

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

Volume Title: Industrial Profits in the United States

Volume Author/Editor: Ralph C. Epstein assisted by Florence M. Clark

Volume Publisher: NBER

Volume ISBN: 0-87014-025-6

Volume URL: <http://www.nber.org/books/epst34-1>

Publication Date: 1934

Chapter Title: Return Upon Sales in Different Industries

Chapter Author: Ralph C. Epstein, Florence M. Clark

Chapter URL: <http://www.nber.org/chapters/c5025>

Chapter pages in book: (p. 114 - 127)

CHAPTER 4

RETURN UPON SALES IN DIFFERENT
INDUSTRIES

I. SALES AND INVESTMENT: CAPITAL TURNOVER

THUS far, our discussion of earnings rates has been restricted either to the return on capitalization or to that on total capital. These indeed are the most fundamental measures of earning power. But another measure of profitability that calls for examination, even though it is not of the same ultimate significance as the return upon capital, is that of the relation of net earnings to sales.

There is a close connection, of course, between the two measures. The one "expresses the rate of return on the investment, the other the margin of profit on the volume which produced that return".¹ If an industry or a company 'turns over' its capital exactly once during the year, that is, if the sales for the year are equal to the average investment of capital during that year, then its percentage of return upon sales exactly corresponds with that upon investment. Actually, however, the rate of capital turnover is seldom such that sales and investment precisely equal each other. Some enterprises and some industries, for example Meat Packing, turn over their capital four or five times in

¹ James H. Bliss, *Financial and Operating Ratios in Management* (1923), p. 65.

the course of a year; others, such as Factory Machinery, evidence annual sales of only about one-half or two-thirds the amount of their capital. Accordingly, differences between industries in the rates of return upon sales cannot be taken as indicative of differences in ultimate profitability, although *changes* in the rate of return upon sales, if no substantial alteration in capital turnover takes place during the same period, of course *suggest* changes in the rate of earnings upon investment. As a measure of cyclical conditions, therefore, the return upon sales is of importance.² In any event, the business world commonly attaches sufficient importance to the relation between net earnings and sales to justify analysis of the ratio in this chapter. It is clearly to be borne in mind, however, that this measure of earning power is often more useful as an operating ratio to be employed in the current observation and control of particular enterprises than in general considerations relating to the theory of profits, and the qualifications that attach to such broader use should not be neglected.

This chapter will consider only the minor groups that make up the Manufacturing and Trade divisions. While sales and gross income (more accurately, aggregate receipts) figures are available for Mining and Finance respectively, those data³ are either incomplete or else made up in a different way than the data for Manufacture and Trade, and are thus not really comparable with the sales

² This is largely the point of view from which William L. Crum's *Corporate Earning Power* (1929) is written. That volume presents a comprehensive and scholarly analysis of the rate of net income to aggregate receipts (which in Manufacturing and Trade are virtually tantamount to sales volume, sales in all manufacturing industries combined being about 60/63 of Crum's 'gross income'), both by industrial divisions and by what in this book are termed 'major groups' within the Manufacturing division, but not by specific industries or minor groups. The trends of absolute sales figures, by minor groups, are discussed in Ch. 7 of the present volume.

³ See Ch. 25 and 26.

figures of the two latter divisions. Nor will any effort be made, even within the Manufacturing and Trade divisions, to carry out the same detailed analysis of the positions of the several minor groups as was undertaken in Chapter 3 in connection with the return upon investment. If the return on sales were of as great ultimate significance as that upon capital, such an elaborated analysis might be warranted. But since that is not the case, this chapter will present only the outline figures, will point out such discrepancies as regularly exist between rates of capital turnover, and will leave to the accountant or other interested reader any more extended analysis of these sales data, all of which are given in detailed tables either here or elsewhere in the book.⁴ This comment concerning the limited significance of sales data, however, applies only to the *rate of return on sales* in one industry as compared with another, either at any one time or for an aggregate of years. With respect to year-to-year changes—or their absence—and the *rate of sales growth* in particular industries, much will be said in Chapter 7.

2. RETURN ON SALES AND CAPITAL: ALL MANUFACTURING

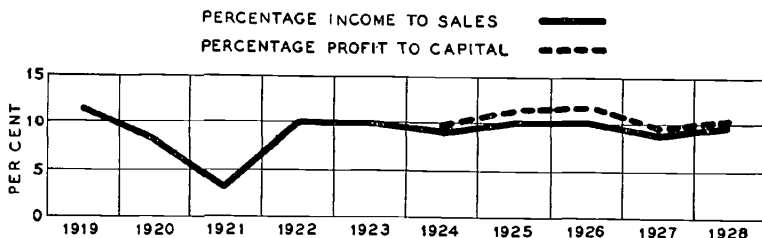
The 2,046 large manufacturing corporations for which we have a continuous ten-year series of data earn an average return which runs from 3.1 per cent upon sales in poor years to 10 or 11.5 per cent in good years. Chart 6 shows the annual rates. These general average figures for All Manufacture do not differ very strikingly from the ratios shown in Chapter 2 for the return upon capitalization. In 1924–28 they run fairly close to those for the percentage

⁴ Under the headings of particular major and minor groups in Ch. 9–14, for the large corporations series, and Ch. 28–42, for the small corporations series.

of net profit to total capital, which for convenience are charted with them.

The ten-year aggregate figure for the rate of return on sales in Manufacture is 9.1 per cent, whereas that upon

CHART 6
EARNINGS RATES, 2,046 MANUFACTURING CORPORATIONS



capitalization is 10.8. In 1928 the return on sales is 9.7 per cent, while that on total capital is 10.6. In other words, in the Manufacturing division *as a whole* the rate of capital turnover is roughly *one*.⁵

3. RETURN ON SALES AND CAPITAL: MINOR MANUFACTURING GROUPS

This average relationship, however, is very far from holding true in many of the 73 individual industries that compose the Manufacturing division. In these particular minor groups the return upon sales, in 1928, ranges from 0.8 per cent in Meat Packing to 28.8 per cent in Miscellaneous Chemicals. The median industry, which in that year

⁵ This conclusion pertains to the large corporations series here discussed, but it also holds as a general statement. See note 7 for the definition of capital turnover, as the term is employed here. For all manufacturing corporations in the country sales in 1928 equalled \$64,361,000,000 whereas capitalization as here defined equalled \$53,919,000,000 and total capital, \$59,790,000,000 (the investment data are estimates as explained in Appendix A).

happens to be either Boots and Shoes or Toys (the return is the same in both industries), earns 10.3 per cent on its sales volume. Table 22 gives the data for 1928⁶ as well as the capital turnover figures, that is, the quotients obtained by dividing the sales by the capitalization figures.⁷

TABLE 22

73 MANUFACTURING GROUPS, RETURN ON SALES AND RATE OF CAPITAL TURNOVER, 1928

MINOR GROUP	PERCENTAGE RETURN ON SALES	CAPITAL TURNOVER
1 Bakery products	12.9	1.4
2 Flour	3.4	3.5
3 Confectionery	14.5	1.0
4 Package foods	7.5	2.4
5 Dairying	4.5	2.2
6 Canned goods	8.6	1.5
7 Meat packing	.8	5.7
9 Beverages	15.8	.5
10 Tobacco	11.2	1.4
11-8 Miscellaneous food products	8.4	1.1
12 Cotton spinning	6.3	1.5
13 Cotton converting	6.9	1.2
14 Cotton weaving	4.6	1.0
15 Weaving woolens	1.8	.9
16 Silk weaving	3.8	1.2
17 Carpets	7.3	.9
18 Men's clothing	7.8	1.5
19 Knit goods	8.0	1.4
20 Miscellaneous clothing	7.1	1.7
21 Miscellaneous textiles	6.6	1.2
22 Boots and shoes	10.3	1.4
23 Miscellaneous leather products	3.1	1.7
24 Rubber products	.8	1.6
25 Lumber manufacture	10.5	.7

⁶ Data for other years are given in Ch. 10-20.

⁷ Sales divided by total capital would theoretically be a better way in which to calculate these ratios, but total capital figures are not available for the first five years of the period. The 'capital turnover' here arrived at is really the turnover of stockholders' equity; but since funded debt is relatively small in most of the minor groups of Manufacture in question, the difference between the two results is not appreciable. This would not be so in all instances if individual corporations were being compared, but here the comparison is between arithmetic means for different industries.

TABLE 22 (continued)

73 MANUFACTURING GROUPS, RETURN ON SALES AND RATE OF CAPITAL TURNOVER, 1928

MINOR GROUP	PERCENTAGE RETURN ON SALES	CAPITAL TURNOVER
26 Planing mills	7.4	1.1
27 Millwork	9.2	.9
28 Furniture (non-metal)	8.4	1.2
29 Miscellaneous lumber products	6.5	1.5
30 Blank paper	7.2	.7
31 Cardboard boxes	10.0	1.3
32 Stationery	8.6	1.2
33 Miscellaneous paper products	9.2	1.0
34 Newspapers and periodicals	17.1	1.5
35 Book and music publishing	13.9	.9
36 Job printing	12.4	1.1
37 Miscellaneous printing and publishing	11.4	1.5
38 Crude chemicals	15.9	1.3
39 Paints	11.8	1.3
40 Petroleum refining	16.1	.6
41 Proprietary preparations	23.7	.9
42 Toilet preparations	20.4	.8
43 Cleaning preparations	10.2	1.9
44 Miscellaneous chemicals	28.8	.6
45 Ceramics	13.2	.6
46 Glass	10.4	1.1
47 Portland cement	23.4	.5
48 Miscellaneous stone and clay products	18.2	.9
49 Castings and forgings	7.8	.8
50 Sheet metal	9.5	1.2
51 Wire and nails	14.2	1.0
52 Heating machinery	9.4	1.0
53 Electrical machinery	15.6	1.1
54 Textile machinery	24.7	.6
55 Printing machinery	19.1	.6
56 Road machinery	14.9	1.1
57 Engines	13.2	.5
58 Mining machinery	9.3	1.1
59 General factory machinery	25.0	.5
60 Office machinery	17.0	1.0
61 Railway equipment	6.9	.5
62 Motor vehicles	8.6	1.9
63 Firearms	19.9	1.0
64 Hardware	10.4	1.1
65 Tools	19.0	.8

TABLE 22 (continued)

73 MANUFACTURING GROUPS, RETURN ON SALES AND RATE OF CAPITAL TURNOVER, 1928

MINOR GROUP	PERCENTAGE RETURN ON SALES	CAPITAL TURNOVER
66 Bolts and nuts	17.2	1.1
67 Miscellaneous machinery	12.9	1.0
68 Non-ferrous metals	12.2	1.2
69 Jewelry	9.7	1.3
70 Miscellaneous metal products	15.1	1.0
71 Scientific instruments	27.7	1.0
72 Toys	14.0	1.1
73 Pianos	7.8	.8
74 Miscellaneous special manufacturing	10.3	1.2

Turn, however, directly to the ten-year results. The five manufacturing industries showing the highest rates of return upon sales are Scientific Instruments, Textile Machinery, Portland Cement, General Factory Machinery and Proprietary Preparations. They all earn about 20 per cent or more on total business volume. In two groups, Scientific Instruments and Textile Machinery, this high return on sales is accompanied by a high return upon investment also; in Textile Machinery the return on capitalization, although substantially less than that on sales, is still high; but in Portland Cement and General Factory Machinery the returns on sales and investment differ widely. The latter group shows a return of 20.3 per cent on sales, but only 10.7 per cent upon investment, its capital turnover being only about one-half. The pertinent figures for these five minor groups (ten-year aggregate returns, 1919-28) are given below.

The five lowest groups, on the other hand, in point of their returns on sales for the ten-year period, are Meat Packing, Flour Milling, Rubber Products, Dairying, Miscellaneous Leather. Three show relatively low earnings upon

<i>Group</i>	<i>Percentage on sales</i>	<i>Rank in list of 73 groups</i>		
		<i>Per- centage on capital- ization</i>	<i>Earnings on sales</i>	<i>Earn- ings on capital- ization</i>
Scientific Instruments	26.5	25.1	1	3
Textile Machinery	22.6	17.1	2	11
Portland Cement	21.4	14.2	3	31
General Factory Machinery	20.3	10.7	4	52
Proprietary Preparations	19.8	20.8	5	5

investment also, but the other two, Flour Milling and Dairying, both show earnings rates three times as great upon investment as upon sales. The ten-year aggregate data are given below.

<i>Group</i>	<i>Percentage on sales</i>	<i>Rank in list of 73 groups</i>		
		<i>Per- centage on capital- ization</i>	<i>Earnings on sales</i>	<i>Earn- ings on capital- ization</i>
Meat Packing	0.4	1.9	73	73
Flour Milling	3.1	11.4	72	54
Rubber Products	4.0	5.9	71	70
Dairying	4.1	12.7	70	39
Miscellaneous Leather Products	4.2	6.8	69	69

If all 73 Manufacturing industries are ranked in this manner, some general degree of correspondence between the rank in earnings on sales and that in earnings on investment appears. In general, however, it is far from exact, and in many instances very different returns and rankings alike prevail. Table 23 presents these arrays, together with the capital turnover figures which constitute the links of connection, so to speak, between the two rates of net return—that on sales and that on investment. For the general list the correspondence between the two is about one-half perfect: the coefficient of rank correlation is $+0.496$, on a scale in which $+1.0$ would indicate exactly the same ranks throughout the entire list.

TABLE 23

73 MANUFACTURING GROUPS RANKED BY EARNINGS RATES

MINOR GROUP		RANK, RETURN ON SALES	RANK, RETURN ON INVESTMENT	RATE OF CAPITAL TURNOVER
1	Bakery products	35	13	1.49
2	Flour	72	50	3.66
3	Confectionery	22	7	1.30
4	Package foods	66	17	2.48
5	Dairying	70	41	3.12
6	Canned goods	52	35	1.46
7	Meat packing	73	73	4.99
9	Beverages	56	72	.46
10	Tobacco	39	33	1.36
11-8	Miscellaneous food products	67	66	1.22
12	Cotton spinning	47	23	1.58
13	Cotton converting	61	53	1.45
14	Cotton weaving	57	62	1.15
15	Weaving woolens	65	68	1.05
16	Silk weaving	60	57	1.38
17	Carpets	20	22	1.11
18	Men's clothing	58	46	1.52
19	Knit goods	53	16	1.75
20	Miscellaneous clothing	62	32	1.97
21	Miscellaneous textiles	51	38	1.38
22	Boots and shoes	50	10	1.80
23	Miscellaneous leather products	69	69	1.62
24	Rubber products	71	70	1.47
25	Lumber manufacture	13	59	.65
26	Planing mills	46	8	1.80
27	Millwork	44	60	.96
28	Furniture (non-metal)	30	15	1.34
29	Miscellaneous lumber products	55	36	1.59
30	Blank paper	41	64	.81
31	Carboard boxes	43	20	1.54
32	Stationery	68	67	1.16
33	Miscellaneous paper products	49	45	1.27
34	Newspapers and periodicals	6	2	1.31
35	Book and music publishing	19	25	1.08
36	Job printing	25	19	1.20
37	Miscellaneous printing and publishing	17	4	1.60
38	Crude chemicals	21	52	.80
39	Paints	38	21	1.45
40	Petroleum refining	34	63	.76
41	Proprietary preparations	5	5	1.06
42	Toilet preparations	9	1	1.75

TABLE 23 (continued)

73 MANUFACTURING GROUPS RANKED BY EARNINGS RATES

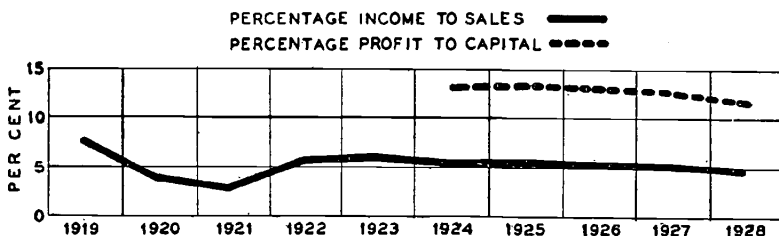
MINOR GROUP	RANK, RETURN		RATE OF CAPITAL TURNOVER	
	ON SALES	ON INVESTMENT		
43	Cleaning preparations	59	27	1.91
44	Miscellaneous chemicals	8	40	.70
45	Ceramics	11	51	.70
46	Glass	32	12	1.45
47	Portland cement	3	31	.66
48	Miscellaneous stone and clay products	15	14	1.10
49	Castings and forgings	64	71	.84
50	Sheet metal	63	61	1.32
51	Wire and nails	36	47	1.09
52	Heating machinery	24	34	1.06
53	Electrical machinery	18	26	1.07
54	Textile machinery	2	11	.76
55	Printing machinery	10	48	.65
56	Road machinery	14	9	1.18
57	Engines	7	39	.68
58	Mining machinery	45	37	1.34
59	General factory machinery	4	55	.52
60	Office machinery	23	28	1.09
61	Railway equipment	42	65	.80
62	Motor vehicles	33	6	1.71
63	Firearms	31	49	.97
64	Hardware	28	30	1.20
65	Tools	12	43	.77
66	Bolts and nuts	16	24	1.06
67	Miscellaneous machinery	29	44	1.00
68	Non-ferrous metals	48	56	1.09
69	Jewelry	54	42	1.39
70	Miscellaneous metal products	27	58	.81
71	Scientific instruments	1	3	.96
72	Toys	26	18	1.21
73	Pianos	37	54	.98
74	Miscellaneous special manu- facturing	40	29	1.41

4. RETURN ON SALES IN TRADING GROUPS

In Trade we have 664 companies in our large corporations series. Their combined return upon sales runs from under 3 per cent in a poor year, such as 1921, to 6 or 7 per

cent in good years. But because Trade as a whole turns over its capital about two and one-half or more times a year (in contrast to the average turnover of roughly 1.00 in Manufacture), the rate on investment runs far higher than that on sales. For the ten-year period, the aggregate return on sales in Trading is 5.1 per cent, whereas upon capitalization it is 13.6 per cent. The average turnover of capitaliza-

CHART 7
PERCENTAGE OF NET INCOME TO SALES AND
PERCENTAGE OF TOTAL PROFIT TO TOTAL CAPITAL
664 TRADING CORPORATIONS



tion, over the same period, is thus two and six-tenths times per year. Chart 7 shows the percentage of net income to sales in Trading for the ten years 1919-28, and that of total profits to total capital for the five years 1924-28.

The Trade division, however, may be separated into 22 minor groups. As in the case of the 73 groups of the Manufacturing division, these vary widely in both the return upon sales and the degree of correspondence between that rate and the return upon capital investment. There is, however, generally less variation in the percentage of earnings upon sales than in that upon investment. Table 24 gives the data for 1928: the return on sales, and the rate of capital turnover.

TABLE 24
22 TRADING GROUPS, RETURN ON SALES AND RATE OF
CAPITAL TURNOVER, 1928

MINOR GROUP		PERCENTAGE RETURN ON SALES	RATE OF CAPITAL TURNOVER
<i>Retail</i>			
75	Automobiles	3.4	4.4
76	Men's clothing	7.4	1.7
77	Department stores	4.6	1.7
78	Drygoods	6.0	1.6
79	Furniture	6.0	1.6
80	Groceries	3.1	6.8
81	Jewelry	13.6	1.0
82	Building material and lumber	7.0	1.2
83	Lumber and coal	9.0	1.2
84	Miscellaneous retail trade	7.9	1.8
<i>Wholesale</i>			
85	Coal, fuel and wood		
86	Drugs	4.3	2.4
87	Drygoods	3.6	2.3
88	Groceries	2.0	3.6
89	Hardware	4.5	1.8
90	Importers and exporters	4.7	2.1
91	Building material and lumber	2.0	2.3
92	Paper	2.7	3.6
93-85	Miscellaneous wholesale trade	3.2	2.6
<i>Retail and Wholesale</i>			
96	Coal, wood and fuel	6.2	1.7
97	Hardware	3.9	1.9
98	Lumber	4.0	1.2
99-95	Miscellaneous retail and wholesale trade	6.0	1.5

But again we may fasten attention upon the distribution of the ten-year aggregate figures.⁸ The diversity of capital turnover relationships may be illustrated by three minor groups: Retail Jewelry, Retail Dry Goods⁹ and Wholesale Paper. Retail Jewelry stands highest of the 22 trading groups in its profit margin upon sales: 10.7 per cent. Its turnover is, however, low for a trading group, and its re-

⁸The detailed data are given in the tables of the various chapters of Book II.

⁹Including ladies' ready-to-wear goods.

turn upon investment is 12.7 per cent, which places it only ninth highest in the list. Retail Drygoods, on the other hand, earns a lower rate upon sales: 6 per cent. But a high turnover gives it a 14.3 per cent return upon capitalization, which places it fourth in that list as against only ninth in the percentage-on-sales column. Finally, take the case of Wholesale Paper. It earns only 2.3 per cent on sales, but with a turnover of more than four, shows 11.3 per cent on its investment.

For all 22 Trading groups the general correspondence between their ranks in earnings on sales and earnings on investment is less marked than in the Manufacturing groups, the coefficient of rank correlation for the ten-year aggregate figures being $+0.347$. Table 25 gives the array for these ten-year aggregate data, together with the capital turnover figures.

TABLE 25
22 TRADING GROUPS RANKED BY EARNINGS RATES

MINOR GROUP		RANK, RETURN ON SALES	RANK, RETURN ON INVESTMENT	RATE OF CAPITAL TURNOVER
<i>Retail</i>				
75	Automobiles	14	1	6.3
76	Men's clothing	6	3	2.1
77	Department stores	10	6	2.3
78	Drygoods	9	4	2.3
79	Furniture	4	11	1.7
80	Groceries	20	2	6.5
81	Jewelry	1	9	1.2
82	Building material and lumber	3	14	1.5
83	Lumber and coal	2	10	1.5
84	Miscellaneous retail trade	5	5	2.0
<i>Wholesale</i>				
86	Drugs	16	13	3.0
87	Drygoods	15	17	2.7
88	Groceries	22	21	4.0
89	Hardware	13	20	2.1
90	Importers and exporters	19	16	3.2
91	Building material and lumber	18	22	2.3
92	Paper	21	15	4.3
93-85	Miscellaneous wholesale trade	17	12	3.0

TABLE 25 (continued)

22 TRADING GROUPS RANKED BY EARNINGS RATES

MINOR GROUP		RANK, RETURN ON SALES	RANK, RETURN ON INVESTMENT	RATE OF CAPITAL TURNOVER
<i>Retail and Wholesale</i>				
96	Coal, wood and fuel	11	7	2.8
97	Hardware	12	19	2.2
98	Lumber	8	18	1.7
99-95	Miscellaneous retail and wholesale trade	7	8	1.9