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THE EFFECT OF SIZE
ON CORPORATE EARNINGS
AND CONDITION

BY
WILLIAM LEONARD CRUM



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CONTENTS

	PAGE
Introduction.....	I
Corporations Classified According to Size.....	2
The Available Data.....	5
Importance of Large Corporations.....	6
Net-to-Gross Ratios.....	7
Return on Net Worth.....	14
Sales in Terms of Net Worth.....	17
Sales and Capital Assets.....	19
Sales as a Share of Total Receipts.....	20
Current Ratios.....	20
Sales Compared with Cash.....	23
Ratio of Inventory to Cash.....	23
Ratio of Sales to Inventory.....	25
Bonds and Mortgages.....	27
Net Worth Compared to Capital Assets.....	29
The Ratio of Net Worth to Total Debt.....	29
Summary and Conclusions.....	31

Corrections

✓ TABLE I, PAGE 3: the first total should read 381,088 instead of 381,008.

TABLE III, PAGE 4: the aggregate net deficit for firms of Class D should read 289,847 instead of 289,487.

✓

THE EFFECT OF SIZE ON CORPORATE EARNINGS AND CONDITION

The purpose of this report is to present a preliminary survey and discussion of some of the more significant comparisons, which classified data in *Statistics of income*¹ now render possible, between corporate size and corporate condition and performance. It is not intended that this analysis will be an exhaustive treatment of the bearing of size upon financial condition and operating performance. The data, even in the present greatly improved form, do not afford a satisfactory basis for full discussion; and they apply only to the severely depressed year 1931. It is also not intended that the study will be an exhaustive treatment even of the particular data available in the 1931 *Statistics of income*. It is emphasized, also, that the study applies only to corporate business. The comparisons presented herewith are suggestive and significant; further study of these particular comparisons and of others derivable from the published data, by the present and other analysts, should reveal further and perhaps more important findings.

Throughout the discussion which follows it must be remembered that the statistics used pertain to 1931—the calendar year for most corporations, fiscal years including part of 1931 for others. It is very probable that certain of the relationships shown by this analysis are not characteristic of normal conditions in corporate enterprise, but reflect rather the peculiar effects of prolonged and severe depression. In what respects and to what extent the stage of the business cycle controls the results of this analysis can not now be known; as further data for other years are published we can test the present findings by conditions peculiar to other stages of the cycle. In the meantime, we must temper all conclusions by this qualification that they rest upon 1931 data, and we must make whatever *a priori* allowance for this fact we can.

Another general remark applies to all of the analyses below: the results presented pertain to groups of corporations and the ratios are averages for the corporations of such groups. No computed figure pertains to

any one corporation. In so far as any of these average figures is a *typical average*, it may serve as a good representative result for the corporations of a group. Unfortunately, there is no satisfactory internal evidence whether the computed figures are in truth typical averages. In order to answer this question more detailed, and differently arranged, statistics would be required. We can merely form a rough opinion as to the trustworthiness of the computed averages, and make definite qualification of our findings wherever the typicalness of the averages (ratios) is involved. That we frequently fail, in particular instances, to mention this qualification specifically should not be regarded as excluding it; it applies generally to all parts of the analysis.

In handling the statistics, we have found it necessary to consider different types of industry separately. The published statistics divide all corporate industry into main divisions, such as manufacture, trade, and mining, and divide the manufacture division into principal groups, such as metals, chemicals, and textiles. Separate study of these different divisions and groups reveals striking differences among the indicated earnings and other ratios. These differences suggest the existence of further differences among smaller and more refined classifications of industries; but, as no data are available for such minor groupings, we can not carry out the present analysis in desired detail. We can infer, however, that certain of the relationships observed in the charts and tables actually studied could be largely explained if we had the detailed data for different lines of industry. Through all of the analyses presented below, the importance of the industrial diversity must not be overlooked.

The investigation shows a significant tendency for larger corporations to have higher return on their gross business than smaller corporations; for larger corporations to have a smaller rate of loss on their net worth, in a year of deep depression like 1931, than smaller corporations. These principal findings are in part supported and explained by certain subordinate general findings: the volume of sales in terms of net worth is larger for small corporations than for large corporations,

¹Published annually since 1916 by the United States Bureau of Internal Revenue.

in most lines of industry; the volume of sales in terms of capital assets is larger for small corporations than for large, but the difference is not so striking as that previously mentioned; the current position of the larger companies in most divisions is distinctly stronger than that of smaller companies; the ratio of sales to inventory was in 1931 much higher for smaller companies than for larger companies, except chiefly in the trade division. These findings, both the principal findings with reference to earning power and the subordinate findings in explanation and support thereof, can not satisfactorily be understood except by studying them in detail with reference to the particular charts and tables involved and by taking into account numerous minor considerations presented in the sections which follow.

We have not undertaken, in this study, to examine all of the financial and other ratios and averages which might be derived from the data as now tabulated and which might have interest and significance. We have selected, rather, particular ratios the analysis of which appeared to have a highly significant bearing upon the rate of profit—on gross business or on net worth—which has been the main concern of this investigation. This study is in truth only an introductory examination of the 1931 tabulations, and it is to be expected that much further attention will be given to the 1931 data, with resulting refinement and elaboration of the findings reported herein. In fact these new tabulations, classified by amount of total assets, have already been commented on by other investigators: the National Industrial Conference Board gave some attention to these statistics in its *Bulletin* of March 20, 1934; and the National Bureau of Economic Research also commented on them in its *Bulletin* of April 18, 1934. It is not expected that the full significance of these new classifications can be worked out until corresponding data become available for subsequent years, but much is to be gained by giving early thought to the interpretation of the 1931 data, already available, and the following sections constitute a preliminary investigation of this sort.

Corporations Classified According to Size

Criteria of size. No systematic classification of corporation statistics according to a satisfactory measure of corporate size has heretofore been available. The 1931 issue of *Statistics of income* presents such classifications for the first time. Previous issues have indeed shown classifications according to amount of statutory net income,¹ and in recent years according to amount of

deficit; but net income (or deficit) is by no means a satisfactory measure of the size of a corporate enterprise. I have discussed this view at length elsewhere, but will repeat the main considerations here.² One consideration is that, although presumably only a large corporation can report a large statutory net income or a large deficit, it is quite possible for a large corporation to have a small statutory net income or small deficit. In the second place, although the actual size of corporations, as revealed by any satisfactory measure of size, would presumably not fluctuate much from year to year, the amount of statutory net income (or deficit) for a particular corporation can vary widely from year to year; in consequence of this the size class in which a particular corporation falls when size is measured by net income (or deficit) can and frequently does shift from year to year.

With the publication of *Statistics of income* for 1931 we have secured for the first time a systematic classification of corporations according to an item—total assets—which may fairly be used as a measure of size.³ For some purposes, another measure of size might be preferable to total assets. Thus, for the analysis of some problems amount of gross sales might well serve as a measure of size of corporate business, whereas in another type of investigation “fair value of the property used in the business” might be suggested. A measure of size which is sometimes used is gross sales, and for some purposes this is a very helpful criterion. The statistics as published do not enable us to classify corporations on this basis, and there is some chance that this measure of size would not be as good as total assets for general purposes anyway. We present, below, an extended discussion of the relations between sales and particular constituents of total assets, but these carry no clear indication as to the extent of correlation between gross sales and total assets. There can be little doubt that a size classification based upon gross sales would be extensively different from that based upon total assets, particularly as corporations in some lines of industry tend to have larger assets per dollar of sales than those in other lines. Doubtless other measures might apply for particular purposes; but *total assets* has a generality of application probably not possessed by any other available measure of size, and it is incomparably superior to net income as a basis of size classification.

Description of size classes. The class intervals of the published tables (selection from which is shown in Table I herewith) are not all of equal width. This

¹ See 1930 *Statistics of income*, pp. 49-51; and 1931 issue, p. 47, for summaries of these earlier reports 1918-31. The most elaborate such statement—with an industrial break-down—begins at p. 360 of the 1926 *Statistics of income*.

² At various places in pp. 25-27, 145-155, 237-250, and 285-298, of *Corporate earning power*; and pp. 430-433 of *Quar. Jour. Econ.*, vol. XLVII, May, 1933.

³ Such a classification is summarized on page 32, and is developed at length on pages 154-177, of the 1931 *Statistics of income*.

Table I. Corporations of All Industrial Divisions Combined,
Classified by Amount of Total Assets, in 1931

Amount* of Total Assets	Class Symbol	All Corporations		Income Corporations		No-Income Corporations	
		Number of Returns	Aggregate Assets†	Number of Returns	Aggregate Assets†	Number of Returns	Aggregate Assets†
Under 50	A	182,447	3.7	65,564	1.4	116,883	2.3
50-100	B	61,144	4.4	24,297	1.7	36,847	2.6
100-250	C	63,428	10.1	25,649	4.1	37,779	6.0
250-500	D	31,052	10.9	12,120	4.3	18,932	6.7
500-1,000	E	19,335	13.5	7,130	5.0	12,205	8.6
1,000-5,000	F	18,345	38.0	6,403	13.2	11,942	24.7
5,000-10,000	G	2,588	18.0	926	6.4	1,662	11.5
10,000-50,000	H	2,117	43.2	841	17.5	1,276	25.7
50,000 and over	I	632	154.8	265	68.2	367	86.6
Total		381,088	296.5	143,195	121.7	237,893	174.8

* Unit: \$1,000.
† Unit: \$1,000,000,000.

results from the peculiar form (discussed below) of the distribution according to size, which renders it difficult to show details in the area of small assets without resorting to great compression in the area of large assets. The class intervals actually chosen in the published compilations appear to represent a fair compromise between the technical desirability of classes of equal width and the practical necessity of showing part of the distribution in greater detail than the rest. As a matter of fact, the actual boundaries of the classes are to a considerable extent appropriate for a logarithmic distribution, with the result that, if the class intervals are charted on a log scale, they appear to have widths of approximately the same size.¹

The bottom interval and the top interval have no stated outside boundaries. It is obvious that the outside boundary for the bottom interval cannot fall below zero, but there is no such obvious upper limit to the top interval.² In the analysis we assume that the bottom interval runs from zero to 50 (thousand dollars), but we can make no assumption as to the range of the top interval. From the point of view of the more refined technique of modern statistical analysis adapted to the investigation of frequency distributions, this total absence of knowledge concerning the range of the top

¹ This, of course, holds only imperfectly: the class 0-50 and the class over 50,000 cannot be shown strictly on the scale (here, and generally in this article where there is no obvious contrary indication, assets are stated in the unit \$1,000). See Chart 1, horizontal scale, which is an example of the scale used regularly in the charts herewith. The "ticks" along the horizontal scale correspond to the mid-points (points arithmetically half-way between the boundaries—something could be said for taking the geometrical mid-points) of the class intervals. Except for point D, and for point I, the location of which is indeterminate, it is clear that these points are about equally spaced along the horizontal log scale.

² In any particular case, of course, we can calculate the absolute upper limit to the top interval; but we can have no such assurance that it is the upper limit of that interval as we have that zero (actually something moderately above zero, but we neglect this) is the lower limit of the bottom interval. For example, in the highest class interval of the two right-hand columns of Table I, we might assume that 366 of the 367 corporations had assets of exactly 50 millions each. This would account for slightly over 18 billions of the total assets, and leave just over 63 billions for the one remaining corporation. This set of assumptions is clearly exaggerated to the point of absurdity, but it serves to show how uncertain we must be concerning the upper limit of this top interval.

interval is unfortunate. For the type of analysis which we shall make, however, although something would be gained by having this range known (or at least less indefinite), the difficulty is not a decisive one.

Classification by assets and income. An interesting treatment of the classification problem (according to size of corporation) would consist in exploring the relation between distributions according to amount of assets and according to amount of net income. Earlier issues of *Statistics of income*, in which the classification was made according to amount of net income (or deficit), give us merely the aggregate total assets in each net-income class; accordingly, we can calculate the average assets per corporation in each such class.³ In the issue for 1931, on the other hand, we have the aggregate net income stated for each total-assets class, and we can accordingly calculate the average net income per corporation in that class.⁴

Table II gives the data for all corporations in 1930, without regard to industrial division, classified by amount of net income or deficit. The third and sixth columns give the average total assets per corporation in each net-income (or deficit) class. Making reservation concerning the suitability of the arithmetic mean as an average, commented on above, we observe that the average total assets increase considerably less rapidly than the net income (or deficit). While the average net income is multiplied by about 6,000 (from the center of the lowest class to the center of the next-to-the-highest

³ The calculation of such an average proceeds without our being able to make the appropriate inquiry into the form of distribution, according to amount of total assets, within the particular net-income class. In other words, we have no adequate basis for knowing whether the arithmetic average is an appropriate average for representing and summarizing such a situation. There is, to be sure some ground for believing a geometric average should be used, but it is so uncertain that we have neglected it. We must remain in doubt as to whether the arithmetic mean is suitable, and avoid attaching precise significance to it.

⁴ The same difficulties, of a theoretical statistical nature, apply here as in the other case—see footnote 1 above. Here, as there, we have no satisfactory basis for determining whether the arithmetic mean is a suitable average.

Table II. Total Assets of All Corporations Classified by Amount of Net Income (or Deficit) in 1930

Amount* of Net Income (or Deficit)	Income Corporations			No-Income Corporations		
	Number of Returns	Total Assets		Number of Returns	Total Assets	
		Aggregate†	Average per Corporation*		Aggregate†	Average per Corporation*
Under 1.....	55,108	4,483	81.4	52,315	4,440	85.1
1-2.....	31,774	3,843	121.	28,152	2,870	102.
2-3.....	28,882	4,379	152.	19,721	2,374	120.
3-4.....	13,889	2,528	182.	14,917	2,030	136.
4-5.....	8,037	2,209	275.	11,222	1,931	172.
5-10.....	19,174	7,063	368.	31,411	6,995	223.
10-15.....	8,774	4,537	517.	14,645	5,070	346.
15-20.....	5,287	3,584	678.	8,351	3,929	471.
20-25.....	3,921	3,105	792.	5,441	2,841	522.
25-50.....	7,276	8,450	1,160.	11,712	9,760	834.
50-100.....	4,822	10,033	2,080.	6,342	19,576	1,670.
100-250.....	3,216	14,438	4,490.	3,830	14,446	3,770.
250-500.....	1,247	13,651	11,000.	1,188	8,997	7,570.
500-1,000.....	685	13,930	20,300.	601	11,993	20,000.
1,000-5,000.....	571	48,345	84,700.	464	19,231	41,500.
5,000 and over.....	158	74,388	471,000.	40	7,535	188,000.
Total.....	192,821	218,966	1,135.	210,352	115,036	547.

* Unit: \$1,000.
† Unit: \$1,000,000.
Data from pp. 272 and 274 of 1930 Statistics of income.

class), the average assets is multiplied by about 1,000; and, while the average deficit is multiplied by about 6,000, the average assets is multiplied by about 500.

This condition may be explained in part by the fact that, whereas a very large corporation (by amount of assets) can earn a very small net income (or deficit), a very small corporation can scarcely have a very large net income (or deficit). Another partial explanation lies in the tendency of consolidated corporations to have large assets, whereas such corporations may not show correspondingly large net incomes (or deficits) because of the offsets of deficit against net income among their subsidiaries. Finally, there may be a definite correlation between earnings (or losses) and size, upon which we shall present some evidence; if this correlation is small, both "regressions" may be slight, as discussed below.

In Table III is a somewhat similar compilation, with the classification according to amount of total assets. The indications here are less significant than in Table II, partly because, as 1931 was a year of more severe depression than 1930, the income aggregates are mainly negative. Leaving out the highest class, we note, as the average total assets is multiplied by about 1,000, that the average deficit is multiplied by about 100.

We have found, from the Table II classification, a large change in net income (or deficit) attended by a less large change in assets; and the classification of

Table III shows a large change in assets attended by a smaller change in deficit. Making reservation because the data apply to two different years, one of them much more severely depressed than the other, and because we have little knowledge on which to test the suitability of the average used, we are forced to conclude that the regressions of assets on net income (or deficit) and of deficit on assets are not close. Similarly, the correlation between assets and net income (or deficit) is probably small. These conclusions confirm that already reached on other grounds: the net income (or deficit) is not a good measure of corporate size.

Table III. Net Income (or Deficit) for all Corporations, Classified by Total Assets in 1931.*

Amount of Total Assets	Class Symbol	Number of Returns	Net Income (or Deficit)	
			Aggregate	Average per Corporation
Under 50.....	A	182,447	-417,755	-2.29
50-100.....	B	61,144	-219,421	-3.59
100-250.....	C	63,428	-361,462	-5.70
250-500.....	D	31,052	-289,287	-9.32
500-1,000.....	E	19,335	-311,087	-16.1
1,000-5,000.....	F	18,345	-788,670	-43.0
5,000-10,000.....	G	2,588	-281,193	-109.
10,000-50,000.....	H	2,117	-434,552	-205.
50,000 and over..	I	632	179,083	283.
Total.....		381,088	-2,924,904	-7.57

*Unit, for total assets and for net income (or deficit): \$1,000. Data from p. 32 of 1931 Statistics of income.

Correlation between assets and income. It will be seen that neither one of these approaches gives any conclusive or precise indication as to the extent to which amount of assets is associated with amount of net income (or deficit). We can, to be sure, discover by computations of this type whether there is a tendency for the average assets per corporation to be larger for the larger net-income classes (or for the average net income per corporation to be larger for the larger total-assets classes). Published data do not enable us to apply *both* types of computation to *one* year. Although these relationships are somewhat significant, they fall very far short of showing unmistakably the existence of correlation. To meet the question really at issue, it is desirable to have the classification made on a double basis: to have the corporations in each total-assets class sub-classified according to amount of net income (or deficit). This would provide a test of the suitability of the arithmetic mean, about which, as noted above, no conclusion can now be formed. It would also afford the materials out of which we might construct the typical correlation table of modern statistical method, and thereby proceed with the usual type of correlation analysis.

Some obstacles peculiar to this problem would of course be encountered: the difficulty of making all of the class intervals of equal width might prove serious; and the fundamental fact of heterogeneity, because of the differing type of industrial activity from corporation to corporation, might largely nullify the significance of such apparent correlations as would be revealed. On this last point it might be urged that a separate double classification should be made for each industrial group; but, although something worthwhile could be achieved in this direction for the larger industrial groups, any very fine-grained industrial breakdown would so greatly reduce the total number of corporations within each group to which the correlation test was applied that the results might be largely nugatory. In any case, we cannot be sure as to the utility of such a double classification until we have an opportunity to experiment with it. There is a sufficient chance of its proving significant to warrant an experiment; and one of the refinements of the Treasury statistics, which we may tentatively suggest, is the compilation of certain double classifications of this sort. Perhaps the year selected for such a test compilation should be more nearly normal than 1931—one of the years 1925–28, or a year after the present recovery is somewhat farther advanced.

Consolidated returns. Another possible approach to this question of size of corporation appears in the separate tabulation, in *Statistics of income*, of data for so-called consolidated returns. The law has for some

years permitted the filing of such returns by closely affiliated groups of corporations; but the freedom to do this was somewhat limited by the regulations after 1928, was still further restricted by an extra tax on such returns in the Revenue Act of 1932, and is wholly removed by the Revenue Act of 1934. I have discussed at length elsewhere the analysis and implications of these data for consolidated returns.¹ The analysis showed emphatically that the consolidated returns represent in the main very large corporations; but it failed to show any striking differences in earning power between consolidated and non-affiliated corporations, although there was some evidence of higher earning power for the consolidated corporations. The failure to disclose highly significant differences, in the study of these consolidated returns, was due partly to difficulties of industrial classification and partly to the narrow restrictions which the form of the published data placed upon our tests.

The Available Data

Almost all of the materials of the present investigation appear in Table 16 (pp. 154–159) and Table 17 (pp. 160–177) of *Statistics of income* for 1931 (hereafter referred to as the 1931 report). Table 16 gives a much more elaborate picture, in that it lists many more accounting items, than Table 17; but it relates to all corporations, regardless of industrial classification, and is therefore of limited usefulness for our purpose. We shall observe below that the analysis of comprehensive data, with no regard to industrial classification, is likely to be misleading. Table 17, while greatly limiting the number of accounting items specifically recorded, classifies corporations according to major industrial divisions and further classifies the corporations of the manufacture division into groups according to particular types of manufacturing activity. Table 17 will therefore be principally useful in our analysis. Both tables give data separately for corporations which reported net incomes, and for those which reported deficits, in 1931; and both tables classify corporations into nine size-classes, according to amount of total assets.²

¹ *Quar. Jour. Econ.*, vol. XLVII, May 1933, pp. 414–448. Further consideration of the same data, for 1931, do not suggest any essentially different conclusions.

² These size classes are those stated in the stubs of Table I and are labelled in our charts with the letters A–I. See comment on p. 2 concerning the unequal width of the classes. In some cases, in order not to disclose data pertaining to a particular corporation, certain of the large classes are combined into a single class so that more than one corporation will invariably be covered by each set of data. In such cases the *number* of returns in each of the regular classes is nevertheless recorded. Thus, on page 160 of the 1931 report, 59 returns are reported in the 1,000–5,000 class, and 1 return in the 50,000-and-over-class; but the data are combined for these 60 returns. This combining of classes upsets the regularity of some of our charts and tables, but is not a serious obstacle to our analysis.

³ Following the useful practice of S. H. Nerlove, in *A decade of corporate incomes*, we shall designate corporations which reported a statutory net income as income corporations, and corporations which reported a deficit as no-income corporations. In making our analyses, we have treated also these two categories combined into a single category, which we call all corporations.

That any systematic study of "all corporations" without regard to industrial classification can be wholly misleading is made sufficiently clear by considering the dominant way in which particular industrial divisions contribute to the total for certain items. We show in Tables IVa and IVb the more elaborate statement, available in Table 16 of the 1931 *Statistics of income*, for all corporations (those of all industrial divisions combined). By consulting Table 15 (pp. 148-153), we learn that: (a) the finance division, which reported 121 (that is, 41%) of the aggregate 296 billions of total assets, reported 9.4 (59%) of the 15.9 billions of cash, 31.2 (64%) of the 48.7 billions of notes and accounts receivable, 49.6 (67%) of the 74.3 billions of investments (not tax-exempt), and 69.3 (85%) of the 81.9 billions of miscellaneous liabilities; and (b) the transportation and other public utilities division (we shall call this division *public utilities*), which reported 72 (that is, 24%) of the aggregate 296 billions of total assets, reported 52.2 (45%) of the 115.3 billions of capital assets. Other comparisons, only less striking, warn us against analyzing data which are too comprehensive, which cover so many lines of industry that they are not even approximately homogeneous.

Table IVa. Aggregate Balance-Sheet Items, for All Industrial Divisions Combined, in 1931.*

Items	All Corporations	Income Corporations	No-Income Corporations
Number of returns.....	381,088	143,195	237,893
Assets:			
Cash.....	15,880	6,473	9,407
Notes and accounts receivable..	48,667	19,243	29,425
Inventories.....	15,140	5,605	9,535
Investments, tax-exempt.....	10,667	4,520	6,148
Investments, other than tax-exempt.....	74,305	33,448	40,858
Capital assets—lands, buildings, equipment (less depreciation)..	115,303	45,688	69,615
Miscellaneous assets.....	16,534	6,749	9,786
Total assets.....	296,497	121,725	174,772
Liabilities:			
Notes and accounts payable....	23,251	8,070	15,181
Bonded debt and mortgages....	48,101	16,130	31,971
Miscellaneous liabilities.....	81,882	36,862	45,020
Capital stock—preferred.....	19,117	7,380	11,737
Capital stock—common.....	79,794	30,617	49,177
Surplus and undivided profits..	51,976	23,407	28,569
Less deficit.....	7,624	741	6,883
Total liabilities.....	296,497	121,725	174,772

* Unit: \$1,000,000 (except for number of returns). Data from pp. 154 and 148 of the 1931 *Statistics of income*.

Importance of Large Corporations

Distribution of assets among classes. The size classes A to I comprise widely differing numbers of corpora-

Table IVb. Aggregate Income-Account Items, for All Industrial Divisions Combined, in 1931.*

Items	All Corporations	Income Corporations	No-Income Corporations
Receipts, taxable income:			
Gross sales.....	73,783	36,571	37,212
Gross profit other than tabulated as gross sales.....	21,206	9,576	11,629
Interest.....	4,024	2,016	2,008
Rents.....	2,110	965	1,145
Profit, sale of capital assets.....	284	149	135
Miscellaneous receipts.....	1,393	662	731
Receipts, tax-exempt income:			
Dividends from domestic corporations.....	1,905	834	1,071
Interest on tax-exempt obligations.....	533	213	321
Total compiled receipts.....	105,238	50,987	54,251
Statutory deductions:			
Cost of goods sold.....	57,374	27,959	30,315
Compensation of officers.....	2,574	1,108	1,466
Interest paid.....	4,369	1,468	2,901
Taxes paid other than income tax	2,172	893	1,279
Bad debts.....	1,153	337	816
Depreciation.....	3,933	1,721	2,211
Depletion.....	261	75	186
Loss, sale of capital assets.....	1,539	150	1,389
Miscellaneous deductions.....	32,351	13,534	18,817
Total statutory deductions....	105,725	46,345	59,380
Compiled net profit or deficit....	-487	4,642	-5,129
Statutory net income or statutory deficit.....	-2,925	3,596	-6,520
Net loss for prior year.....	130	130	...
Income tax.....	393	393	...
Compiled net profit less income tax	-880	4,249	...
Cash dividends paid.....	6,092	3,243	2,849
Stock dividends paid.....	162	77	85

* Unit: \$1,000,000 (except for number of returns). Data from pp. 154 and 148 of the 1931 *Statistics of income*. The items given in this tabulation, while suggestive of corresponding items frequently treated in corporation analyses, are not in all respects defined as those items are usually defined. No brief summary can present the important qualifications upon definition satisfactorily; but the reader is referred to the article by J. F. Ebersole, S. S. Burr, and G. M. Peterson in *Rev. Econ. Stat.*, November 1929, especially pages 179-193.

tions; and the corporations included in one class may have widely different aggregate importance from those, perhaps much more (or much less) numerous, in another class. For such comparisons various measures of importance might be chosen for specific reasons, but total assets affords a generally satisfactory basis. We show in Table V the percentage distribution of total assets among the several size classes for each division and group.¹

It is clear from Table V that the great bulk of the total assets of corporations, in most divisions and groups, falls in large classes (the "classes grouped" items really refer to large classes, as only large classes are ever grouped in the published tabulations). In the manufacture division nearly half of the total falls in the largest class; for the metals group, more than half

¹ These data are for income corporations and no-income corporations combined. Separate figures are available for each of these two categories, but the differences, while interesting, were not sufficiently significant to justify reproduction here.

Table V. Per Cent Distribution, Among the Various Size Classes, of the Total Assets for Each Division and Each Manufacture Group

Size Class: Amount of Total Assets (\$1,000)	Class Symbol	Manufacture	Metals	Foods	Chemicals	Textiles	Printing	Forest Products	Paper	Tobacco	Stone	Leather	Rubber	Trade	Mining	Construction	Agriculture	Public Utilities	Finance	Service
Under 50.....	A	1.17	.71	1.7	.34	2.5	3.9	1.6	.58	.17	1.5	2.1	.31	8.0	.68	7.1	3.4	.23	.58	4.8
50-100.....	B	1.5	.98	2.2	.46	2.8	3.7	2.7	.91	.77	2.3	2.7	.38	7.7	1.03	6.8	4.6	.20	1.02	4.2
100-250.....	C	3.5	2.5	4.9	1.14	6.2	6.6	7.7	2.5	.26	5.7	7.1	1.08	12.9	2.9	13.4	11.3	.41	3.2	8.2
250-500.....	D	3.9	3.1	4.9	1.2	7.6	6.4	8.5	3.4	.68	6.3	7.8	1.4	10.3	3.7	10.6	11.3	.43	4.1	7.2
500-1,000.....	E	4.9	4.0	5.4	1.7	10.2	8.0	10.4	5.1	.77	7.4	8.9	2.0	9.6	5.6	12.2	13.4	.60	5.4	8.4
1,000-5,000.....	F	13.7	12.0	13.5	4.9	29.2	16.8	27.8	18.1	5.8	21.4	25.7	7.7	17.8	19.5	20.0	...	2.4	16.2	21.4
5,000-10,000.....	G	6.7	6.2	6.6	2.6	11.6	9.4	12.1	8.6	.....	12.4	12.9	.....	6.2	9.4	5.5	.....	2.1	7.8	7.4
10,000-50,000.....	H	18.2	16.7	22.7	11.5	.....	17.8	.....	.....	.....	.....	.....	.....	12.1	20.7	.....	.....	8.7	16.3	.....
50,000 and over	I	46.5	53.8	38.0	76.0	.....	11.4	.....	.....	.....	.....	.....	.....	15.4	36.4	.....	.....	84.8	45.6	.....
Classes grouped		.....	.....	.....	.....	29.9	45.0	.....	60.8	91.5	42.9	32.9	87.2	.....	.....	24.4	55.9	.....	.....	38.4

is in the largest class; and for the chemicals group, very much more than half is in the largest class. For tobacco and rubber the three top classes are grouped; but, in each of these cases, the combined class contains a very large share of the total. If we go through the first twelve columns of the table, and examine the combined percentage for the three largest classes in all cases, we have: manufacture division, over 70; metals, over 75; foods, over 65; chemicals, over 90; textiles, under 45; printing, under 55; forest products, under 45; paper, over 65; tobacco, over 90; stone, over 55; leather, under 50; and rubber, over 85. The concentration in the largest classes is least in textiles, forest products, leather, and printing. Even in these cases the concentration is notable—in no case is it less than 40 per cent in the three top classes (those for assets of 5 millions or over).

Similar examination of the other divisions shows concentration very high in public utilities, moderately high in finance, and least in trade and construction. It is striking that the percentage of total assets in the smallest class (under 50 thousand) is quite considerable in trade and construction. Even for that manufacture group, textiles, showing the least concentration in the large classes, there is no equivalent percentage in the smallest class: 2.5 for textiles, against 8.0 for trade. The record as a whole, for the divisions as for the groups, emphasizes the high degree of concentration of total corporate assets in corporations of large size.

Average corporate size. This question of concentration is of interest also when expressed in terms of the average size of individual corporations. Although it is not intended to make a detailed examination of this point in the present study, selected items are of interest in giving a rough idea of the situation. There were in 1931, in the largest class, 139 manufacture corporations hav-

ing aggregate total assets of 29.6 billion dollars; whereas the 80,106 manufacture corporations of all sizes had aggregate total assets of 63.8 billion dollars. The 139 largest corporations thus had average total assets of over 210 million dollars, whereas the entire 80,106 corporations had average total assets of just under 800 thousand dollars. In the metals group the 52 largest corporations had over 11 billion dollars in aggregate total assets, and in the chemicals group the 35 largest corporations also had over 11 billion dollars in aggregate total assets. Among the divisions other than manufacture, concentration is high in public utilities, finance, and mining. In public utilities the 198 largest corporations had aggregate total assets of over 61 billion dollars; in finance the 234 largest corporations had aggregate total assets of over 55 billion dollars; and in mining the 25 largest corporations had aggregate total assets of 3.7 billion dollars.

Net-to-Gross Ratios

Profit ratio defined. In an earlier series of analyses I have given a major place to computed summary figures called profit ratios.¹ The *profit ratio* was defined as the quotient of statutory net income minus income tax divided by gross income. Previous investigations have shown that the usefulness of this ratio is largely restricted to comparisons for a single group of corporations between different times, and that the profit ratio is relatively unsatisfactory for comparisons between groups of corporations at a particular time. A decisive reason for this second conclusion is that the rate of turnover of assets varies so much from industry to industry that the profit ratio gives no trustworthy indication of the

¹ Defined in *Corporate earning power*, page 5, treated at length in that book, and subsequently *Harv. Bus. Rev.*, April 1933, pp. 336-348, and references cited therein.

comparative earning power of capital in various lines of industry. A second, but probably minor reason is that gross income is arrived at somewhat differently for certain groups of corporations than for others, these disparities are especially evident in comparing such an industrial division as manufacture with one such as finance, and the difficulty can largely be avoided by excluding comparisons of this type.

As I have previously indicated, gross income includes not only items which are truly gross, but some items which are net. It has been variously defined, and the most satisfactory technical definition is probably that given officially.¹ It reads: "The gross income represents the total income as reported on the face of the return, plus the difference between gross sales and the gross profits from trading or manufacture (i.e., cost of goods sold)." Gross income, as reported in *Statistics of income*, includes gross sales from manufacturing and trading operations; but its other constituents are to a large extent items which would be called net in ordinary accounting practice. They include such things as profit from operations other than manufacturing and trading, interest, rent, and dividends. It is impossible to know how large a gross business, in reality, is reflected in these net (or at least roughly net) items which find their way into the total for gross income. It is therefore not possible to estimate how great the deficiency of gross income is as a measure of the total gross business of corporations. The item *total receipts* as given in *Statistics of income* differs from gross income only by including interest on tax-exempt obligations. For corporations engaged in manufacturing and trading a preponderant part of gross income is gross sales.² In other types of activity, such as transportation and other public utilities, finance, and personal and professional service, corporations are not required to file a figure for gross sales. And in these cases, although an item for gross income is tabulated, the figure is by no means comparable to that for the other divisions. Similarly, ratios involving gross income, such as the profit ratio, are not comparable as between industrial divisions of these two sorts. For comparisons among the divisions reporting gross sales—manufacture, trade, mining, construction, and agriculture—no such restriction applies; gross income figures, and the derived profit ratios, are at least roughly comparable as among these divisions. Likewise, comparability is good among the various groups within the manufacture division.

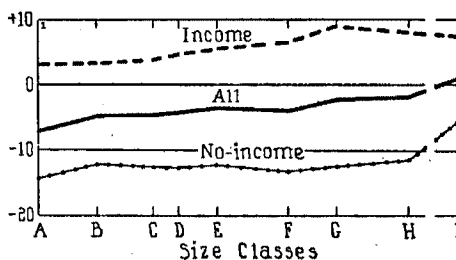
Definition adapted to 1931 data. In the statistics of Table 17 of the 1931 report there is no item which

¹ This is the one reported in the article by J. F. Ebersole, S. S. Burr, and G. M. Peterson, in *Rev. Econ. Stat.*, November 1929, p. 186.

² This item is clearly intended to mean gross sales after returns and allowances.

corresponds exactly to *gross income*, as used heretofore in these analyses. The data of Table 17 do, however, include the item *total receipts*; and this differs from gross income only in that it includes interest on tax-exempt obligations, whereas gross income excludes that item. As interest on tax-exempt obligations constitutes only a minor fraction of total receipts, it is clear that the ratio of statutory net income after taxes to total receipts would differ only slightly from the profit ratio as heretofore defined. The data of Table 17 also fail to include the amount of income tax; and hence the numerator of our ratio must be statutory net income, instead of statutory net income minus tax. We shall therefore use this ratio, of statutory net income to total receipts, in the present study as the *equivalent of the profit ratio* (calling it the profit ratio), and the comparisons and variations revealed will be treated as though they pertained to the profit ratio. This ratio, of statutory net income to total receipts, is roughly a net-to-gross ratio; but it is only roughly so because the tabulated item total receipts includes certain elements which are net, as well as some elements which are strictly gross.

Chart 1. Per cent ratios, of statutory net income to total receipts, for corporations of the manufacture division in 1931, classified by size of total assets.



Manufacture division. We show in Chart 1 the profit ratios for the nine different size classes (in terms of total assets) in the manufacture division; the three separate curves in this chart (and in other similar charts) apply to the corporations which reported net income in 1931, the corporations which reported deficit (no net income) in 1931, and the aggregate list (all) which combines both of these categories. For most purposes, in the present analysis, it is the *all* curve which is significant; but the other curves also are shown, partly because each has significant characteristics peculiar to itself and partly because comparisons between these two

constituent curves and between each of them and the *all* curve are significant.¹ It is particularly important to notice that Class H and Class I are separated on the charts by a blank band. This is because the exact upper boundary of Class I, as indicated on page 3, is not known. We have therefore indicated that the location of this top class on the chart has no scale significance, and correspondingly the inclination of the curve joining Class H to Class I is not significant, although differences in inclination among the three curves of any one chart and possibly among the curves of the several charts (1-10) may be significant.

The most striking feature of Chart 1 is the absence of considerable variation in the *all* curve from Class B to Class H. A gradual but irregular increase in level, from left to right, is apparent; but the total change in level is not large, and the variations from class to class are generally small. This means that for all size classes of manufacture corporations other than the lowest and the highest the average profit ratio for the corporations within a class would not change much from class to class. There is a moderate tendency for the ratio to rise as we pass from the small classes to the large classes; actually, as all of these ratios are negative, the size of the ratio diminishes as we pass along the *all* curve from the small class to the large class (we use, here and in what follows, "small class" to mean class of corporations having small total assets; and "large class" has a similar meaning). For the two end classes the changes are somewhat more striking: the smallest class (A) has a sharply lower ratio than the class adjacent to it; and the largest class has a sharply higher ratio, a ratio which is even positive, than the class adjacent to it. It remains true, however, that, if we omit from consideration these two end classes, the variation in profit ratio as the average size of corporation varies is only moderate. This finding, which applies to the manufacture division as a whole, appears superficially in accord with the finding in our investigation of consolidated returns that there was only a slight tendency for large-scale enterprise to have a different return on gross business from other enterprise.

If we look at the two subordinate curves of Chart 1, that for the income corporations and that for the no-income corporations, we find some departures from the general course exhibited by the *all* curve. All of the ratios for the income corporations are necessarily positive, and all of the ratios for the no-income corporations are necessarily negative. The *no-income* curve

shows an even greater stability from Class B to Class H than does the *all* curve; it shows the same sharp rise from Class A to Class B, and an even sharper rise from Class H to Class I. The *income* curve shows a substantial advance from Class A to Class G, and there is a rather surprising though moderate decline in the profit ratio for the two highest classes. Apparently among the income corporations there is a fairly strong tendency for the profit ratio to be larger for the larger corporations, at least up to Class G; whereas among the no-income corporations the correlation between profit ratio and size of corporation (excluding Class A and Class I) is negligible.

Effect of industrial diversity. These observations relative to Chart 1 are necessarily tentative and superficial. We recognize the possibility that apparent differences in the level of the profit ratio as we pass from one size class to another may arise because one size class is dominated by manufacturing industries of one type and the other size class by manufacturing industries of another type, and that these two types of manufacturing industry have different characteristic profit ratios. This is a basic obstacle to the conclusive interpretation of these corporation statistics classified according to size of corporation: we can never be sure, from the data as tabulated, that apparent variations between one size class and another are not due solely or chiefly to normal variations from one industry to another. No completely satisfactory test of the confusing effect of this classification factor can be made, but the direct application of the same method of analysis to the individual groups which make up the manufacture division may be helpful in showing whether this factor should be taken as completely explaining or offsetting the indicated relationships of Chart 1.

The manufacture division, which on the basis of total receipts in 1931 constitutes about 41 per cent of all corporate industry, is divided into eleven specific groups (plus a miscellaneous group, which we will not analyze separately).² These groups, arranged in the order of their importance according to total receipts in 1931, are as follows: metals, foods, chemicals, textiles, printing, forest products, paper, tobacco, leather, stone, and rubber.³ We shall consider, for each of these

¹ To say that the manufacture division constitutes 41% of the total is somewhat misleading, for reasons indicated above. Three divisions, two of them very large, report their total receipts entirely on a net basis, and hence the aggregate figure for all corporations is too small as reported. Therefore manufacture constitutes considerably less than 41% of the total, although it is unmistakably one of the largest divisions.

² We use here total receipts as a test of importance—see Table V, page 7, where we used total assets.

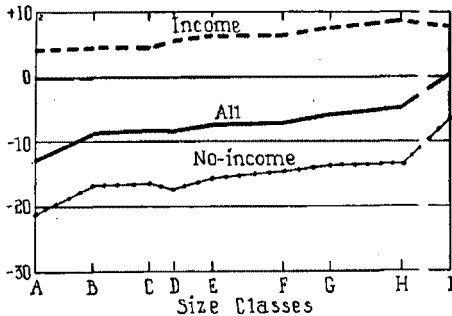
³ Formerly tobacco was included with foods, although for several years recently certain statistical items have been available separately for tobacco. In the 1931 report it is treated definitely as a separate group. Another striking instance of the inclusion within a group of a particular industry which normally has characteristics and variations peculiarly different from the rest of the group is that of petroleum products in the chemicals group. In this instance the subgroup petroleum products much more nearly dominates the entire group, from the point of view of size, than was the case of the subgroup tobacco in the old foods group, for tobacco was always relatively small.

¹ Strictly, there is some theoretical objection to joining the points, for any one of these three series of ratios, into a continuous curve; the plotted points are strictly averages for their respective size classes as a whole, and the points on the line joining any two of the plotted points should not therefore be interpreted as indicating what the ratio would be for some different and intermediate size class. We are using the continuous lines merely to aid the eye in passing from one plotted point, representing one specific size class, to the next plotted point; the curve then is a guide to changing levels of the several plotted points.

groups, the same sort of chart as that exhibited for the whole manufacture division in Chart 1.

Individual manufacture groups. In Chart 2 appear the three curves for the metals group, and it is at once evident that the main outlines observed in Chart 1 are maintained here. The general level of the *all* curve and the *no-income* curve is very much lower here than in Chart 1, but the course of each curve is largely the same in the two charts. In the *income* curve the advance in profit ratio from the small classes to the large classes is somewhat less considerable for the metals group than for the manufacture division. On the other hand, the stability of the *no-income* curve is not so clear for the metals group as for the manufacture division; in the metals group this curve also shows a moderate rise from the small classes to the large classes. The sharp advances between Class A and Class B and Class H and Class I for the *all* curve and *no-income* curve appear in the metals group much as in the whole manufacture division. It might be supposed that this similarity in the course of each curve of Chart 2 and the corresponding curve of Chart 1 is due to the fact that the metals group constitutes an important fraction of the entire manufacture division.¹ Against this inference, however, stands the observed disparity in the general level of the two bottom curves of Chart 2 and the corresponding curves of Chart 1—if the metals group does not dominate the division with respect to the *level* of the curves, should it do so with respect to their course?

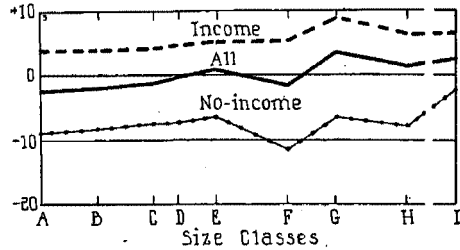
Chart 2. Per cent ratios, of statutory net income to total receipts, for corporations of the metals group in 1931, classified by size of total assets.



We pass now to the foods group, Chart 3. In this case the differences from the situation for the whole manufacture division as reflected in Chart 1 are much

¹ The principal groups constitute the following percentages, on the basis of total receipts in 1931, of the manufacture division: metals, 27%; foods, 21%; chemicals, 17%; and textiles, 12%.

Chart 3. Per cent ratios, of statutory net income to total receipts, for corporations of the foods group in 1931, classified by size of total assets.

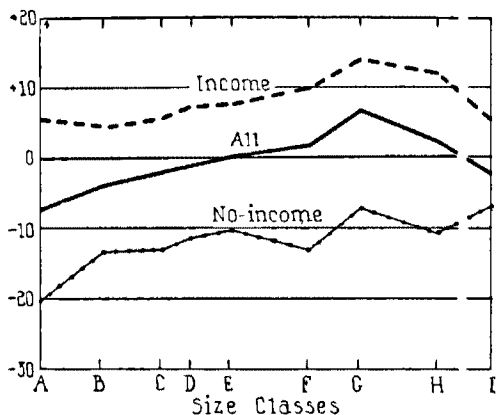


more noticeable. The general level of the two bottom curves of the chart is distinctly higher than for the corresponding curves of Chart 1, and the *all* curve in this chart stands above zero for about half of its course. In all three of the curves of this chart there is a very gradual, but highly irregular, tendency for the profit ratios to rise as the curve passes from the small classes to the large classes, and the irregularity of the movement is very striking. The sharp drop from Class E to Class F in two of the curves and the sharp advance to the next class with a subsequent gradual drop in Class H in all three curves distinguish this group from the metals group and from the division as a whole. We naturally suspect that these irregularities in the area from Class E to Class I may result from industrial differences and not reflect merely differences in the average size of corporation. We know that within the foods group, as within the other groups, there are corporations engaged in widely varying specific lines of activity.² There is no sure means of concluding whether these irregularities in Chart 3 are in fact due to the peculiarities of industrial classification or whether they truly reflect correlation, somewhat irregular, between the profit ratio and the amount of total assets for corporations within the foods group.

Corresponding curves for the chemicals group appear in Chart 4. Here the differences from Chart 1 are even more striking than those we have encountered in the two larger groups. The upward sweep of the various

² Some idea of the extent of this diversity can be obtained from Table 14 (beginning page 142) of the 1931 report. Here are shown selected statistics for various groups within the divisions other than manufacture, and for various subgroups within the several manufacture groups. Thus, in the foods group, there are seven subgroups, one of them miscellaneous. On the basis of gross income in 1931, the chief of these subgroups is packing-house products, and the next most important (excluding the miscellaneous class) is bakery and confectionery products. By examination of the available statistics for these subgroups we can show that the situation varies widely from one subgroup to another: I have reported analyses of this sort in *Harv. Bus. Rev.*, April 1933, pages 330-348, and references cited therein. The statistics which we are now studying from Table 17 are not available for these subgroups; but we may fairly assume that the charts would differ in the same way from subgroup to subgroup as we are finding them to differ from manufacture group to manufacture group. We observe finally that even these subgroups could be further classified into still smaller and still more homogeneous lists of corporations, each such list having characteristics peculiar to itself and yielding results analogous to those of Chart 1, but differing therefrom in detailed relationships and in their implications.

Chart 4. Per cent ratios, of statutory net income to total receipts, for corporations of the chemicals group in 1931, classified by size of total assets.

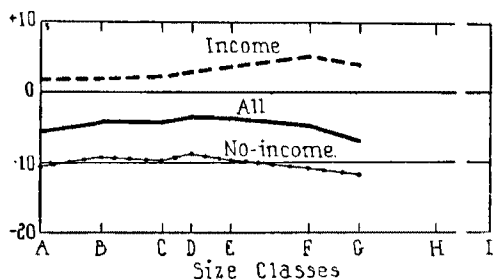


curves (neglecting the two largest classes H and I) is more vigorous here than in the other groups or in the entire division. The spread between the *no-income* curve and the *income* curve is greater here than in any of the cases already studied. The reduction in profit ratio (except for the *no-income* curve) in the large classes, from G to I, is greater here than in the other cases. The irregularity in the course of the curves is on the whole greater here than in the foods group. In the chemicals group, even more than in the foods group, we have reason to suspect that the observed irregularities in the curves, and even some of the more regular relationships, may arise because corporations of certain subgroups within the chemicals group tend to fall in the larger classes, whereas corporations engaged in other types of chemical industry tend to fall in the smaller classes. We have already observed that this group includes petroleum-refining corporations as its principal subgroup, and it is a matter of common knowledge that certain corporations of this subgroup are of very large size. It is likely that more of the petroleum companies fall in Classes E to I than in Classes A to D; and it is also probable that more of the companies engaged in other types of chemical enterprise (for example, drugs, soap, paint) tend to fall in Classes A to D than in Classes E to I. We can have no positive knowledge on this point, but serious question arises whether the movements of the curves of Chart 4 reflect any correlation between profitability and size of corporation, other than an illusory correlation caused by heterogeneity of industrial classification.

In Chart 5 (textiles) we have the first example of a group for which the ratios of the larger classes are not

available, because of the grouping of data to conceal the results for a single corporation.¹ Although the *income* curve shows a moderate advance from the small classes to the large classes, except for Class G, the *no-income* curve and the *all* curve show a gradual downward tendency through most of their course. On the basis of this evidence, we should be tempted to say that for textile corporations the profit ratio is negatively correlated with the size of corporation, that large corporations tend to earn a smaller return on gross business than do small corporations. This conclusion is somewhat confused by the opposite tendency revealed in the *income* curve, and even for the other curves the downward tendency is not very sharp. There is a possibility (corresponding to that in other groups already considered) that the apparent correlation can be charged to a tendency among textile industries of certain types

Chart 5. Per cent ratios, of statutory net income to total receipts, for corporations of the textiles group in 1931, classified by size of total assets.

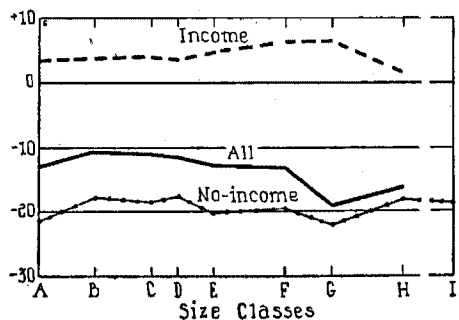


to be large, whereas textile industries of other types tend to be small. We know that the textiles group includes, among its subgroups, not only enterprises engaged in manufacturing fabrics, but also enterprises engaged in manufacturing clothing and other finished goods; and there is at least a chance that differences in the rate of earnings among different types of textile industries may largely account for the relationships revealed in Chart 5.

Chart 6 shows the three curves for the forest-products group; and, except for the *income* curve (up to Class G), there is a clear downward tendency in the curves of this group. This downward tendency is most apparent for the *all* curve, but it is unmistakable also for the *no-income* curve (at least to Class G). The great spread between the *income* curve and the two other curves emphasizes that in 1931 the bulk of this industry

¹ There is one income corporation and there is one no-income corporation in the 50,000-and-over class, and the grouping of these isolated corporations with the corporations of Class H yields data from which we derive the following profit ratios for the combined classes: income corporations, 5.60%; no-income corporations, -12.04%; and all corporations, -5.96%.

Chart 6. Per cent ratios, of statutory net income to total receipts, for corporations of the forest-products group in 1931, classified by size of total assets.

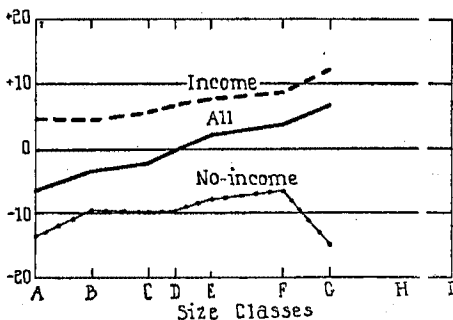


operated at a loss; and the course of the *all* curve is dominated by the course of the *no-income* curve, since the portion of the industry which yielded an income in that year was relatively unimportant.

The *all* curve for the printing group (Chart 7) has the most definite and vigorous upward course of all the curves thus far examined.¹ Part of the rise in the *all* curve is contributed by the *no-income* curve up to Class F, but this latter curve shows a striking drop from Class F to Class G although it rises again for the combined top classes.

Among the smaller groups, we omit specific consideration of paper, as well as leather, stone, and rubber; but we show in Chart 8 the curves for the tobacco group.²

Chart 7. Per cent ratios, of statutory net income to total receipts, for corporations of the printing group in 1931, classified by size of total assets.

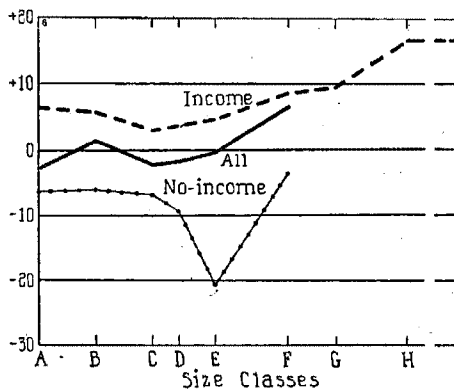


¹ For this group also the largest classes are combined, and the resulting profit ratios are as follows: income corporations, 12.09%; no-income corporations, -2.75%; and all corporations, 4.65%.

² The ratios for the four omitted groups were calculated and charted, but it was not thought that they revealed significant relationships of sufficient importance to warrant their presentation and discussion.

Although the *income* curve reaches through all size classes, the other two curves end with Class F, and the picture for this group is therefore somewhat imperfect.³ From Class C to Class H there is a very strong upward course, and the total change in profit ratio is greater than in any other instance examined. Leaving out Classes A, B, and I, we have here an emphatic case of correlation between the profit ratio and the size of corporation. The somewhat confusing variations of the curves from Class A to Class C, and the subsequent shifts in the *no-income* curve, need not be regarded as seriously damaging to this conclusion, in view of the very small share of the tobacco industry which falls in the small size classes, and in the no-income category.

Chart 8. Per cent ratios, of statutory net income to total receipts, for corporations of the tobacco group in 1931, classified by size of total assets.



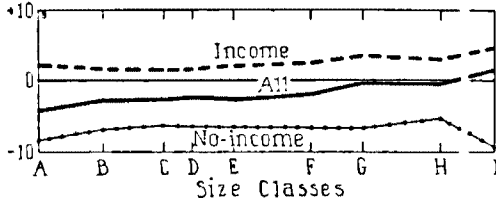
Profit ratios for other divisions. We pass now from consideration of the groups in the manufacture division to a corresponding treatment of the four other divisions—trade, mining, construction, and agriculture—for which total receipts include gross sales as a dominant constituent.⁴ Chart 9 shows the profit ratios for the trade division. Here there is a much narrower spread between curves than was observed for the manufacture division (Chart 1), and this indicates that even the income corporations in this division have relatively small profit ratios. There is a gradual upward course in all three curves (with minor exceptions) as we pass

³ There is one no-income corporation in Class I and two in Classes G and H. Combined data for these were published, and the corresponding profit ratio is -5.50%. These five corporations have relatively little effect upon the total—the overwhelming bulk (on the basis of amount of business) of the corporations in the Classes G, H, and I are income corporations; and we may therefore assume that the *income* curve of the chart shows the course for the *all* curve in these top classes.

⁴ The percentage importance, on the basis of total receipts in 1931, of these several divisions is as follows: trade, 28.0%; mining, 2.0%; construction, 1.0%; and agriculture, 0.44%; these percentages rest upon total receipts for all corporate industry as 100%, and for reasons indicated above they are therefore somewhat larger than they should strictly be.

from small to large classes. We have no knowledge from the Internal Revenue data whether this apparent correlation between the profit ratio and size of corporation is any more real and significant here than for the manufacture division, where we were able to make a detailed study by groups within the division. There are

Chart 9. Per cent ratios, of statutory net income to total receipts, for corporations of the trade division in 1931, classified by size of total assets.

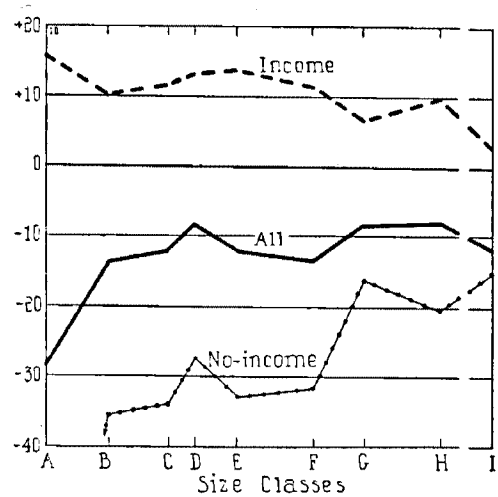


other materials from which to study certain groups of trade corporations—for example, studies of the Harvard Bureau of Business Research (M. P. McNair, *Econ. Jour.*, Dec. 1930, pp. 599-632) show somewhat similar results for department stores.

Chart 10 shows an extreme example of the other sort: the spread between the *income* curve and the *no-income* curve for the mining division is very wide (it becomes strikingly less wide as we proceed from Class A to Class I). For this division the *all* curve is somewhat irregular, and in most of its course shows no strong indication of correlation between the profit ratio and size of corporation. There is a very sharp advance from Class A to Class B; but the superficially emphatic correlation at this point is partially nullified by the *income* curve, which shows a considerable drop from Class A to Class B. In this division particular importance attaches to a consideration mentioned at length in commenting upon some of the manufacture groups. It is quite possible that part of the correlation indicated is really due to heterogeneity of industrial classification.

Within the mining division there are various groups of mining activities—for example, bituminous coal, anthracite coal, iron ore, other metal mines, etc.—and there is good reason to believe that some of these lines of enterprise have different characteristic rates of earning from others. Another disquieting feature of Chart 10 is that, whereas the *income* curve gives a general appearance of negative correlation between profit ratio and size of corporation, the *no-income* curve gives evidence of a positive correlation. We are tempted to conclude that the indications of the chart are inconsistent with each other, and subject also to uncertainty because of industrial diversity.

Chart 10. Per cent ratios, of statutory net income to total receipts, for corporations of the mining division in 1931, classified by size of total assets.



Summary of profit ratio results. We have now examined the statistical results for the leading divisions and manufacture groups. We find fragmentary but rather considerable evidence of moderate positive correlation between the profit ratio and the size of corporation. Many of the curves have an upward tendency as they pass from the small to the large classes, at least in part of their course. The great regularity of this movement for a considerable number of curves, and the fact that it appears in so many of the curves, creates a presumption that the apparent correlation can not be entirely illusory. We must bear in mind the highly significant fact, however, that, in any one division or group, the corporations which fall in the larger classes may tend to be engaged in certain types of activity, whereas those which fall in the smaller classes may tend to be engaged in other types of activity having different characteristic earning power. To some extent, the very diversity among the results for the several manufacture groups bears out this hypothesis; and, if we had corresponding data for the subgroups within each manufacture group, we might hope to get still further confirmation. Such evidences are nevertheless not conclusive, and we cannot say with assurance that all or even most of the indicated correlation can be ascribed to these differences in the normal size of corporations engaged in different lines of activity. We can at best merely hold that consideration in mind as we weigh the significance of the observed correlations. The data as presented give a strong basis for the tentative conclusion that a moderate tendency exists in many lines of industry for

the larger corporations to have on the average somewhat higher profit ratios than the smaller corporations.

By considering the average levels of the *all* curves of Charts 2-10, in conjunction with the distribution percentages of Table V, we get a rough idea of the way in which industrial diversity *may* contribute to the observed variations of Chart 1. There is, however, no clear case; there is no definite basis for saying that groups having largest concentration in large classes have generally highest profit ratios.

We recall that the earlier study of the consolidated returns also showed only moderate differences in profit ratio between the consolidated corporations (most of which are very large) and the non-affiliated corporations (which are mainly small). Although that study gave some indication that large enterprise might on the average earn at a somewhat higher rate than small enterprise, there were reasons for doubt as to the conclusive significance of the evidence. The findings of that study on the whole confirm the findings reached in examining Charts 1-10.

In view of the limitations—both as an accounting summary and as a statistical number—upon the profit ratio, it is helpful to examine several sets of related ratios derived from the tabulations now available in *Statistics of income*.

Return on Net Worth

Thus far we have been considering the profit ratio, a rough measure of the percentage return on gross business. It is this ratio—strictly, a somewhat differently defined profit ratio closely comparable to it—which we have heretofore used in studying time variations in the profitability of corporate industry. With the data in the form in which they appeared before the publication of the 1931 report no other equally satisfactory ratio could be derived directly. It was possible indeed to calculate ratios showing earnings in terms of *estimated* aggregates for certain balance-sheet items.¹ But, as the tabulated balance-sheet statistics (before 1931) did not pertain to the same corporations as the income statistics, these estimates were subject to an unknown error which might be large for particular groups. With the 1931 report, however, we have for the first time balance-sheet and income aggregates pertaining to groups of identical corporations. We can therefore calculate ratios of earnings to balance-sheet items with greater confidence in their validity and significance.

It is clear, of course, that statutory net income as reported for a particular corporation may not be closely

equal to the net earnings which might be reported by that corporation for another purpose and especially for the purpose of estimating return on capital. For groups of corporations, however, the tabulated aggregate statutory net income is probably a fair approximation to the aggregate of net earnings customarily used in measuring the return on capital.² The *net worth* figure used in the present investigation is likely to differ somewhat from the corresponding figure computed from the detailed balance sheet of a given corporation. We use here, as net worth, the sum of the stated value of preferred and common stock and the surplus and undivided profits less deficit. This figure is roughly equivalent to the more refined figure for net worth sometimes derived from the complete individual corporation balance sheet. The figures used here are from balance sheets for the end of the year.

Earnings on equity. The first ratio of importance is that of statutory net income to net worth—the return on net worth. We show these ratios, for the various size classes of the manufacture division and its five chief groups, in Table VI. As before, the ratios are shown separately for income corporations, no-income corporations, and all corporations combined. In addition to showing the ratios for the several size classes, we show also the “total” ratios applying to the entire division (or group) as a whole (without regard to size class).

The first striking observation suggested by this table is that the corporations of the smallest class have the widest spread in earning power between the income corporations and the no-income corporations. As we pass from the smallest toward larger classes, this spread becomes smaller, at first abruptly, and then gradually and irregularly.³ In other words, on the average, very small corporations either earn a very substantial return, or suffer a very severe rate of loss, on their net worth, whereas the rate of profit and the rate of loss are both more moderate for the larger corporations. This may be due in part to the general tendency of consolidated returns to fall in large classes—because such returns combine the income data for their subsidiaries which earn a profit with corresponding data for their subsidiaries which suffer a loss. There is thus an offset in these cases which may tend to make the average rate of profit (or loss) somewhat smaller than for the non-affiliated corporations, which fall mainly in the smaller classes. Probably a much more decisive reason for the observed tendency, however, is found in the higher average net worth, in ratio to business done, of the

¹ The statutory net income is the residue of net profit after interest paid and depreciation and depletion, and after taxes other than federal income tax. It is therefore a roughly appropriate figure for measuring the return on net worth.

² See *Corporate earning power*, chaps. VII and XII. Somewhat different treatment appears in S. H. Nerlove's *A decade of corporate incomes*.

³ Among the groups, there is one exception to this generalization: the chemicals group shows only insignificant change in spread from Class D to Class G.

Table VI. Per Cent Ratios, of Statutory Net Income (or Deficit) to Net Worth, for Corporations of the Manufacture Division and Its Principal Groups, Classified by Size of Total Assets

Total Assets (\$1,000)	Class Symbol	Entire Manufacture Division			Metals Group			Foods Group		
		Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations
Under 50.....	A	11.80	-52.79	-25.70	10.66	-45.80	-28.64	13.64	-38.70	-9.78
50-100.....	B	9.20	-25.72	-11.57	8.98	-23.36	-14.03	10.60	-24.11	-4.60
100-250.....	C	8.38	-19.70	-8.37	6.93	-17.09	-10.05	10.05	-17.01	-2.32
250-500.....	D	8.36	-15.34	-5.95	7.40	-15.07	-8.57	9.77	-14.69	-0.39
500-1,000.....	E	8.31	-12.52	-9.79	7.09	-11.56	-6.44	9.91	-11.88	1.30
1,000-5,000.....	F	7.98	-10.62	-3.54	6.26	-9.51	-5.25	8.07	-16.34	-1.92
5,000-10,000.....	G	9.14	-8.55	-1.66	6.93	-8.23	-4.08	12.06	-6.58	4.26
10,000-50,000.....	H	7.00	-8.04	-1.31	6.63	-8.48	-3.20	8.29	-8.01	1.65
50,000 and over..	I	6.86	-3.65	0.64	7.94	-3.36	0.05	11.06	-5.58	6.26
Total.....		7.44	-7.87	-1.62	7.40	-6.77	-2.49	9.99	-10.43	2.50

Total Assets (\$1,000)	Class Symbol	Chemicals Group			Textiles Group			Forest-products Group		
		Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations
Under 50.....	A	13.53	-51.18	-19.01	11.62	-77.50	-39.19	9.66	-61.22	-37.50
50-100.....	B	8.55	-18.80	-6.46	8.84	-39.05	-19.80	5.73	-18.24	-12.34
100-250.....	C	9.81	-17.02	-2.71	7.46	-30.99	-14.26	6.55	-22.06	-12.88
250-500.....	D	10.32	-12.01	-0.80	7.70	-15.68	-7.47	4.85	-16.56	-11.98
500-1,000.....	E	10.13	-10.94	0.09	6.78	-13.78	-5.81	4.82	-14.19	-9.82
1,000-5,000.....	F	11.42	-11.62	1.92	6.66	-10.64	-5.08	5.24	-10.96	-8.08
5,000-10,000.....	G	14.87	-6.06	6.65	3.78	-10.15	-6.29	1.60	-8.25	-6.84
10,000-50,000.....	H	8.45	-8.04	1.71	.....	.....	.....	0.53	-6.66	-5.80
50,000 and over..	I	2.55	-3.87	-1.25	.....	.....	.....	.....	-4.32	.....
Classes grouped..		.....	.....	.....	3.61	-8.70	-4.13	.....	.....	.....
Total.....		4.83	-5.01	-0.60	5.65	-13.09	-6.50	4.46	-11.05	-8.58

larger corporations. This, coupled with the fairly steady rate of profit per dollar of business for corporations of various sizes, would tend to cause the spread to narrow. Evidence and comment upon this point will be presented below.

Losses heaviest for small firms. The second major observation from Table VI is that, for the division and for each of the five groups, there is a fairly steady increase in the ratio (generally a diminution in the size of the negative ratio) in passing from the smallest class to the larger classes. Thus for the division, the smallest class had an average rate of loss of 25.7 per cent, the next class lost at the rate of only 11.57 per cent, and the very highest class actually made a profit, indicated by the small positive figure of 0.64 per cent. The decline of the ratio, as we pass from the smaller to the larger classes, is not entirely steady; and it is gradual after the sharp jump from the smallest class to the adjacent class. It is, however, very systematic and appears without exception in the division and the five groups shown. There can be no doubt from this evidence that

for 1931 the average rate of loss on net worth for all corporations declines strikingly as the average corporate size increases. As suggested above, this tendency is due largely to the fact that large corporations have a higher net worth on the average, in terms of their volume of business, than small corporations (see "Sales in Terms of Net Worth," below). It is only on this basis that we can reconcile the very striking upward course in the ratio of net income to net worth (downward course of net loss to net worth), as shown in this table, with the very moderate upward course in the profit ratio, as revealed generally in Charts 1-10.

Because of these differences in the relation of net worth to sales as between large and small corporations and because of the fact that the *income* curve declines as we pass from the smallest class to the largest class, the distinct possibility should be borne in mind that in a year of good business as contrasted with such a depression year as 1931 the *all* curve might well have the characteristics shown in 1931 by the *income* curve.

We have made a similar examination of the ratios of

net income to net worth for the remaining groups of the manufacture division, but they are not presented in tabular form herewith. The two main observations noted above are borne out in these cases also.

Return on equity: other divisions. As regards the divisions other than manufacture, similar computations yield Table VII. We include in this table not only the divisions—trade, mining, construction, and agriculture—covered in the analysis of the profit ratio, but also two divisions—public utilities and finance—which were not covered in the profit-ratio analysis because their figures for gross income (and total receipts) are not comparable with those of the other divisions.¹ For these divisions there is a fairly steady tendency for the spread between the ratio of the income corporations and the ratio of the no-income corporations to be reduced, and for the average rate of return to rise (that is, for the average rate of loss to diminish), in passing

from small classes to large classes. The differences noted are somewhat more emphatic for certain of these divisions than for the manufacture divisions and its principal groups, but the nature of the relationships is the same in all of these cases. Here, as in the manufacture division and its groups, appears a systematic confirmation of these two general observations: the rate of profit for income corporations declines whereas the rate of loss for no-income corporations diminishes, and the average rate of return for all corporations rises (the rate of loss declines) as we pass from small to large classes.

As Tables VI and VII give us a basis for comparison of divisions and groups for which we studied the profit ratio with the two chief divisions omitted from that study, it is interesting to make rough comparisons of the "total" ratios.² Confining our attention to the ratio for all corporations, we have: agriculture, —5.66;

¹ Similar figures for the service division, which had been excluded from the profit-ratio analysis for the same reason, were derived and examined, but are not shown herewith. The table for this division confirms the two general observations made above.

² Such comparisons, based upon the profit ratio, would be misleading in certain cases—partly because of differences in turnover of capital, partly because the profit ratio is not significant for all divisions.

Table VII. Per Cent Ratios, of Statutory Net Income (or Deficit) to Net Worth, for Corporations in Divisions Other than Manufacture, Classified by Size of Total Assets

Total Assets (\$1,000)	Class Symbol	Trade Division			Mining Division			Construction Division		
		Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations
Under 50.....	A	10.62	-42.40	-19.93	32.09	-136.08	-59.78	16.30	-56.56	-28.37
50-100.....	B	7.33	-22.15	-10.11	9.71	-21.63	-10.09	13.12	-30.35	-11.92
100-250.....	C	6.59	-16.64	-7.49	8.77	-14.22	-6.39	13.97	-20.59	-4.42
250-500.....	D	6.23	-14.08	-6.16	7.80	-9.44	-3.59	14.65	-12.69	0.70
500-1,000.....	E	6.28	-12.74	-5.75	6.32	-8.70	-3.90	14.98	-15.13	0.34
1,000-5,000.....	F	6.77	-11.14	-3.68	4.26	-6.07	-3.24	15.17	-5.98	5.54
5,000-10,000.....	G	7.76	-9.90	-0.41	1.84	-3.32	-1.88	10.02	-6.34	-0.99
10,000-50,000.....	H	7.69	-8.45	-0.73	4.29	-4.88	-2.22	.....	.....	.....
50,000 and over.....	I	12.90	-13.98	4.35	2.24	-3.87	-3.51	.....	.....	.....
Classes grouped..		.....	.....	.....	.....	.....	.....	10.56	-4.90	-0.29
Total.....		8.49	-15.55	-4.49	4.53	-5.37	-3.33	13.94	-14.75	-2.13

Total Assets (\$1,000)	Class Symbol	Agriculture Division			Public Utilities Division			Finance Division		
		Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations	Income Corporations	No-income Corporations	All Corporations
Under 50.....	A	10.14	-44.69	-24.57	13.10	-75.24	-16.78	9.86	-67.61	-19.57
50-100.....	B	5.39	-20.90	-13.43	11.30	-30.20	-3.97	6.46	-21.08	-5.71
100-250.....	C	4.51	-18.20	-11.62	8.76	-17.23	-0.33	5.49	-16.58	-5.23
250-500.....	D	4.15	-11.18	-7.16	8.99	-11.01	2.18	4.70	-13.35	-4.83
500-1,000.....	E	3.53	-9.37	-6.29	7.87	-10.19	1.09	3.89	-11.63	-5.12
1,000-5,000.....	F	.....	-6.57	.....	6.68	-9.29	0.71	3.84	-11.17	-5.72
5,000-10,000.....	G	.....	-4.01	.....	7.31	-7.50	1.71	3.81	-12.29	-6.44
10,000-50,000.....	H	.....	-5.04	.....	6.14	-8.73	1.07	4.02	-9.12	-4.42
50,000 and over.....	I	.....	.....	.....	3.95	-2.47	0.87	5.28	-4.44	-1.82
Classes grouped..		.....	-5.77	-3.22	.....	.....	.....	.....	.....	.....
Total.....		3.04	-9.73	-5.66	4.47	-3.40	0.85	4.53	-9.20	-4.40

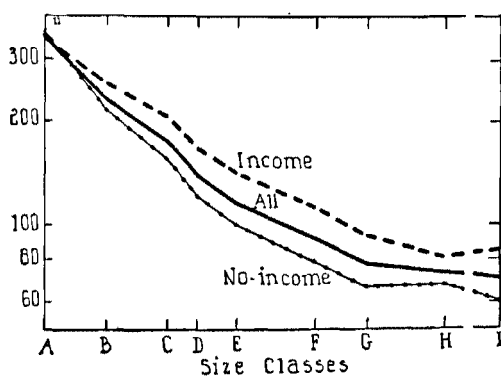
trade, -4.49; finance, -4.40; mining, -3.33; service (not included in the table), -3.17; construction, -2.13; manufacture, -1.62; and public utilities, 0.85. Among the divisions, there is a substantial difference in the rate of return; and although the finance division falls near the bottom of the list, the public utilities division has the highest rate of return and even had a small profit in 1931. Among the manufacture groups, the "total" figure for all corporations ranges from -8.58 for forest products and -6.50 for textiles to 2.50 for foods and 14.43 for tobacco. There is clearly a far greater spread between the highest and lowest ratios of the manufacture groups than between the highest and lowest ratios of the several divisions.

Sales in Terms of Net Worth

We have already remarked that the larger corporations tend to have a much higher average net worth, per unit of volume of business, than smaller corporations. We now examine in some detail ratios of gross sales to net worth, in order to bring out in more tangible form this relationship. It might be suggested that some other measure of the gross volume of business than gross sales would be desirable for this purpose; but as we are confining the analysis to those divisions which report gross sales, and as gross sales seems to be a highly appropriate measure of the volume of ordinary business for such corporations, the indications are probably trustworthy. As previously stated, gross sales is intended to be reported after deduction of returns and allowances; and the remarks made above concerning the definition of net worth, as used in this analysis, should be borne in mind.

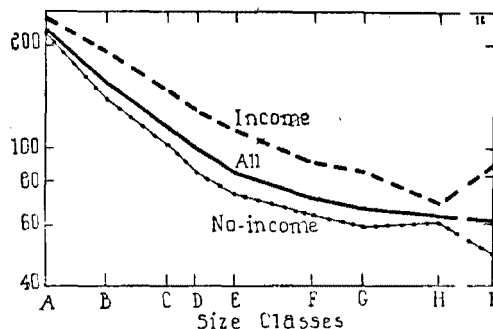
The manufacture division and groups. Chart 11 shows the ratios of sales to net worth for the various size classes of the manufacture division. The *all* curve

Chart 11. Per cent ratios, of sales to net worth, for corporations of the manufacture division in 1931, classified by size of total assets.



declines rapidly, but with some retardation, and very regularly as it passes from the smallest to the largest class. Moreover *income* and *no-income* curves are separated by only a narrow spread, and the whole appearance of the chart lends emphasis to the conclusion that the average ratio is much smaller for large than for small corporations. The retardation in the decline of the curves should not be taken as having any significance in itself; a different selection of horizontal scale (some other scale than the ratio scale actually used) might result in a different apparent curvature. The essential point is that the ratio declines without interruption from a level above 300 per cent to a level below 80 per cent.

Chart 12. Per cent ratios, of sales to net worth, for corporations of the metals group in 1931, classified by size of total assets.



We show, in Charts 12-16, corresponding curves for the five principal groups in the manufacture division. There is a remarkable confirmation in these charts of the correlation, between the ratio of sales to net worth and the size of corporation, revealed by Chart 11. A few irregularities appear, especially in the highest class; and there is also much diversity in the average rate of decline of the curves, ranging from a gradual decline for the chemicals group to a very violent drop for the textiles group. Although the rate of decline for any one chart has very little significance because of the possibility of varying the scale, differences in the rate of decline as between charts (all charts of this investigation except 1-10 have the same scale) are highly significant. We can thus say for the textiles group that there is an extraordinary difference between the ratio of sales to net worth for small corporations and that for larger corporations. Although similar charts were constructed and examined for the remaining groups of the manufacture division (they are not reproduced herewith), they reveal the same general characteristics as those which are shown, and confirm the findings already reported.

Chart 13. Per cent ratios, of sales to net worth, for corporations of the foods group in 1931, classified by size of total assets.

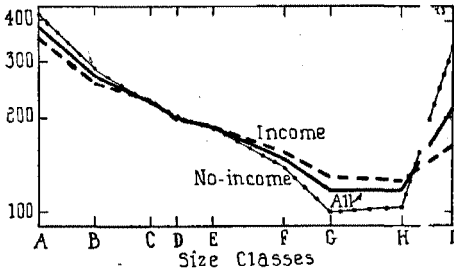


Chart 14. Per cent ratios, of sales to net worth, for corporations of the chemicals group in 1931, classified by size of total assets.

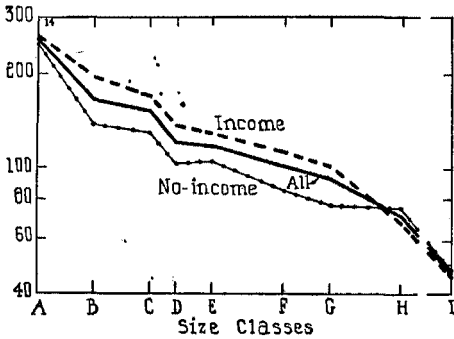


Chart 15. Per cent ratios, of sales to net worth, for corporations of the textiles group in 1931, classified by size of total assets.

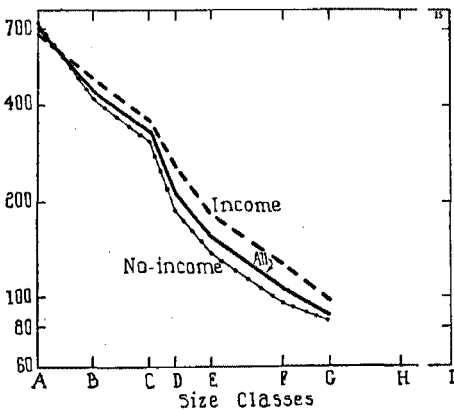
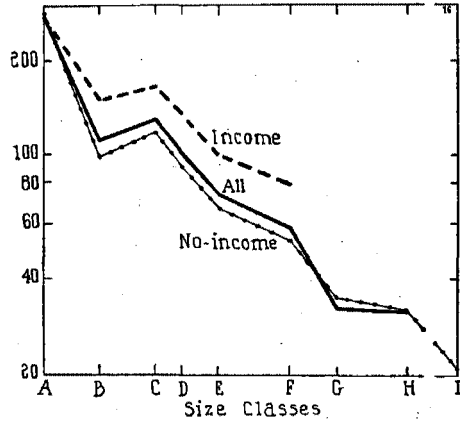


Chart 16. Per cent ratios, of sales to net worth, for corporations of the forest-products group in 1931, classified by size of total assets.



Other divisions. We show in Charts 17 and 18 corresponding figures for the trade and mining divisions. Beyond noticing that the rate of decline of the curves for the trade division is very gradual, and that the curves for the mining division (especially the *income* curve) show an unmistakable rise for the higher classes, these charts afford nothing but a confirmation of the findings already reached. The upturn in the larger classes, particularly evident for the mining division, indicates that after corporations have reached a certain size their sales per dollar of net worth rise as the corporations become larger. This may be another one of the illusory indications about which we have spoken before; it may arise from the fact that particular lines of activity, having particularly high or particularly low ratios of sales to net worth, tend to be large rather than small. No sure conclusion can be

Chart 17. Per cent ratios, of sales to net worth, for corporations of the trade division in 1931, classified by size of total assets.

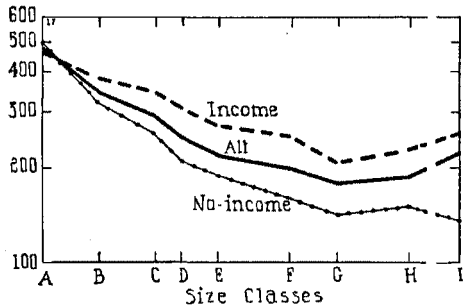
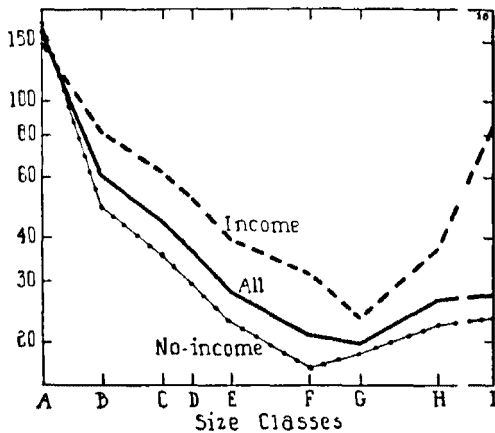


Chart 18. Per cent ratios, of sales to net worth, for corporations of the mining division in 1931, classified by size of total assets.



reached on this score; but, as the peculiarity appears chiefly in the mining division, this explanation is strongly suggested. A similar examination was made of charts for the other two divisions—construction and agriculture—but, as they throw no additional light upon the general indications, they are not reproduced.

Sales and Capital Assets

The examination which we have made of the ratio of sales to net worth (in Charts 11-18) indicated generally a much higher turnover of net worth for small companies than for large companies. This finding appears not only in the major divisions but in all manufacture groups. One of the possible explanations, suggested by the fact that these data pertain to the severely depressed year 1931, is that the net worth of the small companies may have been more seriously impaired

than that of large companies. It is therefore of interest to examine the ratio of sales to capital assets, because the effect of the depression may have been smaller in the direction of reducing capital assets than net worth, and particularly because the effect of the depression upon capital assets may not have been any greater for small companies than for large companies. It is understood, of course, that the progress of the depression has led many corporations to write down capital assets; but there is some uncertainty whether this practice has been resorted to more generally by large companies or by small companies. In any case, there is considerable reason for confidence that the disparity, even if it runs against the small companies, is not so great with respect to capital assets as it probably is with respect to net worth. We may hope therefore that the analysis of these ratios will give a somewhat more trustworthy indication of differences in capital turnover, as between small companies and large companies, than the similar examination of the ratios of sales to net worth. One other point should be borne in mind: there is a wide difference in the situation of corporations in different lines of industry with respect to the amount of capital assets normally needed per dollar of sales; and we should not therefore attach much importance to differences in these ratios (for the "total" covering the entire division or group) as between divisions or groups.

Table VIII shows the ratios of sales to capital assets for the various divisions and groups.¹ There is an almost uniform tendency for the ratio to decline from small classes to large classes. This decline, except for a few groups and divisions, is not of large magnitude compared to some of the changes thus far examined. There are several cases in which the ratio for the smallest class is very high; possibly this situation arises from a tendency in some lines for companies to occupy rented

¹ Certain groups of less significance are not shown in the table; in the main they show no diversity from the general tendencies revealed.

Table VIII. Per Cent Ratios, of Sales to Capital Assets, for the Various Divisions and Chief Manufacture Groups, Classified by Size of Total Assets

Amount of Total Assets (\$1,000)	Class Symbol	Manufacture Division	Metals Group	Foods Group	Chemicals Group	Textiles Group	Forest Products Group	Printing Group	Stone Group	Trade Division	Mining Division	Construction Division	Agriculture Division
Under 50.....	A	516.0	334.0	404.2	514.1	1560.8	331.9	332.2	232.8	1157.0	78.4	598.7	72.8
50-100.....	B	379.1	254.9	309.0	363.0	1096.0	248.5	309.6	159.7	907.8	53.0	392.8	40.7
100-250.....	C	296.8	207.9	279.4	305.9	612.9	207.0	285.1	120.2	776.1	40.6	308.8	36.7
250-500.....	D	245.2	180.5	261.2	241.9	372.2	170.4	256.2	107.3	702.4	37.5	253.1	28.1
500-1,000.....	E	212.0	157.1	293.1	249.6	274.6	134.6	244.2	107.1	606.1	28.6	214.3	21.9
1,000-5,000.....	F	166.8	145.4	242.1	213.9	181.5	84.6	227.6	70.0	557.8	22.9	164.2	....
5,000-10,000.....	G	134.3	132.2	185.7	160.5	154.6	39.7	201.0	53.1	414.8	21.9	97.1	....
10,000-50,000.....	H	123.3	119.2	183.6	112.0	....	34.4	....	....	354.1	30.7	....	....
50,000 and over.....	I	114.8	96.1	405.8	69.8	....	....	....	....	433.6	30.8	....	....
Classes grouped.....		....	....	....	....	119.6	....	185.8	70.8	....	....	91.1	14.8
Total.....		146.6	116.8	288.0	89.1	234.2	83.1	229.1	79.2	601.9	29.3	229.9	23.3

plant and even use rented machinery. Probably such an example appears in the textiles group: it is quite likely that the very small firms in this group consist to a large extent of clothing manufacturers utilizing hired plant space and perhaps hired equipment. A more general condition of the form shown appears, of course, in the trade division—here the custom of hiring plant is somewhat more common than in manufacturing; and, even in the case of various quite large mercantile establishments, ownership of real estate has largely been avoided. With these reservations, the main indication of Table VIII is very general: a substantial, but not violent, reduction in the ratio appears as we pass from small to large classes.¹

Sales as a Share of Total Receipts

In order to disclose what share of total receipts appears in the form of sales, for each division and group and for each size class, we computed the percentage ratio of sales to total receipts in all cases. The resulting detailed data are not reproduced herewith, because the variations were so very small that a few summary statements cover adequately the entire case. For nearly all divisions and groups the ratio is very large; in numerous cases it falls in the high nineties. (For the three divisions—public utilities, finance, and service—which ordinarily do not report sales, no ratios were computed of course.) Generally the ratio does not vary much from size class to size class and is not significantly different for income corporations from that for no-

¹ We show in the table the results only for all corporations in each group and division. Separate data for income corporations and for no-income corporations were computed and examined. These results show, however, no serious general differences from the results for all corporations, and the actual figures for the two categories show differences which were generally of little significance. As was to be expected, of course, the ratios for the no-income corporations were almost invariably considerably smaller than corresponding ratios for income corporations.

Table IX. Per Cent Ratios, of Gross Sales to Total Receipts, for the Several Divisions and Manufacture Groups

Divisions and Groups	Income Corporations	No-Income Corporations	All Corporations
Manufacture division	95.8	94.6	95.2
Metals group	93.2	95.2	94.4
Foods group	97.9	98.1	98.0
Chemicals group	92.9	87.8	90.0
Textiles group	98.2	97.7	97.9
Printing group	95.2	92.0	93.8
Forest-products group	96.3	94.8	95.2
Paper group	98.0	93.1	95.5
Tobacco group	98.6	93.8	98.3
Stone group	96.4	97.0	96.8
Leather group	98.6	97.5	98.1
Rubber group	95.5	96.2	96.0
Trade division	96.8	96.0	96.4
Mining division	88.8	88.8	88.8
Construction division	71.8	81.0	75.9
Agriculture division	47.4	81.6	66.5

income corporations. The "total" figures for the several divisions and groups are shown in Table IX; and, as the variation from size class to size class is slight, these results give a good indication of the differences among divisions and groups. It is clear that, except for construction and agriculture, the ratios are so high for all divisions and groups that analyses based upon gross sales can to a large extent be interpreted as though they applied to total receipts.

Current Ratios

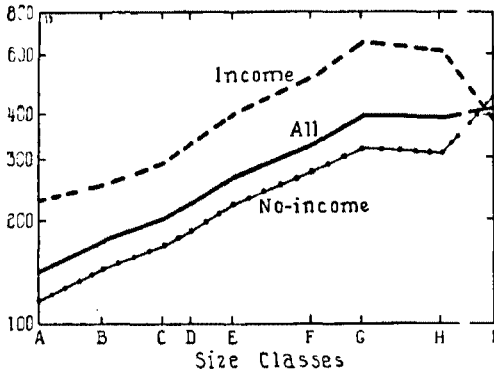
Definition of items. We turn now to the consideration of several ratios based more narrowly upon the balance-sheet statistics. These examinations are of interest in themselves, as revealing certain balance-sheet relationships in terms of size of corporation, but they are also interesting as showing possible reasons for certain findings reported above in the discussion of those ratios involving income-account items. In examining these balance-sheet ratios, we must be especially careful to take account of the depressed state of industry in 1931. Not only was the actual value of many assets seriously reduced by the protracted and severe depression, but it had already become a fairly general practice by 1931 for corporations to write down the estimated value of particular balance-sheet items. There can be no assurance then that the relationships revealed in these charts are any true reflection of those which balance sheets might be expected to show under normal conditions.

The first of these ratios meriting attention is the *current ratio*. The ratio as used here is not exactly as it is frequently defined, because the published income tax data do not supply all of the minor constituents which normally enter into current assets and current liabilities. Our figures for current assets (cash plus accounts and notes receivable—presumably after reserves—plus inventories) and for current liabilities (accounts and notes payable) are, however, roughly equal to the more accurately defined corresponding items; and the current ratio as we compute it is substantially equivalent to the more refined ratio preferably used in analyzing the credit situation of a particular company.

The manufacture division and groups. Chart 19 shows the current ratios for the entire manufacture division, with the customary classification according to size of total assets and according to whether the specific corporations do or do not report a net income. The *all* curve shows an almost uninterrupted advance as it passes from the small to the large classes; and the single interruption from Class G to Class H is not a substantial decline in the ratio. The advance from Class A

to Class G is of important magnitude, and is almost equally reflected in the *income* curve and in the *no-income* curve. It is fairly clear that, among corporations of the manufacture division as a whole, the current ratio is very much larger for large corporations than for small corporations. In this comparison, as in so many

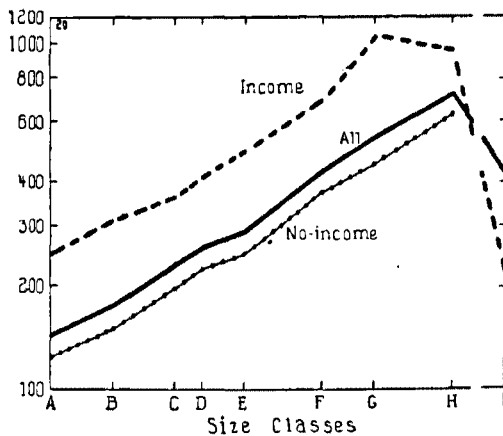
Chart 19. Per cent ratios, of current assets to current liabilities, for corporations of the manufacture division in 1931, classified by size of total assets.



of those we have reported above, the possibility that there is a tendency for corporations in particular lines of activity to be large rather than small should not be overlooked.

Study of corresponding charts for the individual manufacture groups bears upon this question. Chart 20 shows the ratios for the metals group, and the upward tendency of the curves is even more emphatically

Chart 20. Per cent ratios, of current assets to current liabilities, for corporations of the metals group in 1931, classified by size of total assets.



present in this group. The *all* curve rises without interruption from Class A to Class H, and there is only a moderate decline in the *income* curve from Class G to Class H. There is a general and violent decline from Class H to Class I; and, as it is somewhat difficult to understand why the systematic correlation which appears from Class A to Class H should be interrupted at this point, this decline in the right-hand area of the chart strongly suggests that certain corporations in a particular line of industry may be concentrated in this largest class.

Charts 21-24 show the corresponding record for four other leading groups in the manufacture division. These

Chart 21. Per cent ratios, of current assets to current liabilities, for corporations of the foods group in 1931, classified by size of total assets.

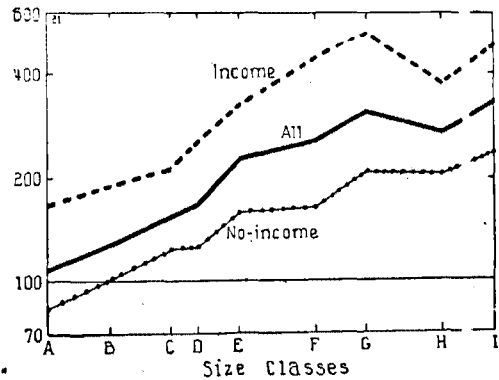


Chart 22. Per cent ratios, of current assets to current liabilities, for corporations of the chemicals group in 1931, classified by size of total assets.

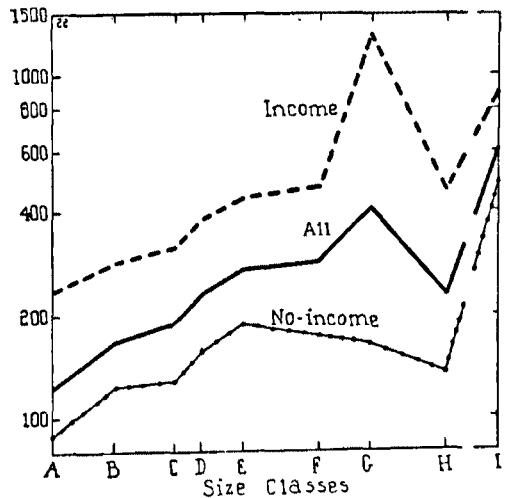


Chart 23. Per cent ratios, of current assets to current liabilities, for corporations of the textiles group in 1931, classified by size of total assets.

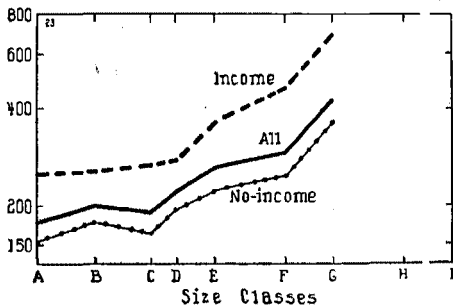
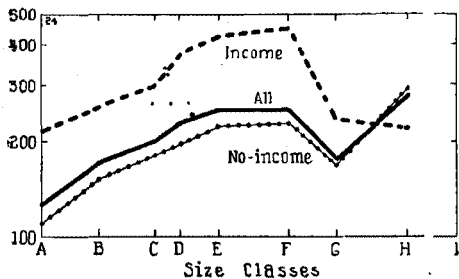


Chart 24. Per cent ratios, of current assets to current liabilities, for corporations of the forest-products group in 1931, classified by size of total assets.

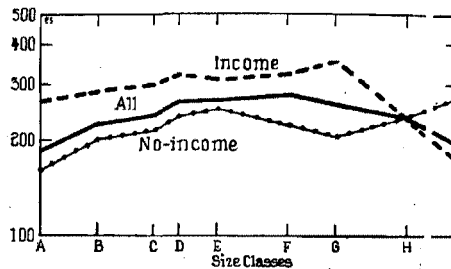


groups show somewhat more numerous and more violent irregularities in nearly all of their curves than are shown in the entire division or in the metals group. The upward tendency, from small to large classes, is generally apparent; although a moderate but significant decline appears in two curves for the textiles group (Chart 23) from Class B to Class C, and a very sharp decline occurs in all curves of the forest-products group (Chart 24) from Class F to Class G. We do not present similar charts for the other manufacture groups, although all of them were prepared and examined; but they show, with some exceptions and irregularities, the same upward course observed in those presented herewith.

Other divisions. Chart 25 presents current ratios for the trade division. It is immediately obvious that no such strong upward tendency appears here as in the manufacture division and its various groups. A gradual rise does in fact appear from Class A to Class F, but there is then an uninterrupted reduction of substantial amount from Class F to Class I. The entire fluctuation of the *all* curve takes place in a fairly narrow belt ranging from somewhat less than 200 per cent to con-

siderably less than 300 per cent. A striking secondary feature of the chart is that the ratios for the *income* curve decline sharply from Class G to Class I, whereas those for the *no-income* curve rise; but no reasons for this condition suggest themselves.

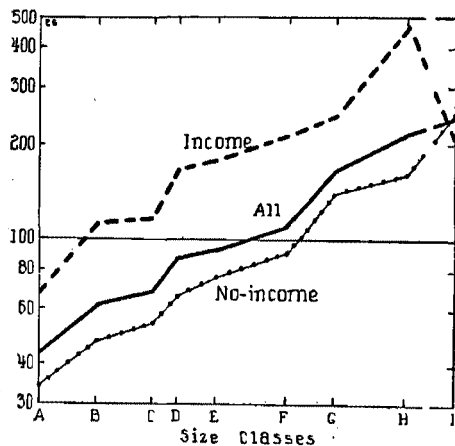
Chart 25. Per cent ratios, of current assets to current liabilities, for corporations of the trade division in 1931, classified by size of total assets.



The curves of Chart 26—for the mining division—conform more closely to those of the manufacture division than do those of the trade division. Throughout its course, with some irregularities in pace, the *all* curve rises. In the main the two subordinate curves show the same course, but from Class H to Class I the *income* curve suffers a severe drop.

We have in these charts showing current ratios a fairly systematic indication of correlation between the current ratio and the average size of corporation in the manufacture division and its several groups and in the mining division. There is a moderately strong tendency

Chart 26. Per cent ratios, of current assets to current liabilities, for corporations of the mining division in 1931, classified by size of total assets.



for the current ratio to rise in passing from small to large classes. Generally speaking, then, the larger companies in these divisions are in a stronger current position than the smaller companies. This relationship does not appear in the trade division (Chart 25); and a similar examination of the public utilities division (chart not shown herewith), reveals that it does not appear there either.

Sales Compared with Cash

The per cent ratio of sales to cash gives some idea of the amount of business done in terms of the cash assets; inversely, it is an indication of the supply of cash carried per dollar of gross business done. We have examined this ratio, for the various divisions and groups, to see whether there is any systematic correlation between the ratio and the size of corporation. The pertinent figures appear in Table X.¹

We observe a fairly general tendency for the ratio to decline gradually in passing from small to large classes in nearly all divisions and manufacture groups. The actual rate of decline is in most cases not large; and the total reduction, from the smallest class (A) to the largest class (I), is seldom greater than 50 per cent. In some instances there are considerable irregularities in the downward course of the ratio from small class to large class; and in a few instances, such as the stone group, the pace of the decline is very gradual.

Taken together, the results in Table X indicate a fairly definite tendency for large corporations in nearly all divisions and groups to carry a moderately larger amount of cash per dollar of sales than for small corporations. Here, as in many other comparisons we have

¹ Similar calculations were made for income corporations and for no-income corporations, separately. In the main, these separate ratios for the two categories did not show significant differences from the general ratios for all corporations; and the latter alone are therefore shown in the table.

made, it is necessary to take account of the possibility that certain types of industry (within each division and group) tend to fall in large classes, whereas other types tend to fall in small classes. If there is also a tendency for these different types of industry to have different characteristic ratios of sales to cash, this consideration would account in part for the apparent correlation revealed in Table X. There is much doubt as to whether this consideration accounts completely for the indicated correlation, in view of its generality; and the statistics studied afford partially conclusive evidence of a negative correlation between the ratio and the size of corporation.

Ratio of Inventory to Cash

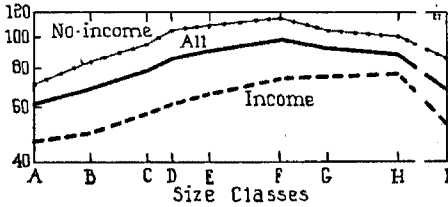
In appraising the significance of data on current assets, it is necessary to consider relations among some of the principal constituents of current assets. Ratios which compare these constituents with each other are likely to be more sensitive than those based on current assets as 100 per cent. One such comparison, likely to be particularly helpful, is that of inventory with cash. In studying the relation of inventories to cash, or any other specific item, it must be remembered that inventories are peculiarly subject to cyclical variations. Furthermore the cyclical responsiveness of the inventory account varies widely from one type of industry to another.

We show in Chart 27 these ratios for the manufacture division, classified in the standard way adopted in all the charts of this study. The *all* curve shows a moderate advance from Class A to Class F, and thereafter a gradual decline which becomes sharp from Class H to Class I. The total advance from A to F is only moderate, when compared with some of the correlations observed in other charts; and there seems to be no

Table X. Per Cent Ratios, of Sales to Cash, for the Various Divisions and Chief Manufacture Groups, Classified by Size of Total Assets

Amount of Total Assets (\$1,000)	Class Symbol	Manufacture Division	Metals Group	Foods Group	Chemicals Group	Textiles Group	Forest Products Group	Printing Group	Stone Group	Trade Division	Mining Division	Construction Division	Agriculture Division
Under 50.....	A	641.0	461.9	1058.3	513.4	850.3	489.6	462.3	397.3	734.8	280.9	386.4	366.7
50-100.....	B	530.1	414.0	836.6	439.3	665.2	366.7	427.8	353.5	563.6	257.0	326.0	255.9
100-250.....	C	487.0	370.6	793.6	448.6	600.8	347.6	396.9	334.9	491.2	241.0	266.3	207.3
250-500.....	D	457.3	371.9	742.3	373.9	581.7	318.5	412.9	353.8	455.1	221.7	206.0	161.6
500-1,000.....	E	430.0	349.9	701.4	373.0	530.4	287.4	389.6	342.8	432.1	202.3	162.8	122.9
1,000-5,000.....	F	398.9	328.9	666.4	372.8	476.2	285.5	357.0	338.6	421.6	174.1	122.6	....
5,000-10,000.....	G	352.0	207.0	605.4	445.0	405.4	203.1	391.7	251.4	438.0	203.1	65.6	....
10,000-50,000.....	H	361.0	280.5	623.2	353.2	....	210.0	....	....	483.0	240.8	....	....
50,000 and over.....	I	310.0	257.1	719.8	278.6	....	....	....	....	525.5	267.0	....	....
Classes grouped.....		....	....	....	....	363.9	....	169.8	391.6	....	....	145.0	70.4
Total.....		367.3	284.8	703.4	312.9	504.0	277.8	288.9	351.3	497.5	230.2	202.8	119.6

Chart 27. Per cent ratios, of inventory to cash, for corporations of the manufacture division in 1931, classified by size of total assets.



strong indication therefore of a striking variation in the ratio of inventory to cash among manufacture corporations of various sizes.

Charts 28-32 show corresponding curves for the five principal manufacture groups. In the metals group the decline at the right of Class F is much more extensive than the antecedent rise. On the other hand, the rise in the foods group—a very gradual rise—proceeds almost without interruption from Class A to Class H. In the chemicals and forest-products groups the movement is somewhat less regular, particularly in the area of the large classes, than in the division or the other groups; and the record for the textiles group, so far as it extends, is closely similar to that for the division. The differences among the groups, and between any one of them and the division as a whole, suggest that the moderate correlation shown in Chart 27 conceals more significant relationships pertaining to smaller and more homogeneous industrial classifications.

Chart 33 exhibits the ratios for the trade division. Here the *all* curve shows a downward tendency through most of its course; this decline is very gradual but the fact that it is a decline, instead of the advance noticed in Chart 27, is significant. It might be expected that the relation between inventory and cash for trade corporations in some lines of different sizes would be fairly

Chart 28. Per cent ratios, of inventory to cash, for corporations of the metals group in 1931, classified by size of total assets.

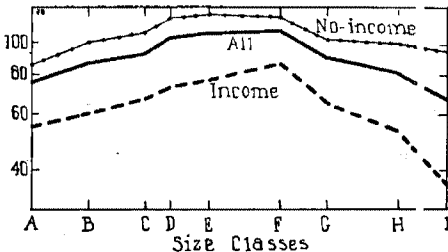


Chart 29. Per cent ratios, of inventory to cash, for corporations of the foods group in 1931, classified by size of total assets.

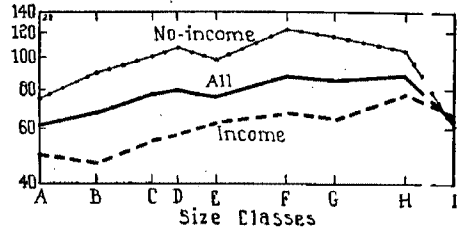


Chart 30. Per cent ratios, of inventory to cash, for corporations of the chemicals group in 1931, classified by size of total assets.

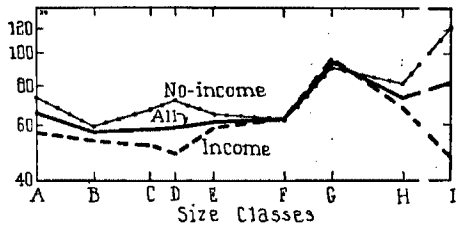


Chart 31. Per cent ratios, of inventory to cash, for corporations of the textiles group in 1931, classified by size of total assets.

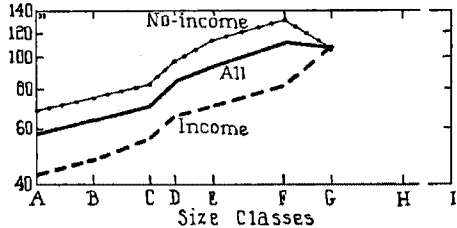
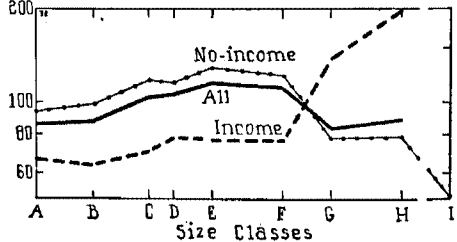
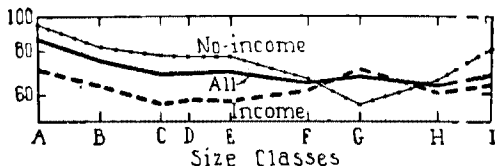


Chart 32. Per cent ratios, of inventory to cash, for corporations of the forest-products group in 1931, classified by size of total assets.



uniform; hence the fact that the curve declines only gradually is not surprising. Why this ratio should be somewhat smaller for large corporations than for small corporations in the trade division is not so apparent,

Chart 33. Per cent ratios, of inventory to cash, for corporations of the trade division in 1931, classified by size of total assets.

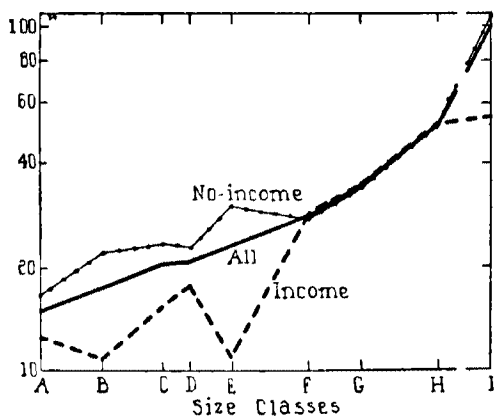


and again it is possible that the variation which appears is due to a tendency for trade corporations of one type to be large whereas those of another type tend to be small.

Chart 34 (mining) furnishes a more striking example of correlation between the ratio and the size of corporation than any other chart in this series (27-33). The *all* curve rises without interruption through all its course, and the advance over the whole range is very large. The *income* curve and the *no-income* curve are very irregular, and therefore nullify somewhat the appearance of steadiness in correlation as revealed by the *all* curve.

These several charts, showing ratio of inventory to cash, have their *no-income* curves higher than their *income* curves almost without exception. This implies that the corporations which reported net income in 1931 systematically had a smaller average ratio of inventory to cash than the corporations which reported

Chart 34. Per cent ratios, of inventory to cash, for corporations of the mining division in 1931, classified by size of total assets.



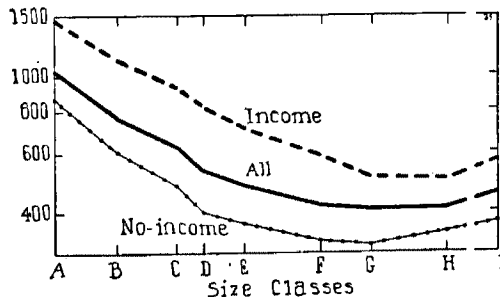
deficits. To what extent this results from the tendency of the income corporations to hold more cash, and to what extent it results from their tendency to carry a smaller inventory than the no-income corporations, it is impossible to ascertain. The essential point is that the income corporations are systematically in a more favorable position, with respect to the apportionment of their current assets (other than receivables) between cash and inventory.

Ratio of Sales to Inventory

One of the most helpful ratio comparisons between an income-account item and a balance-sheet item is that of sales to inventory. A strict calculation of the turnover of inventory would presumably require the inventory to be stated at selling prices, rather than at cost or market whichever is lower, and would require the figure used for the inventory to be an average over the year as a whole, rather than an isolated figure for the end of the year. Unfortunately we are unable to calculate the ratio upon this strict basis, but the calculations which can be made are probably satisfactory for the type of comparison in which we are interested. In these calculations we use the inventory as stated in *Statistics of income*: it is stated as pertaining to the end of the year, and it is valued presumably at cost or market whichever is lower.

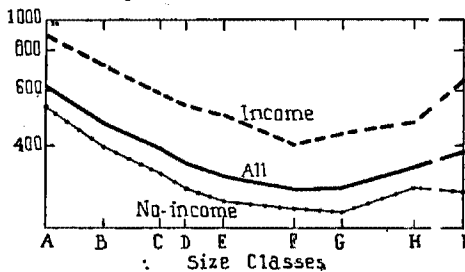
Chart 35 shows these ratios for the manufacture division; and it is clear that the ratio is much larger for smaller corporations than for larger corporations, although there is a moderate advance in the curves for the very largest classes. The actual decline in the *all* curve from Class A to Class G is about 60 per cent, and this is a highly significant change. Clearly, very small corporations turn their inventory much more rapidly than do larger units, and it is doubtful if any large part of the observed variation can be ascribed to differences in industrial classification.

Chart 35. Per cent ratios, of sales to inventory, for corporations of the manufacture division in 1931, classified by size of total assets.



Charts 36-40 show similar results for the principal manufacture groups. Except for moderate differences in the rate of variation, and for some irregularities in the course of the curves, the results for the metals, foods, and textiles groups conform closely to those for the entire division. In the chemicals and the forest-products groups, although there is a considerable net decline over the whole course of the curves, there is a

Chart 36. Per cent ratios, of sales to inventory, for corporations of the metals group in 1931, classified by size of total assets.



very great irregularity of movement which implies that such correlation as exists is not systematic. Irregularities of the type revealed, particularly in Charts 38 and 40, suggest that industrial classification within the various groups may have a large share in causing the apparent correlation.

We made similar computations for the other manufacture groups and examined corresponding charts; but, as they showed no significant general differences from those already discussed, they are not presented herewith.

In the trade division (Chart 41), as might have been expected, the ratio shows only moderate variation from size class to size class. To be sure, the *all* curve is similar in shape to that of the manufacture division—

Chart 37. Per cent ratios, of sales to inventory, for corporations of the foods group in 1931, classified by size of total assets.

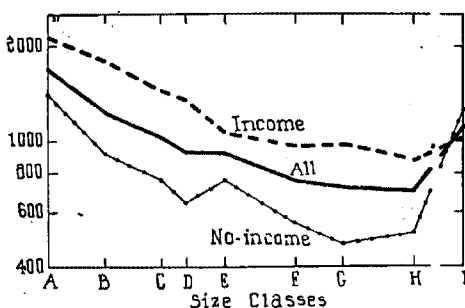


Chart 38. Per cent ratios, of sales to inventory, for corporations of the chemicals group in 1931, classified by size of total assets.

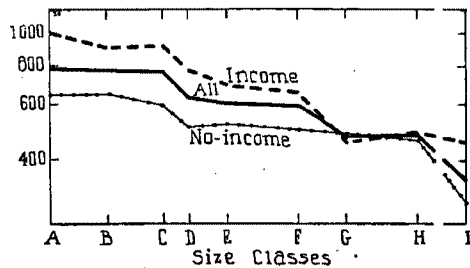


Chart 39. Per cent ratios, of sales to inventory, for corporations of the textiles group in 1931, classified by size of total assets.

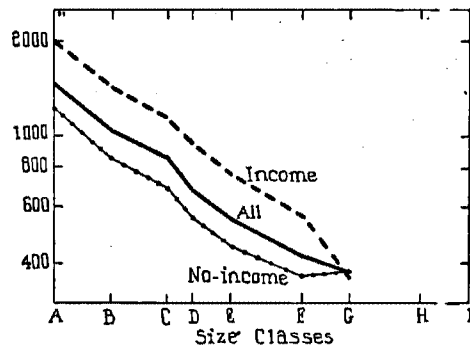
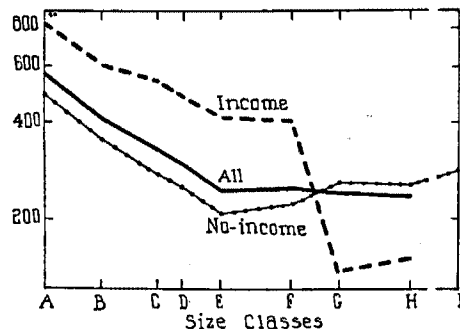


Chart 40. Per cent ratios, of sales to inventory, for corporations of the forest-products group in 1931, classified by size of total assets.



it declines in the left area of the chart and rises in the right area of the chart. The actual amount of change, however, is not great; and, if it were not for the steadiness of movement, we should not regard the change revealed as having definite significance.

Chart 41. Per cent ratios, of sales to inventory, for corporations of the trade division in 1931, classified by size of total assets.

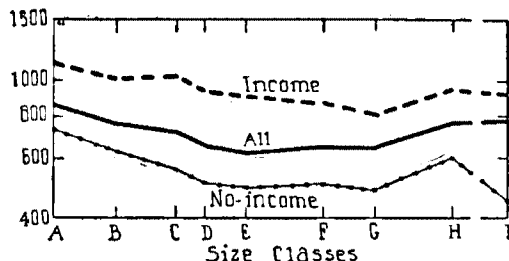
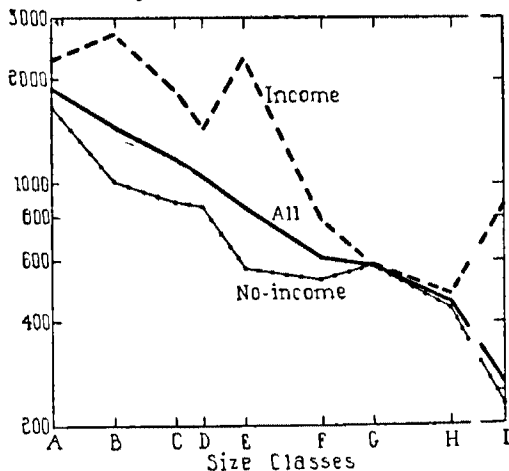


Chart 42 (for the mining division) shows a more persistent decline in the rate of turnover than we have found in any other division or group. Throughout its course, the *all* curve declines at a fairly rapid pace; and the total reduction from the smallest to the largest class is over 80 per cent. Whereas very small mining corporations have a remarkably large average turnover of inventory, the very largest mining corporations turn their inventory only slightly more than twice a year. This is another case in which an important share of the correlation observed should perhaps be ascribed to differences in industrial classification: the very large mining corporations probably include generally enterprises in certain lines (such as petroleum production) in which large inventory must be carried.

Chart 42. Per cent ratios, of sales to inventory, for corporations of the mining division in 1931, classified by size of total assets.

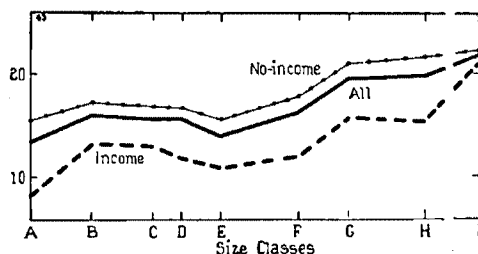


Bonds and Mortgages

One of the important aids in studying the capital structure, as reflected in the balance sheet of a corporation, is the relation between the long-term debt and the value of plant and equipment. Although the figures given in *Statistics of income* do not enable us to calculate this ratio precisely in the most desirable form, these figures are sufficiently appropriate for the purpose so that the ratios actually computed yield trustworthy indications.

The first chart of this series is for the manufacture division (Chart 43) and shows only a moderate—and by no means steady—correlation between the ratio and the size of corporation. After irregular changes in the left area of the chart, the *all* curve rises moderately from Class E to Class I. The total change in level is not great, and we conclude that no wide differences exist between small and large manufacture corporations in the extent to which they borrow against their fixed assets.

Chart 43. Per cent ratios, of bonded debt to capital assets, for corporations of the manufacture division in 1931, classified by size of total assets.



The principal manufacture groups (Charts 44-47) disclose somewhat more striking evidences of correlation. The most marked correlation appears in the foods group, for which the ratio rises quite rapidly through most of its course. In this case, there is strong chance that many of the large companies are engaged in those food manufacturing activities requiring large plant facilities against which heavy indebtedness is customary. In the chemicals group the main tendency of the curves is downward—such correlation as exists is negative, although highly irregular. For the textiles group also the general tendency of the curves is irregularly downward—the correlation is negative. For these two groups, small corporations tend to borrow more extensively against their fixed assets than do large corporations.¹

¹ We examined similarly the other manufacture groups and found evidence of great irregularity in the individual curves, and of much diversity in the extent and direction of the correlation indicated. These groups are not exhibited herewith.

Chart 44. Per cent ratios, of bonded debt to capital assets, for corporations of the metals group in 1931, classified by size of total assets.

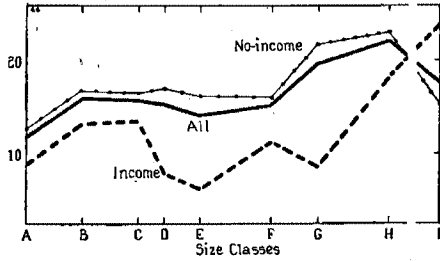


Chart 47. Per cent ratios, of bonded debt to capital assets, for corporations of the textiles group in 1931, classified by size of total assets.

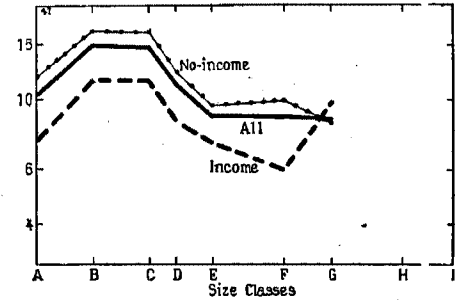


Chart 45. Per cent ratios, of bonded debt to capital assets, for corporations of the foods group in 1931, classified by size of total assets.

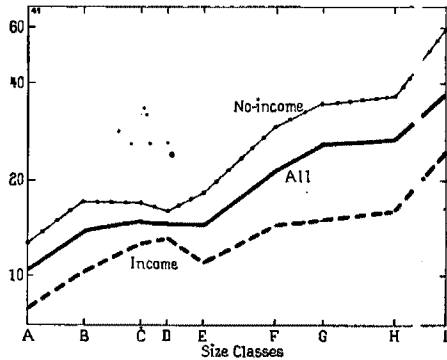


Chart 48. Per cent ratios, of bonded debt to capital assets, for corporations of the trade division in 1931, classified by size of total assets.

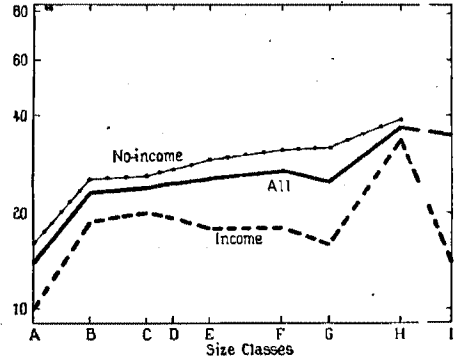


Chart 46. Per cent ratios, of bonded debt to capital assets, for corporations of the chemicals group in 1931, classified by size of total assets.

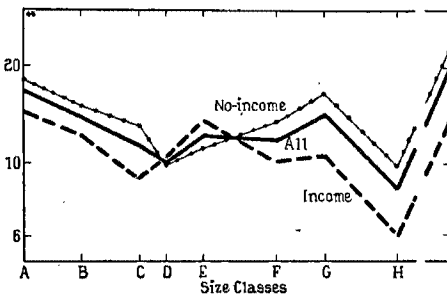


Chart 49. Per cent ratios, of bonded debt to capital assets, for corporations of the public-utilities division in 1931, classified by size of total assets.

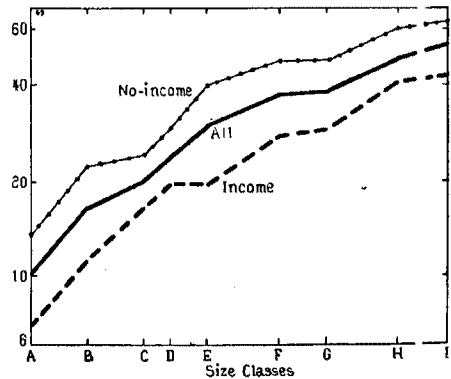


Chart 48 shows that the trade division has a moderate positive correlation between the ratio and the size of corporation; in this division large corporations tend to borrow slightly more against their fixed assets than do small corporations. Chart 49—for the public utilities division—is a good example of an emphatic positive

correlation. In this case the *all* curve rises vigorously throughout its course; large corporations in this division unmistakably tend to borrow more heavily against their fixed assets than do small corporations. When account is taken of the fact that the large corporations of this division are likely to be railroads which have long been accustomed to borrow heavily, it is clear that even such a strong correlation as appears here cannot be ascribed solely to a relation between indebtedness and mere size of corporation.

Net Worth Compared to Capital Assets

Generally speaking, it is expected that the owners of a corporation will contribute enough capital not only to cover all of the fixed assets but to leave something over for circulating capital. Obviously, in particular cases and generally in some lines of industry, a portion of the capital assets is in fact mortgaged; what we are interested in here is the *amount* of the capital contributed by the owners, and the relationship indicated refers merely to that amount. For certain lines of industry it is quite possible that conditions and customs justify a form of capital structure for which the relationship indicated above does not hold; in such cases the total net worth may be less than the stated value of the assets.

We show in Table XI the ratio of net worth to capital assets for the various divisions and groups, classified according to size of corporation. For most divisions and groups there is only moderate variation in this ratio from size class to size class. In the manufacture division, and in most of its groups, there is a moderate upward tendency in the ratio from small to large classes; but, as this tendency is very irregular and as it is clearly reversed in certain of the groups, no great significance attaches to it. In all size classes of the manufacture

division and of each of its groups the ratio is distinctly above 100 per cent, and in many cases very much above 100 per cent. Systematically among manufacture corporations, therefore, the average ratio conforms to the general rule noted above: the average net worth of manufacture corporations ordinarily exceeds the total value of capital assets.

Except for small classes in the mining division, the ratios for all classes of three other divisions—trade, mining, and construction—satisfy the same rule. For most classes in the agriculture division, however, and for all classes in the public utilities division, about one-half the classes in the finance division, and most classes in the service division, the percentage is less than 100. In the finance division we have the most striking example of correlation between the ratio and the size of corporation; here the ratio rises from less than 100 per cent for the smallest class to over 600 per cent for the highest class. Except for this division, evidences of correlation are relatively slight in these several divisions, as they were for the manufacture division and its various groups.

The Ratio of Net Worth to Total Debt

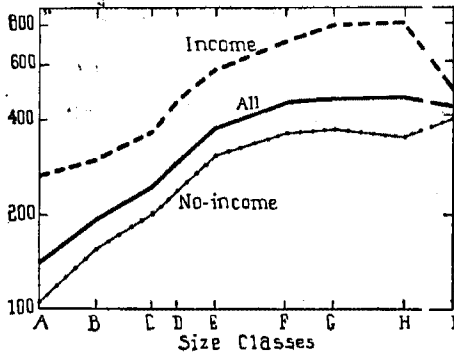
An indication of the distribution of ownership of corporate assets, as between proprietors and creditors, is afforded by the ratio of net worth to total debt. There might be some advantage in confining the comparison to that indebtedness which is sufficiently permanent to have rough stability, but there are also reasons in favor of using the over-all figure particularly in a depression year; and in any case the data take a form which renders this a simple treatment.

Chart 50 shows the ratios for the manufacture division, and the *all* curve has an extraordinarily smooth and a generally upward movement. Most of the advance occurs between Class A and Class F, and the

Table XI. Per Cent Ratios, of Net Worth to Capital Assets, for the Various Divisions and Chief Manufacture Groups, Classified by Size of Total Assets

Amount of Total Assets (\$1,000)	Class Symbol	Manufacture Division	Metals Group	Foods Group	Chemicals Group	Textiles Group	Trade Division	Mining Division	Construction Division	Agriculture Division	Public Utilities Division	Finance Division	Service Division
Under 50.....	A	146.2	149.5	104.1	201.1	222.0	241.4	48.8	164.1	69.2	86.2	88.4	93.3
50-100.....	B	163.8	164.4	115.2	220.8	245.0	263.1	87.2	155.2	77.6	88.4	77.2	91.6
100-250.....	C	169.0	179.6	124.2	202.0	184.9	267.0	90.5	164.6	84.4	89.7	76.8	90.0
250-500.....	D	175.8	183.9	130.8	201.0	174.6	282.1	101.7	187.7	91.2	86.4	84.9	85.3
500-1,000.....	E	182.2	186.5	156.2	212.8	176.8	275.5	102.0	193.7	98.7	77.9	100.3	76.9
1,000-5,000.....	F	181.0	203.1	162.7	210.5	170.2	280.8	109.8	220.5	.....	68.8	145.7	66.6
5,000-10,000.....	G	174.4	197.8	159.3	173.3	176.5	234.0	110.6	185.3	.....	70.2	193.2	59.6
10,000-50,000.....	H	168.5	186.4	157.4	158.5	.....	188.2	116.3	.....	.....	65.3	319.5	.....
50,000 and over.....	I	163.0	154.9	191.3	149.6	.....	196.3	113.7	.....	.....	70.9	615.4	.....
Classes grouped.....		.....	.....	.....	.....	179.1	.....	.....	157.8	112.0	.....	.....	134.3
Total.....		168.5	170.0	163.2	155.3	177.3	242.1	110.6	178.8	101.1	70.6	191.3	93.4

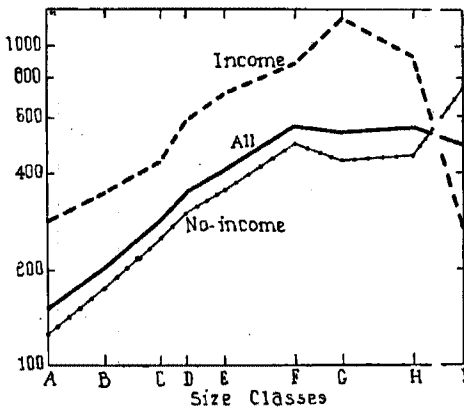
Chart 50. Per cent ratios, of net worth to total debt, for corporations of the manufacture division in 1931, classified by size of total assets.



curve thereafter becomes nearly horizontal, and actually declines from Class H to Class I. The general indication of the chart is one of considerable correlation in which the chief variation occurs for the smaller classes; in the left area of the chart there is a strong tendency for higher ratios to be associated with larger average size of corporation.

As we examine the principal groups in the manufacture division, Charts 51-55, we see the correlation observed in Chart 50 generally confirmed. The curves of this group of charts are, however, considerably irregular, and the inclination of the curves varies from that of the *all* curve in Chart 50. The metals and chemicals groups are roughly similar to the division as a whole; but the advance in the *all* curve of the foods group, and (beyond Class B) that of the forest-products group, is

Chart 51. Per cent ratios, of net worth to total debt, for corporations of the metals group in 1931, classified by size of total assets.



very gradual, whereas the advance in the *all* curve of the textiles group is strikingly sharp (particularly after Class C). In spite of the considerable differences among the curves of Charts 50-55, and in spite of certain irregularities in particular curves, it is fairly clear that larger manufacture corporations tend to have a higher-than-average share of their total assets owned by the

Chart 52. Per cent ratios, of net worth to total debt, for corporations of the foods group in 1931, classified by size of total assets.

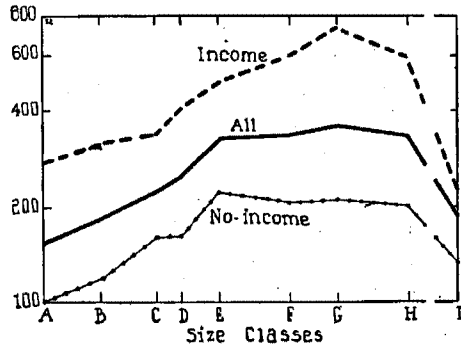
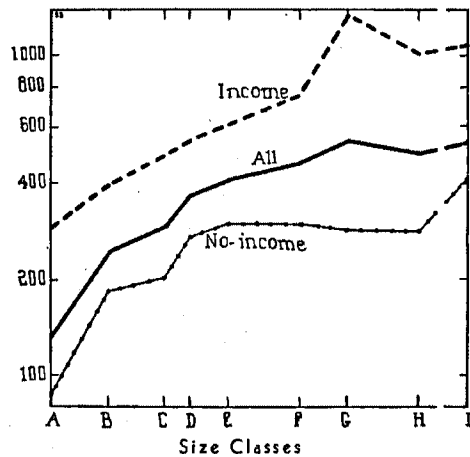


Chart 53. Per cent ratios, of net worth to total debt, for corporations of the chemicals group in 1931, classified by size of total assets.



proprietors, whereas smaller corporations tend to have a higher-than-average share owned by the creditors (see, however, above comment on relation of bonds and mortgages to capital assets).

The charts for two other divisions—trade and mining, Charts 56 and 57—reveal somewhat similar contours of the curves. The total rise in the *all* curve for the trade division from Class A to Class G is only very moderate,

Chart 54. Per cent ratios, of net worth to total debt, for corporations of the textiles group in 1931, classified by size of total assets.

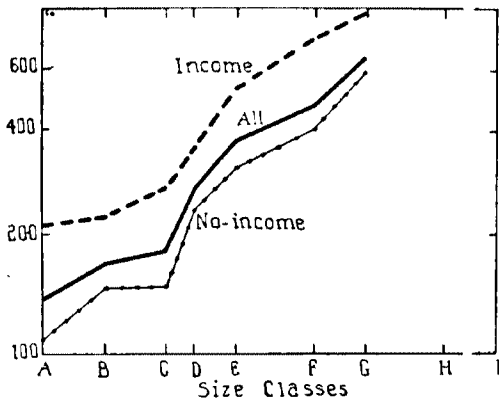


Chart 57. Per cent ratios, of net worth to total debt, for corporations of the mining division in 1931, classified by size of total assets.

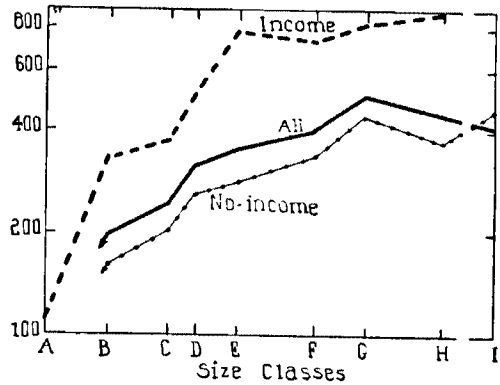


Chart 55. Per cent ratios, of net worth to total debt, for corporations of the forest-products group in 1931, classified by size of total assets.

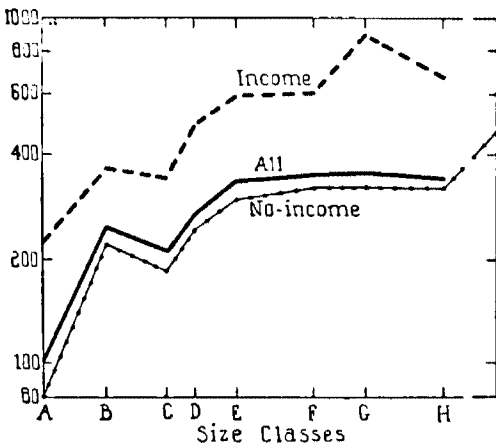
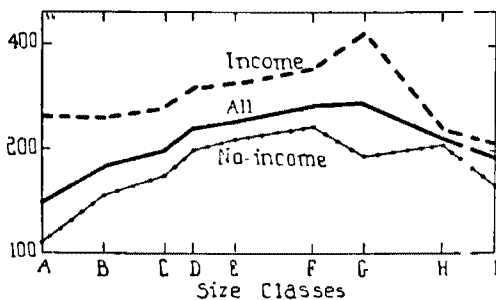


Chart 56. Per cent ratios, of net worth to total debt, for corporations of the trade division in 1931, classified by size of total assets.



and there is a substantial decline to the right of Class G. In the mining division there is an extraordinary rise from Class A to Class B, and thereafter only a gradual change in the ratio. For this division the creditors own the major share of the assets in the average corporation of small size.

Summary and Conclusions

The most striking finding of the above analysis, with reference to corporate earning power, is the fairly general tendency for larger corporations to have a higher average return on their gross business than smaller corporations. This tendency is shown, not only in the case of numerous groups (Charts 1-10) for corporation groups showing actual net incomes in 1931, but also in the reduction in the rate of loss for various groups which had deficits in that year. In other words, most of the profit-ratio curves rise in passing from small class to large class, whether those curves lie in the positive area of the chart (reflecting actual net income) or in the negative area (reflecting deficit). Although this tendency does not appear without exception in all divisions and groups, and is accompanied with some irregularities even in various groups where it does appear, it is so common in the cases examined that there is ample reason for regarding it as a roughly general rule.

In considering this finding, as well as various other findings of this study, it is necessary to take account of the important possibility that certain types of industrial activity—within any particular industrial division or group—may tend to be handled by larger corporations while other types tend to be handled by smaller corporations. This condition could account for a portion, perhaps a large portion, of the observed correlation

between the profit ratio and the size of corporation, provided one type of activity had characteristically a different profit ratio from the other type. One of the advantages of studying separately the individual groups within the manufacture division is that such study throws light on this hypothesis. It appears, in fact, not only that the shape and slope of the curves vary from group to group (Charts 2-8), but also that the average levels of the curves are different for some groups from those for other groups and for the division. These differences are sufficient to afford a strong presumption in favor of the above hypothesis, in favor of suggesting that a portion and perhaps an important portion of the observed correlation is due to industrial diversity.

Another important qualification upon this finding, as upon the other findings of this investigation, is that the data apply only to the year 1931. That year was one of deep depression; and, in addition to the general effect of cyclical depression upon various items in the financial records of all companies, we must consider the diverse effects upon different lines of industry and upon different companies within specific lines of industry. No clear conclusions as to the significance of these ratio results for ordinary or normal conditions in industry can be drawn from figures pertaining to such an unusual year as 1931. We can, however, establish certain tentative conclusions from 1931 statistics and look forward to checking those conclusions against the data of later years. Furthermore, of course, the record for 1931 is of interest for its own sake: it gives us a striking picture of corporate conditions at a time of severe depression.

The second finding of chief significance is that, in general, large corporations had a smaller rate of loss on their net worth in 1931 than did smaller corporations. There were some instances in which groups of corporations showing net profit, instead of loss, appeared to follow a corresponding rule: larger corporations appeared to have a higher rate of profit on their net worth than smaller corporations. These groups were, however, not numerous, and it is very doubtful if this general rule as to profits holds under normal conditions. It seems somewhat more likely that smaller corporations may have the higher rate of profit on their net worth than larger corporations in years of good business. This question is so dependent upon depression conditions, particularly as they determine the valuation

of net worth, that it is especially necessary in this case to suspend judgment so long as we have evidence based only upon the year 1931.

In order to supplement and test the two chief parts of the investigation, various subordinate sets of ratios were examined. Certain of these have interest on their own account, to be sure; but they all help to explain what we have observed concerning the rate of profit. We found, for example, that the volume of sales expressed as a ratio of net worth was larger for the small corporations than for the large corporations; but, although this relationship was fairly general, it did not prevail in all lines of industry. This comparison helps to explain why the rate of profit expressed in terms of gross business was found so considerably different from the rate expressed in terms of net worth. Among the other subordinate ratios, one of the most significant studied is the ratio of current assets to current liabilities. Examination of this ratio shows that the current position of larger companies was emphatically better than that of smaller companies for most lines of industry in 1931. To what extent this situation resulted from a cutting down of liabilities, and to what extent it resulted from a building up of current assets, cannot be determined because of the unavailability of corresponding data for the years before the depression.

Without cataloguing at length the subordinate findings, and the detailed qualifications which must be applied to the various findings with reference to particular lines of industry, we conclude with some assurance that there are unmistakable differences between the operating results and financial condition of smaller corporations and those of larger corporations. As suggested above, a portion of the observed differences may be due to industrial diversity, to the tendency of corporations in some lines of industry to be large and of those in other lines of industry to be small. It seems highly improbable, however, that this consideration fully, or even largely in most cases, accounts for the differences observed. Those differences must therefore be accepted as real differences, at least for such a year as 1931. In that year, corporate size was definitely an important factor in determining operating performance and financial condition in many lines of corporate industry.

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