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

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

Volume Publisher: NBER

Volume ISBN: 0-870-14098-1

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

Publication Date: 1965

Chapter Title: Appendix A: Source of Data

Chapter Author: Thor Hultgren

Chapter URL: http://www.nber.org/chapters/c1637

Chapter pages in book: (p. 176 - 186)

APPENDIX A

SOURCE OF DATA

Manufacturing: Quarterly Data

QUARTERLY SALES, MARGINS, AND PROFITS

These data are from Federal Trade Commission and Securities and Exchange Commission, *Quarterly Financial Report for Manufacturing Corporations.* The FTC-SEC obtain income and balance sheet data from all large corporations, and from samples of small ones; the amounts reported by the sampled corporations are raised to provide estimates for all corporations in each industrial group. The sampling and estimating procedure has been revised twice. We may call figures based on the original procedure Series A, those based on the first revision Series B, and those based on the second revision Series C. They are available respectively, for 1Q 1947 to 4Q 1951; 3Q 1951 to 2Q 1956; and 1Q 1956 to date. Each later series therefore overlaps the preceding one by two quarters.[1] In many cases, the B sales estimates for the overlapping quarters are much larger than the A estimates, and those in C are larger than those in B (Table A–1). Apparently A and B, at least in the later quarters of their periods, understate the true national totals. Many of the earlier figures should be raised to make them comparable with the later ones. But how? Each series might be accurate at the beginning of its period, losing coverage of an industry gradually. In that case, its successive quarterly figures should be raised by gradually increasing amounts. Or it may not have covered the industry completely even at the beginning, in which case it might be appropriate to raise all the figures by a uniform percentage.

In most cases we decided which method would be better by comparing the FTC-SEC sales of a group, quarter by quarter, with an alternative estimate of sales. For each group with data on prices received, we multiplied its price index by the most nearly corresponding Federal Reserve index of production. The FTC-SEC sales data were turned into index numbers and the index for each was divided by the corresponding alternative index. Although the latter has its own defects, the trend of the

[1]According to the text of the later reports, Series C was obtained only for 2Q 1956. But the 4Q 1956 report contains "new sample" as well as revised old sample figures for 1Q 1956.

ratios thus obtained is instructive. If the trend of the ratios for an industry from 1947 to 1951 was downward, the FTC-SEC sales presumably lost coverage gradually over that period. If the curve was level, the FTC-SEC figures were presumably too low and should be raised by about the same percentage, over the entire period.

If the C figures for a group exceeded the B in the overlaps by only a small percentage, or if the curve of the test ratios was flat, we increased all the B figures by the overlap percentage. If the overlap difference was large, and if the test ratio had a downward trend, we raised the B figures by a uniformly increasing percentage which at the end equaled the overlap percentage. We then applied the same procedure to the A figures to bring them up to the level of the adjusted B figures at the overlap.

TABLE A-1
Comparison of Sales as Reported in Estimates Based on Successive Samples

	Ratio of Sales of	
	Sample B to Sample A (third and fourth quarters, 1951)	Sample C to Sample B (first and second quarters, 1956)
Food and beverages	1.24	1.02
Tobacco	1.01	1.00
Textiles	1.25	.96
Apparel	1.81	1.26
Lumber and products	1.58	1.11
Furniture and fixtures	1.63	1.07
Paper and products	1.02	1.00
Printing and publishing	1.22	1.10
Chemicals	1.10	1.02
Petroleum refining	a	1.00
Rubber	1.00	1.00
Leather and products	1.32	1.04
Stone, clay, glass	1.11	1.06
Primary iron and steel	1.04	1.01
Primary nonferrous metals	1.11	1.02
Fabricated metals	1.19	1.02
Machinery	1.09	1.12
Electric equipment	1.10	1.06
Motor vehicles	1.04	.99
Other transportation equipment	1.06	1.03
Instruments	1.10	1.07
Miscellaneous	1.53	1.22
All manufacturing	1.15	1.04

[a]Industry in Sample A included coal products.

In most cases we used a uniform percentage.[2] Graduated increases were made in the B figures for apparel, the A and B for stone, clay, and glass, fabricated metals, machinery, and the A for electric equipment. In the five industries for which there are no price data, and consequently no alternative sales estimates, uniform percentages were used. No adjustment seemed necessary for tobacco or petroleum products. We preferred, however, to have figures for the latter industry alone, rather than for the petroleum and coal products group. Petroleum refining is reported separately beginning with the B series. The overlap ratio of the new figure for petroleum only to the old figure for petroleum and coal products is .9574; we multiplied the A sales figures by this ratio.

The 1957 revision of the Standard Industrial Classification changed the content of some manufacturing groups. Beginning with the 1Q 1959 report, FTC-SEC followed the new classification. Back figures were given for each quarter of 1958. Group by group and quarter by quarter, we computed the ratio of the old to the new figure. After pondering the trend, if any, in these ratios, we raised or lowered the figures for 1Q 1959 and later to make them comparable with the figures based on the old classification. The largest percentage increase was in the miscellaneous group, where we multiplied the new figures by 1.1078. The largest decrease was in rubber, where we multiplied the new figures by 0.8811. In apparel, lumber, furniture, printing and publishing, chemicals, petroleum, leather, and total manufacturing, the differences were zero or negligible, and no adjustment was made.

Margins, as computed by FTC-SEC, were made comparable by a simpler procedure, using the absolute difference during the overlap. If the C overlap margin for a group was 6.0 and the B margin 5.8, we raised all B margins by 0.2. If the B figure as adjusted was 7.1 during its overlap with A, and the latter was 7.4, we reduced all A margins by 0.3. Margins of 1Q 1959 and later figures were adjusted similarly to make them comparable with C figures.

Sales and margins, after adjustment for comparability and seasonal variation, were multiplied together to estimate adjusted profits.

The sales and profits data used to compute margins for individual companies are described in Table A–2.

PRICE INDEXES

Price indexes of industrial products included in the Bureau of Labor Statistics index of wholesale prices appear to represent prices received by producers rather than by wholesalers. (Many of these products, indeed, do not pass through the hands of wholesalers.) In some cases, subindexes made by BLS appear to represent the products of an FTC-SEC manu-

[2]The B series of textile and motor vehicle sales were *reduced* by a uniform percentage.

facturing group as closely as possible. In other cases we could achieve a closer correspondence to an FTC-SEC group by recombining BLS components. In making such a combination, we divided the BLS 1947–49 value weight of each component by the sum of the weights of all components. Each component index for any month was multiplied by the fraction of 1.0000 thus obtained, and the products for the several ingredients were added. In some cases it proved simpler to delete an inappropriate item from a BLS grouping, which was accomplished by giving a negative weight to the item, keeping the algebraic sum of the weights at 1.0000 (a mathematically defensible procedure). Details are shown in Table A–3. Finally the monthly figures were averaged to get quarterly figures. The composite price index is an average of the price indexes for

TABLE A-2
Large Industrial Companies with Quarterly Sales and Profit Data, 1919–41

	Initial Date		Number of	
	Year	Quarter	Sales Expansions	Sales Contractions
Hercules Powder Company[a]	1919	1	4	4
Studebaker Corporation	1919	1	5	6
Air Reduction Company	1921	1	3	3
Skelly Oil Company	1922	3	5	5
Calumet & Hecla Consolidated Copper Co.	1924	1	2	2
General Motors Corporation	1924	1	2	2
Chrysler Corporation	1926	1	1	2
General Electric Company[b]	1927	1	1	2
Tide Water Associated Oil Company	1927	1	3	3
Yellow Truck & Coach Mfg. Company	1927	1	1	2
Houston Oil Company of Texas	1928	1	1	2
Johns-Manville Corporation	1928	1	1	2
Crown Cork & Seal Company	1928	3	1	2
Atlas Powder Company	1929	1	1	1
Kimberley-Clark Corporation	1929	1	0	1
Link-Belt Company	1929	1	1	1
Continental Oil Company	1930	1	1	1
Scott Paper Company	1930	1	0[c]	0[c]
Radio Corporation of America[d]	1930	3	1	1
Allis-Chalmers Mfg. Company	1931	1	1	1
Ohio Oil Company	1932	1	2	2
Liquid Carbonic Corporation	1932	4	0	1
Total	--	--	37	46

[a] Profits after taxes, 1919-28.

[b] Profits after taxes.

[c] Sales declined to 1Q 1933, rose thereafter.

[d] Through 3Q 1941.

TABLE A-3

BLS Wholesale Price Indexes Used to Construct Indexes of Prices Received by Fifteen FTC-SEC Manufacturing Industries

FTC-SEC Industry	BLS Code Number	BLS Description	BLS Weight
Food and beverages	02	Processed foods	.9168
	02-23	Unprocessed fin fish	-.0086
	14-4	Alcoholic beverages	.0701
	14-5	Nonalcoholic beverages	.0217
Tobacco	14-1	Cigarettes	.7183
	14-2	Cigars	.1969
	14-3	Other tobacco manufactures	.0848
Textiles	03	Textile products and apparel	1.6981
	03-31	Man-made filament yarns and fibers	-.0717
	03-51	Apparel, women's, misses'	-.3505
	03-52	Apparel, men's, boys'	-.2776
	03-54	Apparel, infants', children's	-.0349
	03-55-22	Underwear, shorts, men's, woven	-.0041
	03-61	Burlap	-.0208
	12-3	Floor coverings	.0615
Apparel	03-51	Apparel, women's, misses'	.5254
	03-52	Apparel, men's, boys'	.4161
	03-54	Apparel, infants', children's	.0524
	03-55-22	Underwear, shorts, men's, woven	.0061
Lumber and products	08	Lumber and wood products	
Paper and products	09	Pulp, paper, and allied products	1.0181
	09-2	Wastepaper	-.0181
Chemicals	06	Chemicals and allied products	
Petroleum refining	05-51	Gasoline	.5655
	05-52	Kerosene	.0624
	05-53	Distillate fuel oils	.1592
	05-54	Residual fuel oils	.1379
	05-55	Lubricating oils	.0750
Rubber	07	Rubber and rubber products	1.2118
	07-11	Crude, natural rubber	-.1149
	07-12	Crude, synthetic rubber	-.0969
Leather and products	04	Hides, skins, leather, and leather products	1.1906
	04-1	Hides and skins	-.1906
Stone, clay, glass	12-61	Dinnerware	.0506
	12-62	Household glassware	.0474
	12-63	Glass containers	.1749
	13	Nonmetallic minerals, structural	.8875
	13-21	Sand, gravel, and crushed stone	-.1604
Primary metals	10-13	Semifinished steel products	.0421
	10-14	Finished steel products	.4924
	10-15	Foundry and forge shop products	.1670
	10-22	Primary nonferrous metal refinery shapes	.0758
	10-24	Secondary nonferrous metal and alloy basic shapes	.0373
	10-25	Nonferrous mill shapes	.1519
	10-26-01	Copper wire, bare	.0335

(continued)

TABLE A-3 (concluded)

FTC-SEC Industry	BLS Code Number	BLS Description	BLS Weight
Fabricated metals	10	Metals and metal products	2.5875
	10-1	Iron and steel	-1.1321
	10-2	Nonferrous metals	-.5305
	10-66-01	Water heaters, domestic, electric	-.0074
	12-41	Household stoves	.0544
	12-41-31	Household range, electric	-.0151
	12-67	Cutlery	.0157
	12-68	Metal household containers	.0275
Machinery	11-1	Agricultural machinery and equipment	.1580
	11-2	Construction machinery and equipment	.0960
	11-3	Metalworking machinery and equipment	.1630
	11-4	General purpose machinery and equipment	.2812
	11-5	Miscellaneous machinery	.1860
	12-42	Household laundry equipment	.0419
	12-43	Household sewing machines	.0060
	12-45	Household refrigerators and freezers	.0611
	12-66	Lawnmowers	.0068
Electric equipment	10-26	Wire and cable	.2215
	10-26-01	Copper wire, bare	-.0838
	11-7	Electrical machinery and equipment	.5324
	12-41-31	Household range, electric	.0286
	12-44	Household vacuum cleaners	.0286
	12-46	Household small electric appliances	.0642
	12-5	Television, radio receivers, and phonographs	.1844
	15-55	Phonograph records and recording blanks	.0241

Source: Bureau of Labor Statistics, "Wholesale Price Index (1947-49 = 100): Abbreviated Specifications for Individual Commodities," issued May 1955, and "Wholesale Price Index (1947-49 = 100): Base Value Weights for Groups, Subgroups, Product Classes and Individual Commodities," issued April 1952.

the fifteen groups weighted by the percentage distribution of sales in 1947-49.

The index of prices paid by manufacturers for materials is a weighted average of the following BLS "sector" price indexes:

(1100) Crude foodstuffs and feedstuffs
(1210) Crude nonfood materials, except fuel, for manufacturing
(1310) Crude fuel for manufacturing industries
(2100) Intermediate materials and components for manufacturing
(2410) Processed fuels and lubricants for manufacturing industries
(2500) Containers, nonreturnable
(2610) Supplies for manufacturing industries

The first three groups comprise the index of crude materials; the last four comprise the index of manufactured materials. The composite index does not include prices of transport, public utility, or other services to business.

LABOR COST

The data on hours, earnings, and number of workers come from BLS: *Bulletin 1312, Employment and Earnings Statistics for the United States, 1909–60* and current issues of *Employment and Earnings.*

Construction, Manufacturing, and Trade: Annual Data

These data are from Internal Revenue Service (formerly Bureau of Internal Revenue), *Statistics of Income* (annual). Our "sales" are IRS (BIR) "gross sales" plus "gross profits from operations," 1922–31; and "gross sales" plus "gross receipts" from business in which inventories are not an income-determining factor, 1932–61. Both sales and deductions are too low, in the 1922–31 period, by the amount of cost assigned directly to "operations," which cost was not included anywhere on the tax return. Experiments with analogous figures after 1932 (cost of operations was included but not segregated in 1932) indicate that ratios of costs to sales are not, in manufacturing or trade, seriously affected by the omission. Our profit from sales is sales as just described minus IRS total deductions. Our profit before tax is IRS "compiled net profit."

Sales were estimated for the 1919–21 period by applying to BIR "gross income" the 1922–26 average ratio of sales to gross income (all manufacturing, 0.976; durables, 0.981; nondurables, 0.972; trade, 0.978).

For construction corporations, gross receipts, not reported before 1932, were large relative to gross sales. For example, gross *profit* from such receipts was $423 million in 1931, gross sales were $1,618 million. Gross receipts in 1933 were $502 million, and gross sales $477 million. Revenue figures comparable with expense and profit figures therefore were not available; data before 1932 were not usable.

Compiled net profit exceeds BIR "net income" by the amount of tax-exempt interest. Only net income was available for 1919–21; net profit was estimated from its ratio to net income in later years.

In 1925 BIR did not report gross profits from operations. It reported as "miscellaneous income" the total of items b and c in Table A–4. For all manufacturing, we estimated gross profits from operations (to be added to "gross sales") and cost of operations (to be subtracted from total deductions) as indicated in the table. Similar estimates were made for manufacturing of durables and for trade.

In all years, figures for manufacturing of nondurables were obtained by deduction. Durables figures are totals for the following industrial groups under "Manufacturing." 1922–35: lumber and wood products or forest products; stone, clay, and glass products; metal and metal products. 1936–37: the same, plus motor vehicles, complete or parts. 1938–

TABLE A-4
Estimated Cost of Operations, Manufacturing, 1925
(million dollars)

a.	Miscellaneous income as defined in 1925	3,430
b.	Interest, rents, royalties, and miscellaneous income as defined in other years: average of 1924 and 1926	1,150
c.	Estimated gross receipts from operations, 1925 (a - b)	2,280
d.	Estimated gross profits from operations, average of 1924 and 1926	1,074
e.	Estimated cost of operations, 1925 (c - d)	1,206

47: lumber and timber basic products; furniture and finished lumber products; stone, clay, and glass products; iron, steel, and products; nonferrous metals and their products; electrical machinery and equipment; machinery . . . ; automobiles and equipment . . . ; transportation equipment except automobiles. 1948–61: the same, except primary metal industries and fabricated metal products in place of iron, . . . and nonferrous metals . . . ; plus ordnance and accessories and scientific instruments. . . . In general, the new groups were created by fission from the old.

Railroads

All figures in Chapter 5 were from publications of the Interstate Commerce Commission or its Bureau of Transport Economics and Statistics. The sources of the revenue, expense, traffic, and labor data, needed to compute revenue per traffic unit, cost per traffic unit, and the operating ratio, are described in detail in my *American Transportation*, pp. 383–86. Data on federal income and excess profits taxes and net income after tax, needed to compute the final margin, were obtained from the Bureau's monthly *Selected Income and Balance-Sheet Items* (Class I Railways). Data on postwar cumulative increases in freight rates come from its *Transport Economics* (Monthly Comment), September 1958, p. 5. The list of railroads emerging from receivership, and the data on their long-time debt before and after, were compiled from various annual issues of *Statistics of Railways*. In some cases the source shows the debt just before the receivership ended and the reorganization became effective. In other cases the before-end figures refer to the December 31 preceding emergence from receivership. The after-end figures all refer to the December 31 follow-

ing emergence. The average interest rate on December 31, 1943 is computed by weighting the rates for various classes of debt (*Statistics of Railways*, 1943, p. 108) by the amounts outstanding (p. 132). The average for December 31, 1949 is given in the 1949 issue, p. 114.

Heavy charges for amortization, allowed for income tax purposes, are included in operating expenses as reported for the last four months of 1945, and large amounts of retroactively awarded wage increases are included in March, April, and May, 1946. The amounts are stated in the source and we have deducted them, increasing operating and pre-tax profit correspondingly. Similar retroactive wage awards are included in the expenses for June 1918 and August 1920, but the amounts are not on record; they account for the two spires in the cost per unit and operating ratio curves.

Telephone Companies

Monthly number of messages, and income account data beginning January 1933, were obtained from the Federal Communications Commission. Operating data were from *Monthly Reports of . . . Telephone Carriers . . .* (title varies). Annual data in Table 72 are from the December 1959 issue of this publication. Number of companies included varies, but changes are not large enough to affect the figures seriously except at the beginning of 1949. At that time, the number was reduced from 114 in December 1948 to 53 in January by eliminating small companies. Data for the twelve months of 1948 are available for both the larger and the smaller group. Ratios of smaller-group to larger-group figures are as follows: total operating revenues, 0.96750; net operating income, 0.95086; depreciation, 0.95086; federal taxes, 0.94921; other taxes, 0.97001. Figures before 1948 were multiplied by these ratios to make them comparable with later data.

FCC operating revenue, 1933–41, includes license fees and rentals received by some telephone companies from others. Later data do not include them. Data including them and excluding them are available from 1942 to 1948. The ratio of 1942 revenue excluding them (and reduced as explained above) to revenue including them is 0.9440. Revenue as reported by FCC from 1933 to 1941 has been multiplied by this ratio.

The monthly number of messages and net income before or after taxes was not reported until 1948.

The FCC did not report depreciation or taxes in January–May 1933. We estimated them at the average for the remaining seven months.

Operating revenue, May 1915–December 1932, was obtained from Interstate Commerce Commission files. (FCC took over interstate regulation from ICC in 1934.) There are also ICC figures overlapping the FCC

figures for January 1933–May 1934. The two sets of figures differ because of changes in the accounting regulations.

Net operating income was obtained from office records of the *Survey of Current Business,* 1915–22, 1931–33, and from the *Survey's Annual Supplement,* 1923–30. Data for other variants of profit were not available before 1933.

Annual data on number of messages are from FCC, *Statistics of the Communications Industry* (annual) and ICC, *Telephone Companies: Selected Financial and Operating Data* (annual). Early figures in the form of averages per day or per month were multiplied by 365, 366, or 12, as appropriate.

Comments on economic conditions affecting companies during and after World War II are based on remarks in annual reports of the American Telephone and Telegraph Company to stockholders. Data on hourly earnings of telephone workers were from BLS, *Employment, Hours, and Earnings, Telephone,* release number LS54–2884, April 1954. These mainly covered employees subject to the Fair Labor Standards Act. January–March 1945 figures for all employees, except executives, were multiplied by 0.973, the ratio of the new to the old basis in April 1945.

Electric Utilities

Monthly data on kilowatt-hours sold and electric income account were obtained from Federal Power Commission, *Sales, Revenues and Income of Privately Owned Class A and Class B Electric Utilities . . .* (monthly). Kilowatt-hour data begin in January 1944, income data December 1941. Kilowatt-hour, revenue, and expense figures include power sold by utilities to utilities.

Earlier monthly figures (mentioned in Chapter 6) were obtained as follows: electric power production, from University of Illinois, Bureau of Business Research, *Bulletin No. 16* and *Survey of Current Business* and its supplements. Original sources were U.S. Geological Survey March 1919–December 1938, FPC January 1936 onward. These data include publicly as well as privately owned utilities, and some electric railway power plants, etc. (in the Geological Survey data). Earlier monthly figures on electric revenue were obtained as follows: revenue from central station sales, 1913–33, from *Electrical World,* adjusted, 1913–22, to 100 per cent basis by SCB; revenue from sales to ultimate consumers, 1928 onward, including publicly owned utilities, from Edison Electric Institute, *Statistical Bulletin* (annual).

Annual electric income account figures are from the same source. Estimates by Edison Electric Institute for 1926–36 were based on FPC, with allowance for small companies from 1937 onward. Intercompany sales were excluded from revenues and expenses.

Annual kilowatt-hour data used to determine annual peaks and troughs in kilowatt-hours come from Edison Electric Institute. Public plants were included.

Annual data on total (including nonelectric) revenue and income are from FPC, *Statistics of Electric Utilities, Classes A and B Privately Owned Companies* (annual).

Beginning-of-year data on electric rates were from FPC, *Typical Electric Bills,* 1954, pp. iii, viii, ix.

Gas Utilities

Data were obtained from American Gas Association, *Historical Statistics of the Gas Industry, 1961*, and *Gas Facts* (annual). These data cover the "total gas utility and pipeline industry," and include gas operations of electric utilities. Intercompany sales were included in revenues and expenses, except as noted in Chapter 6.

All Domestic Business

Component items for the income statement, as illustrated in Table 90, were taken from Department of Commerce, Office of Business Economics, *National Income, 1954 Edition,* Tables 7, 9, 11, and 23. Figures for 1952–53 were from corresponding tables in July 1956 *Survey of Current Business.* Figures for 1954–56 were from July 1957, *Survey of Current Business.* Some component items were not available for years after 1956. Capital expense, item f of our table, includes change in book value of inventories.