peak	19.65	0.20	--
July 1921	Trough	20.38	--	0.73
May 1923	Peak	21.02	0.64	--
July 1924	Trough	20.76	--	-0.26
Oct. 1926	Peak	24.49	3.73	--
Nov. 1927	Trough	24.09 ^b	--	-0.40
Aug. 1929	Peak	23.92	-0.17	--
Mar. 1933	Trough	21.81	--	-2.11
Aug. 1929	Peak	19.61 ^c	--	--
Mar. 1933	Trough	17.89	--	-1.72
May 1937	Peak	19.88	1.99	--
June 1938	Trough	18.32	--	-1.56
Feb. 1945	Peak	12.07	-6.25	--
Oct. 1945	Trough	12.20	--	0.13
Nov. 1948	Peak	9.24	-2.96	--
Oct. 1949	Trough	11.86	--	2.62
July 1953	Peak	12.09	0.23	--
Aug. 1954	Trough	13.02 ^b	--	0.93
July 1957	Peak	13.89	0.87	--
Apr. 1958	Trough	15.29	--	1.40
May 1960	Peak	16.66	1.37	--
Feb. 1961	Trough	16.86	--	0.20

^aThree-month averages, except as noted. 1918-33 segment based on ICC data; 1933-61 segment based on FCC data.

^bTwo-month average; December 1927 and July 1954 omitted because of erratic fluctuations.

^cEstimated FCC basis, see appendix.

with other industries. But the fall was very slight, from 22.65 to 21.81 (three-month averages) or 0.84 points. Its direction of net change during the business cycles from March 1933 onward was the same as the direction of net change in the operating margin, except in three instances. The differences change the direction-of-change conformity index for this period from the positive figure, +33, to a small inverse figure, -17.

Net declines in the operating income ratio during business contractions, however, were the rule rather than the exception up to March 1933. Taking the period since 1918 as a whole, the direction-of-change score is +14.

A more logical point at which to break the history of the ratio might be the trough in June 1938. Until then, all but one of the changes in the operating income ratio during contractions are declines. Thereafter, they are all rises. The direction-of-change score for the period ending with that trough is +64; for the period since then, it is -40.

Before 1933 we are forced to base our impressions of how telephone margins fluctuated on the operating income ratio, because we have no data on other variants of profit. The operating margin, however, gives a better impression of the interplay between prices of telephone service on the one hand, and wages, prices of materials, and physical inputs on the other. Depreciation and property taxes, which do not represent month-to-month variations in physical input, are included in the deductions made to arrive at the net operating income ratio; while taxes on income, which in the short run depend on profits and which are subject to changes in tax rates, are also included in those deductions.

Probably these differences in components of the ratio do not cause a decisive difference in the shape of the margin curve up to 1938. During the war and postwar periods, however, changes in the system of taxes do create important differences. The operating margin had a slight net rise in the 1938-45 business expansion. During the course of that expansion, however, the tax rates on corporate income were drastically increased, and the excess profits tax was imposed (and telephone companies did have "excess" profits). Consequently the operating income ratio fell from 18.32 to 12.07. In the brief 1945 contraction, the operating margin fell 4.72 percentage points, but along with the fall came a

reduction in income tax liability accrued, and the operating income ratio rose by 0.13 percentage points. In the 1945-48 expansion, the operating margin fell 11.58 points, but the operating income ratio fell only 2.96 points.

We are unable to account for the fall in the operating margin during the 1945 contraction. The tremendous fall in 1945-48, however, reflects inflation. The telephone companies were caught in a price squeeze. Wage rates and prices of materials rose rapidly, as in other industries. Telephone workers received 91.6 cents per hour around February 1945, 97.8 cents around October 1945, and 128.5 cents around November 1948 (three-month averages). The increase between the last two dates is 31 per cent. Telephone companies began to ask utility commissions for higher rates late in 1946. By 1948 the commissions had approved increases amounting, for the Bell system, to \$178 million per annum. By 1949 the figure was about \$364 million or 14 per cent of Bell system operating revenue in 1948.

The before-tax margin is available only for the business expansions and contractions after 1948 (Table 73). Like the after-tax margin, it rose in both kinds of phases, except in 1960-61.

As in other industries, growth of revenue in the telephone industry can result in rising profit even if the profit margin declines. Operating profit rose in all of the six business expansions since 1933, and in four of the six contractions; it declined in 1937-38 and 1945 (Table 75). Its direction-of-change conformity score is +33. Net operating income fell only in 1937-38; in 1945 the decline in operating profit was more than offset by a decline in federal income tax accruals. The conformity score is +17. Net operating income also rose in all business expansions and contractions between 1918 and 1933, except the 1929-33 contraction. For the whole period 1918-61, the conformity score is only +14. Like these two variants, net income both before and after taxes has increased in all phases since the 1948 business peak.

In the expansion of 1945-48, when inflation sharply reduced the operating margin and the operating income ratio, profits increased very little; operating profit rose from \$73.03 million to \$73.62 million, net operating income from \$20.98 million to \$21.98 million.

TABLE 75
Telephone Profits at Business Peaks and Troughs, 1918-61^a
(million dollars)

Turn in Business		Net Operating		Turn in Business		Operating		Net Operating		Net Income		Net Income	
Date	Level	(old accounting	definition)	Date	Level	Profit	Income	Before Taxes	After Taxes	Before Taxes	After Taxes	Before Taxes	After Taxes
Aug. 1918	Peak	5.96		Mar. 1933	Trough	34.35	13.15						
Mar. 1919	Trough	6.07		May 1937	Peak	43.78	18.12						
Jan. 1920	Peak	7.49		June 1938	Trough	42.57	16.61						
July 1921	Trough	9.29		Feb. 1945	Peak	76.67	19.59						
May 1923	Peak	11.30		Oct. 1945	Trough	73.03	20.98						
July 1924	Trough	12.13		Nov. 1948	Peak	73.62	21.98					26.58	18.32
Oct. 1926	Peak	18.54		Oct. 1949	Trough	94.29	31.30					37.78	24.78
Nov. 1927	Trough	19.72 ^c		July 1953	Peak	153.41	46.85 ^c					82.78	42.21
Aug. 1929	Peak	23.14		Aug. 1954	Trough	173.86	55.24 ^c					96.46	50.37 ^c
Mar. 1933	Trough	16.95		July 1957	Peak	257.61	77.22					138.21	73.24
				Apr. 1958	Trough	284.36	88.89					154.32	80.43
				May 1960	Peak	364.98	115.39					206.80	107.25
				Feb. 1961	Trough	380.21	121.83					213.60	111.56

^aThree-month averages, except as noted.

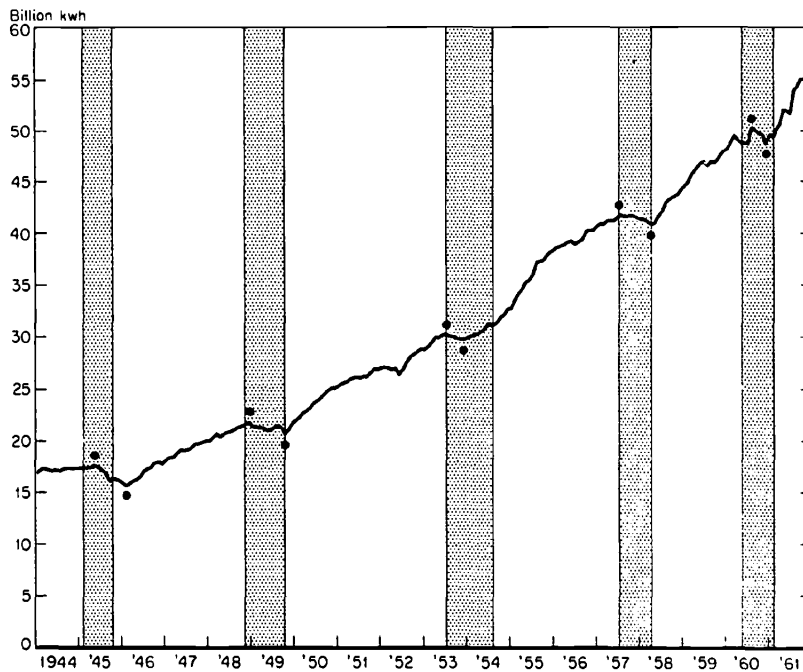
^bNo data for earlier turns.

^cTwo-month average: December 1927 and July 1954 omitted because of erratic fluctuations.

Electric Utilities

The electric light and power industry has been somewhat more sensitive to business fluctuations than the telephone industry. Its customers have reduced their purchases of kilowatt-hours on five occasions since the end of World War II, and the periods during which they did so correspond roughly to the contractions in business at large, although the dates differ (Chart 20). Earlier figures on kilowatt-hours generated show that production of power fell off in the vicinity of every business contraction after 1919 (when the data begin) except 1926-27. In general, however, the declines in kilowatt-hours have been small in comparison with

CHART 20
Electric Utilities: Kilowatt-Hours Sold, 1944-61



SOURCE: Appendix Table B-21.

NOTE: Shaded areas are contractions in business. Dots are at peaks and troughs in kwh.

either the intervening rises or declines in the output of other industries.

Since World War II, revenue from the sale of electricity, unlike kilowatt-hours, has seldom declined, but has continued to rise even when fewer kilowatt-hours were being sold. There was a net rise in revenue during every contraction in kilowatt-hours sold except that of 1945-46 (Table 76). Earlier figures on revenue, beginning with 1913, indicate declines in the neighborhood of every business contraction except 1913-14 and 1926-27. They were all, however, quite mild.

In the postwar period, rising wage rates and prices of fuel and other commodities used by power companies eventually forced the utility commissions to allow increases in prices for electric service. Some of these doubtless became effective when consumption of energy was falling.

Even if the rate schedules do not change, however, one should not expect electric operating revenue to fall in proportion to the quantity of current sold. The rate schedules are designed to reflect economies of large-scale consumption. Commercial and industrial users pay less per kilowatt-hour than householders. When business declines they are likely to reduce their consump-

TABLE 76
*Electric Utilities, Electric Operating Revenue:
Change and Rate of Change During Expansions and Contractions
in Kilowatt-Hours Sold, 1945-61*

Turn in kwh Sold		Months from Preceding Date	Electric Operating Revenue ^a (million dollars)	CHANGE FROM PRECEDING DATE		
Date	Level			Total	Per Month	
				To Peak from Trough	To Trough from Peak	
May 1945	Peak	--	265.3	--	--	
Feb. 1946	Trough	9	265.1	-.2	-.02	
Dec. 1948	Peak	34	361.0	95.9	2.82	
Oct. 1949	Trough	10	365.2	4.2	.42	
July 1953	Peak	45	517.4	152.2	3.38	
Dec. 1953	Trough	5	522.5	5.1	1.02	
July 1957	Peak	43	697.5	175.0	4.07	
Apr. 1958	Trough	9	712.0	14.5	1.61	
Aug. 1960	Peak	28	848.6	136.6	4.88	
Dec. 1960	Trough	4	849.8	1.2	0.30	

^aThree-month averages.

tion by a greater percentage than householders do. A larger portion of the power sold therefore yields the higher residential rates. The schedules usually embody a block system, with a lower charge per kilowatt-hour for each additional block. Even if a householder reduces his consumption, he cuts back on the electricity that costs him least, and his average payment per kilowatt-hour rises.

Although the last three contractions in electricity sold were not accompanied by declines in revenue, they did reduce the rate of growth in the latter. Revenue in each contraction increased less rapidly than in the neighboring expansions (Table 76).

Power is another industry in which labor and materials currently consumed account for a comparatively small part of revenues and total costs, while costs related to capital expenditure account for a comparatively large part (Table 77).

The reported figures make it possible to compute profits before depreciation, all taxes, and interest. As this figure is not given a name in the usual statistics, we shall call it operating profit, as we

TABLE 77
Income Account of Electric Utility Companies, 1957
(million dollars)

	Electric Department	All Departments
a. Operating revenues	8,308	9,670
b. Operating expenses (fuel, labor, materials, etc.)	3,937	4,875
c. Depreciation and amortization	826	907
d. Federal taxes on income	1,066	1,163
e. Other taxes	774	876
f. Net operating revenues, a-(b+c+d+e)	1,705	1,849
g. Other income (including income from plant leased to others)	3	67
h. Interest on long-term debt	--	524
i. Other deductions (net)	--	-21
j. Net income, f+g - (h+i)	--	1,413
k. Operating profit, a-b	4,371	4,795
l. Net income before taxes on income, d+j	--	2,576
m. Operating margin, 100 k/a	52.6	49.6
n. Before-tax margin, 100 l/a	--	26.6
o. Net revenue ratio, 100 f/a	20.5	19.1
p. After-tax margin, 100 j/a	--	14.6

did in the telephone industry, and shall call its percentage ratio to operating revenue (sales), the operating margin.

Instead of this ratio, the Federal Power Commission statisticians compute and publish "net operating revenues," i.e., sales minus not only labor, materials, etc. but depreciation and all taxes (even federal income taxes), but before deducting interest, etc. It is similar to "net operating income" in the telephone statistics. We shall call its percentage ratio to sales the net revenue ratio.

Many power companies also sell gas or receive revenues from still other utility services. The monthly FPC statistics, however, do not show revenue from other utility sales, but only the net earnings from them. Consequently, it is not possible to compute the operating profit or net revenue from all sales month by month, and we must confine our discussion of monthly fluctuations to the *electric* operating margin or net revenue ratio. Annual figures on total revenue, however, are published.

The statistics do not segregate interest paid and the related "other deductions" between electric and other services. We can therefore compute the final before-tax (or after-tax) margin only year by year and only for all services combined.

The earliest monthly statistics on electric profits are those for December 1941, and the earliest comparable statistics on kilowatt-hours sold are those for January 1944. Conclusions about earlier fluctuations in margins and their relation to energy sold must therefore rest on annual data, which start in 1926.

The experience of power companies with respect to margins, like that of telephone companies, has differed from that of manufacturing corporations or railroads. The electric operating margin fell during three of six expansions in kilowatt-hours sold, and rose in six of seven contractions (Table 78). The electric net revenue ratio fell in four of seven expansions, and rose in four of six contractions. The operating margin was inversely rather than positively related to fluctuations in the physical volume of sales, and the net revenue ratio had no relation to physical volume.

Annual data on electricity sales indicate only two contractions between 1926 and 1944: from \$1,894 million in 1930 to \$1,640 million in 1933, and from \$2,031 million in 1937 to \$2,018 million in 1938. The operating margin increased in the two contrac-

tions, and fell in the expansion; the net revenue ratio fell in all three phases (Table 79).

The relation of operating margins and net revenue ratios to cycles in business at large was similar to their relation to cycles in the power industry. Before we consider the former relation, however, we ought to note that, even when the consumption of electricity declines in the vicinity of a business contraction, it may show a net rise from the business peak to the business trough, because of differences between the dates of turning points in the power and in the business cycles. In fact, sales of energy increased in one of the four postwar contractions (Table 80). Kilowatt-hours sold also increased in 1926-27, but less rapidly than in 1927-29. Declining business retarded the growth of power consumption. From 1929 to 1946, peaks and troughs in annual power sold coincided with those in business.

Electric operating revenue declined in only three of eight business contractions for which data are available (Table 81). Growth was more rapid in 1926-27 than in 1927-29; otherwise, contracting business retarded the growth of revenue.

The rapid growth of revenue in most expansions did not assure a widening of the operating margin. On the contrary, the latter fell in four of seven expansions, and rose in all but one of eight contractions (Table 82). The net revenue ratio fell in five of seven expansions, and rose in five of eight contractions.

As previously noted, we can compute the before-tax margin only from annual data and only from combined electric and non-electric operations. For comparison we have also computed the operating margin on this basis. Both fell in two of five expansions. The operating margin rose in five, and the pre-tax margin in three, of the six contractions (Table 83). The annual margins had little relation to business (conformity index: operating margin, -27; pre-tax margin, -9).

Electric utilities, like telephone companies, were squeezed in the postwar inflation. The electric operating margin fell 6.55 points from the kilowatt-hour trough in February 1946 to the peak in December 1948 (Table 78). From the business trough in October 1945 to the business peak in November 1948, it fell 9.38 points (Table 82). From 1946 to 1948, the over-all operating margin fell

TABLE 78
*Electric Operating Margin and Net Revenue Ratio: Change During
 Expansions and Contractions in Kilowatt-Hours Sold, 1929-61*

Turn in kwh Sold		Operating Margin ^a	Net Revenue Ratio ^a	CHANGE FROM PRECEDING DATE			
				Operating Margin		Net Revenue Ratio	
				To Peak from Trough	To Trough from Peak	To Peak from Trough	To Trough from Peak
1929	Peak	60.98	42.93	--	--	--	--
1932	Trough	63.92	42.79	--	2.94	--	-0.14
1937	Peak	61.55	35.75	-2.37	--	-7.04	--
1938	Trough	62.24	35.03	--	0.69	--	-0.72
1944	Peak	58.54	24.84	-3.70	--	-10.19	--
May 1945	Peak	53.99	23.38	--	--	--	--
Feb. 1946	Trough	54.07	25.09	--	0.08	--	1.71
Dec. 1948	Peak	47.52	19.13	-6.55	--	-5.96	--
Oct. 1949	Trough	48.26	20.93	--	0.74	--	1.80
July 1953	Peak	50.17	19.64	1.91	--	-1.29	--
Dec. 1953	Trough	50.94	20.04	--	0.77	--	0.40
July 1957	Peak	52.65	20.59	1.71	--	0.55	--
Apr. 1958	Trough	53.61	21.27	--	0.96	--	0.68
Aug. 1960	Peak	55.54	22.00	1.93	--	0.73	--
Dec. 1960	Trough	54.95	21.96	--	-0.59	--	-0.04

^aAnnual data are twelve-month averages; monthly data are three-month averages.

TABLE 79
*Electric Operating Margin and Net Revenue Ratio: Change During
 Expansions and Contractions in Operating Revenues, 1930-38*

Turn in Operating Revenue		Operating Margin	Net Revenue Ratio	Change from Preceding Date	
Date	Level			Operating Margin	Net Revenue Ratio
1930	Peak	61.83	43.56	--	--
1933	Trough	63.41	40.37	1.58	-3.19
1937	Peak	61.55	35.75	-1.86	-4.62
1938	Trough	62.24	35.03	0.69	-0.72

7.76 points. These are the largest falls in our record for any phase of kilowatt-hours sold or of business. Electric utility workers received 112.0 cents per hour around February 1945, 114.6 cents around October 1945, and 150.8 cents around November 1948. Electric utility companies paid \$4.45 for a ton of coal in 1945, \$4.89 in 1946, \$5.60 in 1947, and \$6.69 in 1948. Prices of electric service, meanwhile, did not increase. Average rates for the various classes of customers and for the several quantities of kilowatt-hours consumed per month are available for January 1 of each year. Residential and commercial rates were generally lower on January 1, 1949 than on January 1, 1945. Rates for industrial service rose between the same dates, but not very much; the percentage increases for three quantity ranges are 5.9, 7.2, and 8.4.

Since operating revenues increased almost continuously after 1938, the occasional declines in profit ratios were not necessarily accompanied by declines in profits. Operating profit declined only in the 1929-32 and 1960 contractions of kilowatt-hours (Table 84). Net operating revenues declined in those contractions and in 1937-38. A large rise in depreciation and taxes resulted in a small net decline in the 1932-37 expansion also. With these exceptions, both kinds of profit increased in expansions and contractions alike.

TABLE 80
Kilowatt-Hours Sold: Change and Rate of Change During
Business Expansions and Contractions, 1945-61

Turn in Business		Months from Preceding Date	Kilowatt- Hours ^a (millions)	CHANGE FROM PRECEDING DATE		
				Total	Per Month	
Date	Level			To Peak from Trough	To Trough from Peak	
Feb. 1945	Peak	—	17,459	--	--	--
Oct. 1945	Trough	8	16,229	-1,230	--	-153.8
Nov. 1948	Peak	37	21,602	5,373	145.2	--
Oct. 1949	Trough	11	21,033	-569	--	-51.7
July 1953	Peak	45	30,255	9,222	204.9	--
Aug. 1954	Trough	13	31,402	1,147	--	88.2
July 1957	Peak	35	41,642	10,240	292.6	--
Apr. 1958	Trough	9	41,013	-629	--	-69.9
May 1960	Peak	25	49,066	8,053	322.1	--
Feb. 1961	Trough	9	49,832	766	--	85.1

^aThree-month averages.

TABLE 81
*Electric Operating Revenue: Change and Rate of Change During
 Business Expansions and Contractions, 1926-61*

Turn in Business	Date	Level	Years or Months from Pre- ceding Date	Revenue ^a (million dollars)	CHANGE FROM PRECEDING DATE		Conformity of Rate of Change ^b
					Per Year or Month		
					Total	To Peak from Trough	
YEARS				PER YEAR			
1926	Peak	--	--	1,415	--	--	--
1927	Trough	1	--	1,567	152	152	--
1929	Peak	2	--	1,817	250	125	Inverse
1932	Trough	3	--	1,713	-104	-35	Positive
1937	Peak	5	--	2,031	318	64	Positive
1938	Trough	1	--	2,018	-13	-13	Positive
1944	Peak	6	--	2,955	937	156	Positive
1946	Trough	2	--	3,127	172	86	Positive
MONTHS				PER MONTH			
Feb. 1945	Peak	--	--	264.4	--	--	--
Oct. 1945	Trough	8	--	260.0	-4.4	-6	--
Nov. 1948	Peak	37	--	360.7	100.7	2.7	Positive
Oct. 1949	Trough	11	--	365.2	4.5	.4	Positive
July 1953	Peak	45	--	517.4	152.2	3.4	Positive
Aug. 1954	Trough	13	--	550.4	33.0	4.5	Positive
July 1957	Peak	35	--	697.5	147.1	4.2	Positive
Apr. 1958	Trough	9	--	712.0	14.5	1.6	Positive
May 1960	Peak	25	--	834.6	122.6	4.9	Positive
Feb. 1961	Trough	9	--	856.1	21.5	2.4	Positive

^a Annual totals or three-month averages.

^b Based on comparison with preceding line, alternate column.

TABLE 82
*Electric Operating Margin and Net Revenue Ratio: Change During
 Business Expansions and Contractions, 1926-61*

Turn in Business	Date	Level	Operating Margin ^a	Net Revenue Ratio ^a	CHANGE FROM PRECEDING DATE			
					Operating Margin		Net Revenue Ratio	
					To Peak from Trough	To Trough from Peak	To Peak from Trough	To Trough from Peak
1926	Peak	--	56.96	39.01	--	--	--	--
1927	Trough	1	58.33	40.65	--	1.37	--	1.64
1929	Peak	2	60.98	42.93	2.65	--	2.28	--
1932	Trough	3	63.92	42.79	--	2.94	--	-0.14
1937	Peak	5	61.55	35.75	-2.37	--	-7.04	--
1938	Trough	1	62.24	35.03	--	0.69	--	-0.72
1944	Peak	6	58.54	24.84	-3.70	--	-10.19	--
Feb. 1945	Peak	--	54.08	21.83	--	--	--	--
Oct. 1945	Trough	8	54.55	24.84	--	0.47	--	3.01
Nov. 1948	Peak	37	45.17	18.86	-9.38	--	-5.98	--
Oct. 1949	Trough	11	48.26	20.93	--	3.09	--	2.07
July 1953	Peak	45	50.17	19.64	1.91	--	-1.29	--
Aug. 1954	Trough	13	52.70	21.14	--	2.53	--	1.50
July 1957	Peak	35	52.65	20.59	-0.05	--	-0.55	--
Apr. 1958	Trough	9	53.61	21.27	--	0.96	--	0.68
May 1960	Peak	25	55.52	22.03	1.91	--	0.76	--
Feb. 1961	Trough	9	54.86	21.83	--	-0.66	--	-0.20

^a Annual data are twelve-month averages; monthly data are three-month averages.

TABLE 83
*Electric Utilities: Change in Operating Margin and Pre-Tax Margin
 During Business Expansions and Contractions, 1937-61*

Turn in Business		CHANGE FROM PRECEDING DATE					
		Margin ^a		Operating Margin		Pre-Tax Margin	
				To Peak from Trough	To Trough from Peak	To Peak from Trough	To Trough from Peak
Date	Level	Operating	Pre-Tax				
1937	Peak	53.12	22.31	--	--	--	--
1938	Trough	53.83	21.58	--	0.71	--	-0.73
1944	Peak	51.84	24.40	-1.99	--	2.82	--
1946	Trough	49.25	24.77	--	-2.59	--	0.37
1948	Peak	41.49	20.35	-7.76	--	-4.42	--
1949	Trough	44.35	22.27	--	2.86	--	1.92
1953	Peak	47.67	26.56	3.32	--	4.29	--
1954	Trough	49.09	27.00	--	1.42	--	0.44
1957	Peak	49.59	26.64	0.50	--	-0.36	--
1958	Trough	50.60	26.59	--	1.01	--	-0.05
1960	Peak	51.53	26.79	0.93	--	0.20	--
1961	Trough	52.02	26.52	--	0.49	--	-0.27

^aIncludes income from other operations as well as electric operations.

TABLE 84
*Electric Operating Profit and Net Revenue at Peaks or Troughs in
 Kilowatt-Hours Sold, 1929-61*
 (million dollars)

Turn in kwh Sold		Operating Profit ^a	Net Operating Revenue
Date	Level		
1929	Peak	1,108	780
1932	Trough	1,095	733
1937	Peak	1,250	726
1938	Trough	1,256	707
1944	Peak	1,730	734
May 1945	Peak	143.3	62.0
Feb. 1946	Trough	143.3 ^b	66.5
Dec. 1948	Peak	171.5	69.0
Oct. 1949	Trough	176.3	76.4
July 1953	Peak	259.6	101.6
Dec. 1953	Trough	266.2	104.7
July 1957	Peak	367.2	143.6
Apr. 1958	Trough	381.7	151.4
Aug. 1960	Peak	471.2	186.7
Dec. 1960	Trough	466.9	186.6

^aAnnual totals or three-month averages.

^bBefore rounding, slightly higher than May 1945.

The annual dates of turns in kilowatt-hours are also dates of annual peaks and troughs in business at large. Both kinds of profit increased in the business contraction of 1926-27 and the expansion of 1927-29. Monthly data after 1944 indicate a net rise in both kinds of profit in every business expansion or contraction, except for a slight decline in operating profit from \$143.0 million around February 1945 to \$141.8 million around October. Actual cyclical declines in profits have therefore been a rarity in this rapidly growing industry.

Gas Utilities

Separate annual figures on sales and profits of the gas industry are available, beginning in 1937. They include gas operations of electric utilities as well as those of companies engaged in the gas business only. The quantity of gas (measured in therms) sold to ultimate consumers (industrial or household), and the revenue derived from it, fell slightly from 1937 to 1938, but rose steadily thereafter. Growth was especially rapid after the war, when long-distance pipelines were constructed and began to carry natural gas from the southwestern fields to eastern, northern, and Pacific coast markets.

Without exception, however, the quantity sold increased faster in each business expansion than during its neighboring contraction (Table 85). With two exceptions, revenue also increased more rapidly during the expansions.

The income account of gas companies can be arranged in the same categories as for electric companies, and we define the operating margin in the same way. In general, the operating margin was not consistently related to fluctuations in business (Table 86). It changed in the same direction as business five times, and in the opposite direction six times.

The pre-tax margin followed business somewhat more closely. It changed in the same direction eight times, and the opposite direction only three. In the 1948-49 business contraction, more rapid growth in capital charges than in revenue converted a rising operating margin into a falling pre-tax margin. In the 1949-53

and 1954-57 expansions, slower growth in capital charges than in sales turned a slight decline in the operating margin into a small rise in the final margin.

Like the profit ratios, aggregate operating profits, and also pre-tax profits, fell in 1937-38. Operating profits, but not pre-tax profits, fell in 1944-46. Other declines in the ratios were not reflected in profits; with the three exceptions just noted, both kinds of profit increased in every business expansion and contraction after 1937.

TABLE 85
Gas Utilities^a: Change and Rate of Change in Quantity Sold and Revenue During Business Expansions and Contractions, 1937-61

Turn in Business Date	Level	Years from Preceding Date	Quantity Sold or Revenue ^b	CHANGE FROM PRECEDING DATE		
				Total	Per Year	
					To Peak from Trough	To Trough from Peak
QUANTITY (billion therms)						
1937	Peak	--	15.8	--	--	--
1938	Trough	1	14.7	-1.1	--	-1.1
1944	Peak	6	25.1	10.4	1.7	--
1946	Trough	2	26.4	1.3	--	0.6
1948	Peak	2	33.9	7.5	3.8	--
1949	Trough	1	35.8	1.9	--	1.9
1953	Peak	4	56.1	20.3	5.1	--
1954	Trough	1	61.0	4.9	--	4.9
1957	Peak	3	77.0	16.0	5.3	--
1958	Trough	1	80.3	3.3	--	3.3
1960	Peak	2	92.9	12.6	6.3	--
1961	Trough	1	95.9	3.0	--	3.0
REVENUE (million dollars)						
1937	Peak	--	802	--	--	--
1938	Trough	1	777	-25	--	-25
1944	Peak	6	1,108	331	55	--
1946	Trough	2	1,213	105	--	52
1948	Peak	2	1,579	366	183	--
1949	Trough	1	1,689	110	--	110
1953	Peak	4	2,716	1,027	257	--
1954	Trough	1	3,049	333	--	333
1957	Peak	3	4,134	1,085	362	--
1958	Trough	1	4,568	434	--	434
1960	Peak	2	5,617	1,049	524	--
1961	Trough	1	5,993	376	--	376

^aIncludes publicly owned gas utilities.

^bDoes not include gas sold for resale (e.g., by a pipeline company to a local gas company) or revenue from such sales.

TABLE 86
*Investor-Owned Gas Utilities: Change in Operating Margin and Pre-Tax Margin
 During Business Expansions and Contractions, 1937-61*

Turn in Business	Margin				CHANGE FROM PRECEDING DATE			
	Date	Level	Before	Before	Operating Margin To Peak from Trough	Operating Margin To Trough from Peak	Pre-Tax Margin To Peak from Trough	Pre-Tax Margin To Trough from Peak
			Operating Taxes	Federal and State Income Taxes				
1937	Peak	39.70	22.61	--	--	--	--	
1938	Trough	39.73	21.78	--	0.03	--	-0.83	
1944	Peak	43.50	28.06	3.77	--	6.28	--	
1946	Trough	38.02	26.89	--	-5.48	--	-1.17	
1948	Peak	32.75	19.80	-5.27	--	-2.71	--	
1949	Trough	33.11	17.09	--	0.36	--	-0.18	
1953	Peak	32.94	16.91	-0.17	--	0.04	--	
1954	Trough	32.42	17.28	--	-0.52	--	0.05	
1957	Peak	32.40	17.33	-0.02	--	0.25	--	
1958	Trough	32.04	17.58	--	-0.36	--	-0.54	
1960	Peak	31.57	17.04	-0.47	--	-0.11	--	
1961	Trough	31.44	16.93	--	-0.13	--	-0.83	
			16.10	--	--	--	--	

Construction

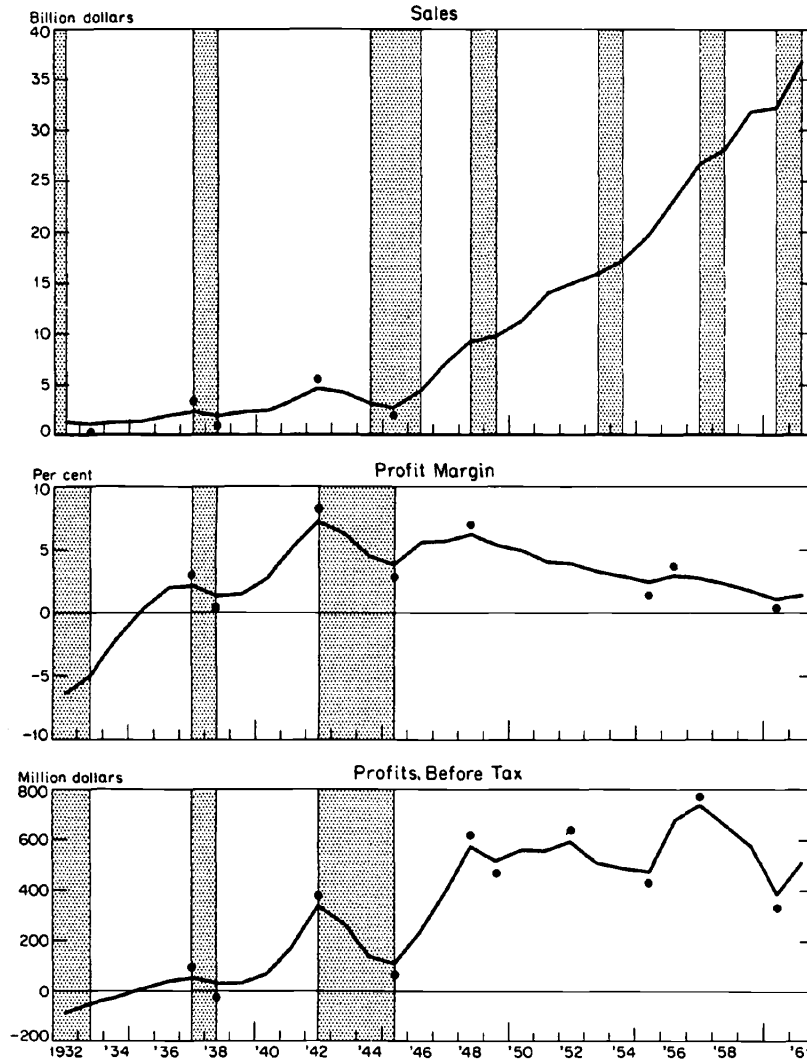
As explained in the appendix, usable statistics on profits of construction industry corporations start in 1932. Sales reached a trough in 1933 (Chart 21). Thereafter they followed the business cycle until 1942, rising to a peak in 1937 and falling to a trough in 1938. During the war the government severely restricted construction that served no military purpose. War construction apparently reached a peak in 1942, for total sales of the corporate construction industry declined thereafter until 1945. From that year onward, they increased year by year without regard to the business cycle, at least through 1961. During most of the period covered by our data, therefore, the construction business has not been related very directly to business at large. (In 1948-49, 1953-54, and 1957-58, however, the annual increases were not as large as in the adjoining business expansions.)

Because of the long-sustained growth after 1945, our data include only two complete cycles in construction revenues, those between 1933 and 1945. The margin rose in both expansions, and fell in both contractions (Chart 21). In the long upswing, however, the margin rose continuously for only three years, declining thereafter except in two years, and was lower in 1961 than in 1945.

Since there are few turning points in the industry's revenue, it may once more be of some interest to note how the margin changes between turning points in business at large. Between the 1932 business trough and 1960, the margin had a net rise in the first three business expansions, and fell in the last three. It fell in four of six business contractions, rising only in 1944-46 (during the postwar shortage of housing) and in 1960-61. Margin changes in the same direction as those in business outnumbered changes in the opposite direction by two, or 17 per cent of the twelve observations.

Aggregate profits, like the margin, rose and fell with sales from 1933 to 1945 (Chart 21). During the long subsequent expansion of sales, they fluctuated irregularly. They fell in the business contractions of 1948-49 and 1957-58; a decline from 1952 to 1955 overlaps the 1953-54 business contraction at both ends.

CHART 21
 Construction Corporations: Sales, Margins, and Profits, 1932-61



SOURCE: Appendix Table B-30.
 NOTE: In upper panel, shaded areas are contractions in business; in others, in sales. Dots are at peaks and troughs in the charted variable.

The industry achieved an increase in sales during these periods of recession, but at the price of a decline in profit. For the whole 1932-61 period, the index of conformity of profits to business is +33.

Trade

According to annual figures, four expansions and five contractions in the sales of trade corporations began and ended between 1920 and 1958 (Chart 22).

The slight decline from 1941 to 1942 was confined to traders whose supplies of merchandise were curtailed by wartime regulations.¹

If this untypical contraction is ignored, and sales are regarded as expanding from 1938 to 1948, there was a net rise in margin during every sales expansion except 1949-57, and a net decline in every sales contraction (Chart 22).

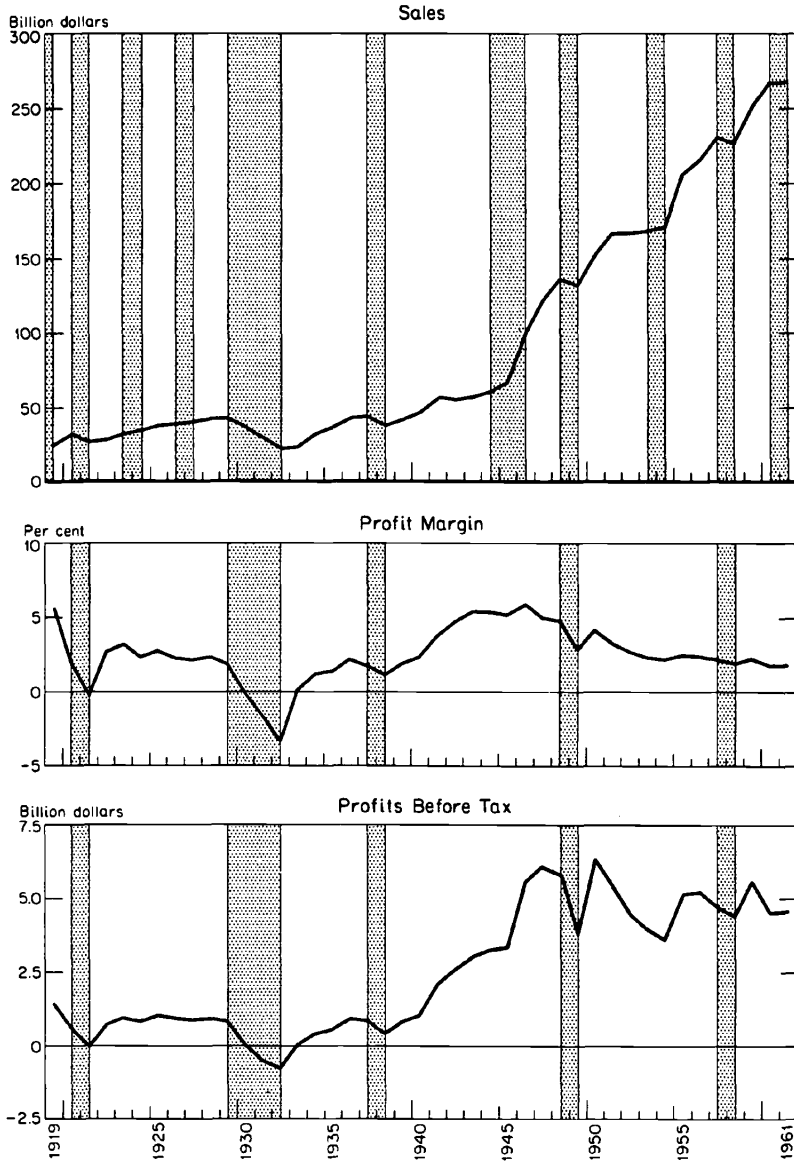
The annual figures show no declines in sales during the business contractions of 1923-24, 1926-27, 1944-46, 1953-54, and 1960-61. In 1926-27 and 1953-54, however, the increase was smaller than the average annual increase in either the preceding or the following business expansion. In 1944-46 the increase was less rapid than in 1946-48 but more rapid than in 1938-44. In 1960-61, the increase was less rapid than in 1958-60. In 1923-24, sales increased more rapidly than in either of the neighboring business expansions; the direction-of-change conformity score is + 50.

The release of demand from wartime restrictions, with the related upswing in prices, resulted in an extremely rapid rise in sales from 1945 to 1946.

The trade margin, although it bore a high positive relation to cycles in sales (78), was poorly related to cycles in business. It changed in the same direction as business during three expansions and eight contractions in the latter. It changed in the opposite direction during seven expansions and two contractions. These figures yield a conformity index of only +10.

¹Automotive dealers lost 69 per cent of their 1941 sales, filling stations lost 16 per cent, furniture dealers 14 per cent, and vendors of building materials 2 per cent.

CHART 22
Trade Corporations: Sales, Margins, and Profits, 1919-61



SOURCE: Appendix Table B-31.

NOTE: In upper panel, shaded areas are contractions in business; in others, in sales.

The inflationary postwar increase in demand brought a sharp rise in the already high margin from 1945 to 1946. The sudden Korean burst of demand in the last half of 1950 brought an even sharper rise from 1949 to that year. The margin declined in at least the last year of all the expansions in sales. The fall may have been general, or it may have been concentrated in those enterprises or lines of trade whose sales had begun to fall, moving contrary to the total for all trade.

Aggregate profits, like the margin, had a net rise in every sales expansion, and a net fall in every contraction, again ignoring 1941-42 (Chart 22). The upswing in sales and widening of margins immediately after the war, and again in the Korean crisis, resulted in remarkable upsurges in profits. After the all-time 1950 peak, however, they fell off year by year through 1954. Profits, like the margin, fell off moderately in the last year of every sales expansion.

Because sales frequently, and the margin sometimes, rose and fell with business, profits were more closely related than either profit factor to business. The profit conformity score is +60.