

DISPERSION IN THE INDEBTEDNESS OF LARGE NONFINANCIAL CORPORATIONS: AN INTER-INDUSTRY ANALYSIS OF FINANCIAL LEVERAGE

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This article reports some results of a large empirical study on financial leverage. The article first defines financial leverage and some of its fundamental principles. This is followed by a brief description of the study's data base, which comprises measurements of financial variables and their dispersions for more than 3,000 large corporations. Following that is a discussion of the research findings and some broad implications of the findings.

I. INTRODUCTION

Financial leverage, as the term is commonly used, denotes the power a company can obtain, through debt, to translate a given level of net income into return on owners' equity. From the internal viewpoint of the individual firm, financial leverage is a tool to be employed by management. From the viewpoint of financial markets, however, financial leverage is a source of corporate risk, since it involves indebtedness.

From the external viewpoint, looking at the individual firm, the degree of financial leverage is usually an important consideration for creditors and investors. Financial leverage should also be an important consideration when one looks at industry averages. The high level of risk that accompanies high leverage tends to speed up the retrenchment reactions of business decision makers to signs of economic downturn. For this reason, financial leverage at the industry level should be watched closely by tax revenue estimators as well as makers of tax policy and fiscal policy. Industries where financial leverage exceeds established norms may be deemed potential sources of weakness in projections of corporation tax revenues and early unemployment trouble spots if the economy should show signs of weakening.

Since financial leverage at the industry level provides important information for analysts in both public and private sectors, consideration should be given to the credibility with which the numerical measurement of industry leverage is made. Dispersion is an important determinant of the credibility with which an industry average can be used to represent financial leverage for the companies in the industry. The findings reported here show that large corporations vary considerably in the degree to which they employ financial leverage, even for within-industry comparisons. Such comparisons of financial leverage reveal that certain industries have exceedingly high dispersions. The present study suggests some standards for dispersion (as measured by coefficient of variation) that might be used to assess the credibility of

industry average leverage.

II. FINANCIAL LEVERAGE

Financial leverage is proportional to the relative size of debt in a company's financial structure.[1] Figure 1 illustrates the basic principles of financial leverage.

Figure 1.--Illustration of Financial Leverage

Total assets.....	\$ 1,000
Debt.....	500
<u>Equity.....</u>	<u>\$ 500</u>
Net income.....	\$ 100
Leverage factor = (Debt/Total assets)100	
= (\$500/\$1,000)100 = 50.	
Return on equity = (Net income/Equity)100	
= (\$100/\$500)100 = 20.	

We have a company here with a thousand dollars worth of assets. Setting aside the \$500 debt owed by the company leaves \$500 owners' equity--that part of the company's assets effectively owned by the company's owners. Leverage factor, the percent ratio of debt to total assets, is fifty percent. Net income, the amount by which a firm's receipts exceed its costs, is assumed to be \$100. Return on equity is defined as the percent ratio of net income to owners' equity. With our assumed net income of \$100 and equity of \$500, we have a return on equity of twenty percent.

To appreciate the importance of financial leverage, let's compare the results of three alternative growth options for this company. (See Figure 2). Each of these growth options expands total assets by \$100. This extra

Figure 2.--Growth Options

Item	1	2	3
Total assets	\$1,100	\$1,100	\$1,100
Debt	550	500	600
Equity	550	600	500
Net income	110	110	110
Leverage factor	50%	45%	55%
Return on equity	20%	18%	22%

capacity is assumed, in each case, to generate additional revenues in excess of costs sufficient to push net income up by \$10. Note that option one is financed through equal additions of \$50 to debt and equity, with the leverage factor holding at 50 percent. The new debt may take the form of a bond issue or perhaps new loans, either from banks or from other kinds of lenders. The new equity could come from the sale of common stock, or, more likely, through the use of the corporation's undistributed internal funds to purchase the new assets. Option two growth is financed entirely through equity, with no increase in debt, pushing the leverage factor down to 45. Option three is entirely debt-financed, raising the leverage factor to 55.

The bottom line shows the impact of each of these options on the firm's return on equity. The first option, half financed with equity, half with debt, involves a \$50 increase in equity. With the \$10 increase in net income assumed, return on equity does not change, since net income and equity increase in equal proportions. Option two, wholly financed through equity, results in a decrease in the company's return on equity since equity grows by a greater proportion than net income. Option three, wholly financed through debt with no increase in equity, results in a jump of two percentage points in return on equity. Looking at these results, it is easy to understand at least one source of motivation underlying a corporation's decision to plunge deeply into debt.

However, the corporation also has incentive to avoid excessive leverage and financial risk: the probability of company failure stemming from indebtedness.[2] Financial risk contrasts to business risk: unavoidable threats to cash flow caused by the business cycle together with product market hazards inherent in any line of business. Increased debt is accompanied by increased interest expense. Interest expense is a contractual fixed cost. In contrast to other costs, which a company is generally able, to some extent, to control during times of cash flow stringency, interest must be paid when due. Thus, when a company has too much debt and interest obligations this involves the company in excessive risk of default and bankruptcy.

There are no universal standards for financial risk. What makes a prudent degree of leverage for a company would depend on the company's product markets and business risk, as well as prevailing norms within the company's comparison group (generally, firms of similar size within an industry). The need for quantitative norms to be used in financial risk assessment gives utility to industry averages of financial ratios of the kind analyzed here.

III. DATA DESCRIPTION

The data for this study come from large corporations in each of 159 nonfinancial industries. The industries are listed in the main table at the end of the paper. Companies are grouped into industries according to major

line of business--that is, the line of business that provides the single largest source of company sales receipts. The observation group for the study is defined as the twenty largest corporations in each industry, but to include no corporation with total assets less than \$50 million. Nineteen industries in the table have less than twenty large corporations as defined here, and three industries (in the service sector) have less than five large corporations, deemed here to be too few for meaningful dispersion analysis. Industries with fewer than twenty corporations in the observation group are identified in the footnotes to the table.

The data are part of the IRS Statistics of Income (SOI) 1983 sample of more than 90,000 corporation income tax returns. The sample takes in all large corporations, as defined here.[3] Thus the findings reported here are not based on sample data, but cover all the top large corporations in each industry.

IV. FINDINGS

The main table presents a substantial volume of numerical data on financial leverage for approximately 3,000 large corporations, grouped into conventional industries according to major line of business. What do these numbers tell us?

Industry averages of financial leverage for nonfinancial industries show a moderately strong grouping around central tendency, with 35 percent of the observations lying within ten percent of the overall mean leverage factor of 58.3.[4].

Before addressing the primary question of interest in this study: within-industry dispersion in financial leverage, let's look briefly at what the SOI corporation data show regarding the propensity of large corporations in nonfinancial industries to employ financial leverage.

Look first at manufacturing. Figure 3 shows that while the leverage factor in 1983 ranged from 43.8 percent (for large manufacturers of furniture and fixtures) to 66.4 percent (for makers of motor vehicles and equipment), most manufacturing industries had leverage factors within a few points of the average: 53.1 percent. Areas of business activity outside manufacturing show substantially higher degrees of financial leverage, especially large corporations in services, with their mean leverage factor of 68.0 percent.

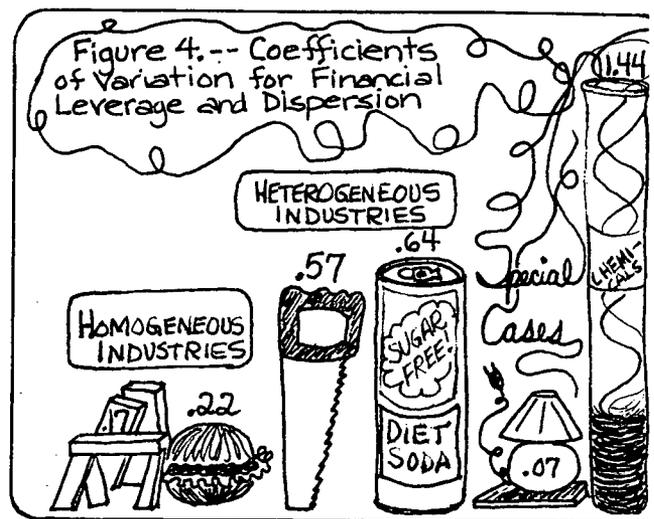
Dispersion measures were computed for financial leverage among the top large corporations within the 159 nonfinancial industries covered by SOI data. Since average leverage factors vary significantly from industry to industry and standard deviation tends to vary in proportion to industry average, dispersions cannot be compared using standard deviation alone. A conventional method of placing dispersion measurements on a comparable basis is used here: coefficient of variation, the ratio of standard deviation to group average.

Figure 3.--Leverage Factor Averages for Nonfinancial Industries

Nonfinancial Industry	Average
Manufacturing	53.1
Food and kindred products	56.9
Tobacco manufactures	51.8
Textile mill products	49.1
Apparel and other textile products	49.6
Lumber and wood products	52.5
Furniture and fixtures	43.8
Paper and allied products	51.2
Printing and publishing	52.2
Chemicals and allied products	46.9
Petroleum (including integrated) and coal products	57.1
Rubber and miscellaneous plastic products	53.2
Leather and leather products	49.5
Stone, clay and glass products	50.8
Primary metal industries	62.2
Fabricated metal products	47.6
Machinery except electrical	57.6
Electrical and electronic equipment	49.7
Motor vehicles and equipment	66.4
Transportation equipment except motor vehicles	63.3
Instruments and related products	49.6
Transportation	64.9
Communication	59.8
Electric, gas, and sanitation utilities	61.2
Wholesale trade	60.1
Retail trade	60.5
Services	68.0
Other nonfinancial industries	64.9

Let's look at some highlights of the main table. See Figure 4. Industry coefficients of variation often conform to our expectations. For example, the relatively low coefficient of variation of 0.17 for general building contractors is consistent with the general impression that these types of companies are fairly homogeneous in business structure. The same observation can be made for meat packers with their 0.22 coefficient of variation. Moreover, look at the heterogeneous industries in the area of fabricated metal products. We see a coefficient of variation of 0.64 for large manufacturers of metal cans and shipping containers and 0.57 for makers of cutlery, hand tools and hardware; screw machine products, bolts and similar products.

The lowest coefficients of all are found in utilities: 0.07 for electric companies, for instance. This may reflect the uniformity imposed by regulatory commissions. Wholesale trade, while having a few industries with low coefficients of variation (the groceries trade with 0.24 for example), is characterized mostly by high dispersions. Note especially large wholesalers of chemical and allied products with a coefficient of variation of 1.44. This industry has a large number of "domestic international sales corporations" (DISC), special legal entities that differ basically in financial structure from other



corporations.[5] Finally, as you would expect, the residual groups, i.e., "others," "miscellaneous," "business not allocable," have relatively high dispersions.

Look now at some overall features of this dispersion. The median coefficient of variation is 0.37, with one half the nonfinancial industries having coefficients lying between 0.29 and 0.46. The lowest quarter ranges from 0.07 through 0.29 and the upper quarter ranges from 0.46 to 1.44. This suggests a hefty but not overwhelming magnitude of dispersion in corporate leverage. It is notable that about a quarter of the industries have coefficients of variation as large as one-half.

Three likely sources of dispersion in financial leverage for large corporations are random variation, differences in management judgment, and dispersion stemming from business diversification.

Since the corporate balance sheet shows values of financial variables at one point in time--typically the last day of tax year--these values could be significantly affected by random factors. For instance, to most corporations in nonfinancial industries, inventories are an important component of total assets, the denominator of the leverage ratio. Inventories are notorious for sudden temporary changes, when ups or downs in sales or production are brought on by such factors as demand change, calamitous weather, accidents, or labor strife. Random factors, whether influencing inventories, other asset items, or some component of total debt, will cause company leverage factors to deviate from values that would otherwise obtain. Thus, there might be a substantial amount of random dispersion within the industry, even if all other sources of dispersion were absent.

Another source of dispersion in financial leverage is the difference in the financial judgment of corporate management. Given the same set of market factors, business conditions, and economic outlook, different management teams may arrive at different sets of financial decisions.

These sources of dispersion--randomness and

variation in corporate management--may be considered "licit", in that they are inevitable, given the nature of the observation unit. There is another source of dispersion, however, that has an "illicit" taint. A substantial amount of dispersion stems from a basic fault in corporate classification. While each corporation is assigned to one of a large number of industries defined according to finished products, it is a fact that virtually no large corporation entirely fits into any one industry. This is because of diversification, whereby companies attempt to maximize return on total investment by obtaining positions in a variety of product markets. As pointed out earlier, a company is classified as belonging to the industry that is the largest single source of its sales receipts. But this source could well amount to less than half the company's total receipts. Major components of a typical large corporation could be engaged in different lines of business, in which widely different financial practices are the norm.

V. DISPERSION STANDARDS FOR INDUSTRY LEVERAGE FACTOR

The effectiveness of industry average leverage factor as a summary measure of financial leverage for the industry depends heavily on the amount of dispersion in the measurement. Without doubt, at some high degree of dispersion a collection of leverage ratios has so little coherence that its average value does not effectively represent leverage for the group.

Consider the situation where an industry has dispersion of such magnitude that its standard deviation is equal to the arithmetic mean. In other words, its coefficient of variation is unity. Assuming the underlying configuration of the industry's distribution of leverage factors to approximate the normal, with a coefficient of variation equal to one it would theoretically require an interval reaching from zero to twice the size of the average leverage factor to enclose two-thirds of the factors of the corporations in the group. Also, Coefficients of variation greater than one have the difficulty that the lower bound of the interval that covers two-thirds of the observations lies below zero. For the leverage factor, as with many other economic variables, such an interval would make no sense. Since there are no such things as negative debts, and negative total assets do not make sense either, leverage factors do not legitimately drop below zero. For this reason it seems appropriate here to designate a coefficient of variation equal to one to be the upper limit allowable for dispersion. For coefficients beyond this level, it is deemed that the collection of leverage factors has too little coherence for the mean to effectively represent the group's financial leverage.

Now consider cases where industry standard deviation relative to average leverage factor give coefficients of variation of 0.50 and

0.25 respectively. In the former case, an interval large enough to contain two-thirds of the leverage factors of large corporations in the industry would reach from one-half the size of the average factor to one-and-one-half times the size of the average factor. Finally, a coefficient of variation of 0.25 would require an interval reaching from three-quarters to one-and-one-quarter times the size of industry average leverage.

As indicated Figure 5, those industries are designated as "poor" that have coefficients of variation lying between 0.50 and 1.00, those with coefficient of variation between 0.25 and 0.50 are designated as "acceptable," and those with coefficient of variation no larger than 0.25 are designated as "good." These standards are arbitrary but, it is hoped, not unreasonable.

Consider the twenty largest corporations in the meat products industry in 1983. See the main table. These had an average leverage factor of 73.2 and a standard deviation of 15.9, resulting in a coefficient of variation of 0.22. This relatively favorable degree of dispersion places this industry in the "good" category. On the other hand, look at another manufacturing industry: logging, sawmills and planing mills. Here the twenty largest corporations had an average leverage factor of 43.3 percent. With a standard deviation of 25.7, the resulting coefficient of variation is 0.59, which gives that industry a "poor" dispersion rating.

Figure 5.-- Dispersion Standards

Dispersion Class	Credibility
$CV \leq 0.25$	Good
$0.25 < CV \leq 0.50$	Acceptable
$0.50 < CV \leq 1.00$	Poor
$CV > 1.00$	Unacceptable

Note: There are a total of 155 industries in the above four groups. Of the 159 non-financial industries found in the main table, 3 are without dispersion data due to either no large corporations or too few for dispersion analysis. The fourth absence is the non-industry group: "Nature of business not allocable," which shows a coefficient of variation of 1.04.

The above standards can be used to assess dispersion in financial leverage for large corporations in non-financial industries. Of the 155 nonfinancial industries assessed, 128 of the industries (82 percent) show sufficiently low degrees of dispersion to rank in the "acceptable" and "good" categories. Twenty-six industries show "poor."

The only industry having an unacceptably high dispersion is the wholesale trading of chemicals and allied products, with a coefficient of variation of 1.44. As pointed out earlier, this industry has a large number of "domestic international sales corporations"

(DISC) that are special legal entities that differ basically from other corporations, in financial structure. According to the dispersion standards suggested, this industry's average leverage factor should not be accepted as a summary measure of financial leverage for the largest corporations in the industry.

For industries with coefficients of variation between 0.50 and 1.00, average leverage factors should be used with caution, and with decreasing confidence as the coefficient of variation approaches one.

VI. SUMMARY OF FINDINGS AND IMPLICATIONS

These findings show a substantial but not overwhelming amount of dispersion in financial leverage among the 20 largest corporations of nonfinancial industries in 1983. The median dispersion, as measured by coefficient of variation, is 0.37, with one-half the industries having coefficients lying between 0.29 and 0.46. The overall range is 0.07 to 1.44.

The basic implication of these findings is to bring into question the use of the arithmetic mean--or any other numerical measure of central tendency--to represent the financial leverage of large corporations in those industries with high degrees of dispersion, say coefficients of variation exceeding one-half. For some industries, where the coefficient of variation approaches or exceeds unity, there is probably so little grouping around central tendency that the mean leverage factor is without meaning as a summary statistic.

I will finish by disposing of a non-implication. These findings for financial leverage do not imply a similar level of dispersion for other financial variables. A preliminary look at liquidity ratios, for instance, suggests substantially higher degrees of dispersion than for leverage ratios.

Future projects on my research agenda for IRS corporation data include further investigation into financial leverage, studies of corporate liquidity trends, and measurements of corporate risk and uncertainty. An additional promising area of research may be the study of industrial classification systems with respect to dispersion criteria. Groupings of industries may well differ significantly in dispersion of basic economic measurements. It should strengthen the credibility of such measurements to classify industries accordingly.

NOTES AND REFERENCES

- [1] Financial leverage is treated in the standard textbooks on corporate finance. An especially good treatment is found in Weston, J. Fred and Brigham, Eugene F.,

Essentials of Managerial Finance, Third Edition, The Dryden Press, (Hinsdale IL, 1974), Chapter 18. Although financial leverage is commonly treated as a phenomenon of the corporate sector, it is a factor of equal importance in the financial evaluation of partnerships and proprietorships.

- [2] For a clear explanation of financial risk see Van Horne, James C., Financial Management and Policy, Third Edition, Prentice-Hall, Inc. (Englewood Cliffs, NJ, 1974), pp. 220-222.
- [3] For an analysis of the Statistics of Income corporation sample, see Jones, Homer W. and McMahon, Paul B., "Sampling Corporation Income Tax Returns for Statistics of Income, 1951 to Present; Statistics of Income and Related Administrative Record Research: 1984; Department of Treasury, Internal Revenue Service, Statistics of Income Division, October 1984.
- [4] The subject of this article is dispersion of financial leverage and not its measurement per se, nor the implications of changes in leverage for the economy. Recent writings that address such questions include the following: Auerbach, Alan J., Real Determinants of Corporate Leverage, NBER Reprint No. 616, National Bureau of Economic Research, (Cambridge MA, 1985); Ciccolo, John H. Jr. and Baum, Christopher F., "Changes in the Balance sheet of the U.S. Manufacturing Sector, 1926-1977," NBER Working Paper Series, W.P. No. 1169, National Bureau of Economic Research (Cambridge MA, 1983); Taggart, Robert A. Jr., "Have U.S. Corporations Grown Financially Weak?", NBER Working Paper Series, W.P. No. 1523, National Bureau of Economic Research, (Cambridge, MA, 1984); and also by Taggart, Secular Patterns in the Financing of U.S. Corporations, NBER Reprint No. 614, National Bureau of Economic Research, (Cambridge MA, 1985); and Volcker, Paul A., "The Rapid Growth of Debt in the United States," Economic Review, Federal Reserve Bank of Kansas City (Kansas City Mo, May, 1986), pp. 3-12.
- [5] For an explanation of the DISC see Hartzok, Jeffrey, "Domestic International Sales Corporations Returns, 1980;" SOI Bulletin, Fall 1983, pp. 9-24; Publication 1136 (Rev. 10-83), Department of Treasury, Internal Revenue Service, Washington, DC. This article was reprinted in Statistics of Income: Compendium of Studies of International Income and Taxes 1979-83; Publication 1267 (9-85), Department of the Treasury, Internal Revenue Service, Washington, DC. See also Department of the Treasury, The Operation and Effect of the Domestic International Sales Corporation Legislation, 1981 Annual Report.

**Financial Leverage and Dispersion: Large Corporations
in Non-Financial Industries 1983**

Industry	Mean Leverage Factor	Leverage Factor Standard Deviation	Coefficient of Variation	Industry	Mean Leverage Factor	Leverage Factor Standard Deviation	Coefficient of Variation
AGRICULTURE, FORESTRY, AND FISHING				Radio, television, and communication equipment	57.1	14.7	.26
Agricultural production	71.3	32.9	.46	Electronic components and accessories	49.8	17.1	.34
Agricultural services (except veterinarians), forestry, fishing, hunting and trapping	57.7	31.3	.54	Other electrical equipment	41.3	18.5	.47
MINING				Motor vehicles and equipment	66.4	14.1	.21
Metal Mining:				Transportation equipment except motor vehicles:			
Iron Ores ^a	60.2	38.0	.63	Aircraft, guided missiles and parts	62.9	17.0	.27
Copper, lead and zinc, gold and silver ores	41.7	28.4	.68	Ship and boat building and repairing	64.7	22.0	.34
Other metal mining ^b	85.8	56.0	.65	Other transportation equipment, except motor vehicles	62.4	24.4	.39
Coal Mining	48.2	16.5	.34	Instruments and related products:			
Oil and gas extraction:				Scientific instruments and measuring devices; watches and clocks	45.9	19.4	.42
Crude petroleum, natural gas, and natural gas liquids	66.2	23.7	.36	Optical, medical, and ophthalmic goods	41.7	17.5	.42
Oil and gas field services	57.4	20.6	.36	Photographic equipment and supplies	61.3	26.2	.43
Nonmetallic minerals, except fuels:				Miscellaneous manufacturing and manufacturing not allocable	60.7	20.9	.34
Dimension, crushed, and broken stone, sand and gravel	45.9	20.7	.45	TRANSPORTATION AND PUBLIC UTILITIES			
Other nonmetallic minerals, except fuels	48.1	26.3	.55	Transportation:			
CONSTRUCTION				Railroad transportation	52.1	16.5	.32
General building contractors and operative builders:				Local and interurban passenger transit	60.0	20.4	.34
General building contractors	75.8	12.9	.17	Trucking and warehousing	53.3	18.0	.34
Operative builders	82.0	12.4	.15	Water transportation	76.1	21.5	.28
Heavy construction contractors	67.6	17.9	.26	Transportation by air	73.2	18.7	.26
Special trade contractors:				Pipe lines, except natural gas	69.7	25.0	.36
Plumbing, heating, and air conditioning	89.7	19.4	.22	Transportation services not elsewhere classified	70.0	20.7	.30
Electrical work	63.9	21.4	.33	Communication:			
Other special trade contractors and contractors not allocable	76.9	34.4	.45	Telephone, telegraph, and other communication services	53.5	14.8	.28
MANUFACTURING				Radio and Television broadcasting	66.0	33.4	.51
Food and kindred products:				Electric, gas, and sanitary services:			
Meat products	73.2	15.9	.22	Electric services	58.2	4.3	.07
Dairy products	60.7	20.5	.34	Gas production and distribution	64.0	10.8	.17
Preserved fruits and vegetables	65.4	18.8	.29	Combination utility services	58.0	4.0	.07
Grain mill products	52.4	20.4	.39	Water supply and other sanitary services	64.7	11.6	.18
Bakery products	47.7	19.7	.41	WHOLESALE AND RETAIL TRADE			
Sugar and confectionary products	48.5	21.8	.45	Wholesale trade:			
Malt liquors and malt ^c	53.9	22.0	.41	Groceries and related products	65.8	15.9	.24
Alcoholic beverages except malt liquors and malt	47.4	19.4	.41	Machinery, equipment, and supplies	53.5	29.3	.55
Bottled soft drinks and flavorings	63.3	24.0	.38	Motor vehicles and automotive equipment	49.7	27.0	.54
Other food and kindred products	56.3	22.6	.40	Furniture and home furnishings	67.3	23.8	.35
Tobacco manufactures ^d	51.8	25.5	.49	Lumber and construction materials	62.1	31.3	.50
Textile mill products:				Sporting, recreational, photographic, and hobby goods, toys and supplies	71.9	39.4	.55
Weaving mills and textile finishing	43.2	11.0	.25	Metals and minerals, except petroleum and scrap	72.7	24.6	.34
Knitting mills	46.3	19.3	.42	Electrical goods	53.7	31.8	.59
Other textile mill products	57.9	19.1	.33	Hardware, plumbing, and heating equipment and supplies	62.9	21.1	.34
Apparel and other textile products:				Other durable goods	63.3	27.6	.44
Men's and boy's clothing	52.1	15.1	.29	Paper and paper products	65.8	46.1	.70
Women's and children's clothing	48.1	23.1	.50	Drugs, drug proprietaries, and druggists' sundries	48.9	28.3	.58
Other apparel and accessories	47.6	19.7	.41	Apparel, piece goods, and notions	79.4	28.1	.35
Miscellaneous fabricated textile products; textile products not elsewhere classified	52.5	24.4	.46	Farm-product raw materials	66.5	23.2	.35
Lumber and wood products:				Chemicals and allied products	21.6	31.0	1.44
Logging, sawmills, and planing mills	43.4	25.7	.59	Petroleum and petroleum products	66.6	30.9	.46
Millwork, plywood, and related products	57.3	17.9	.31	Alcoholic beverages	56.9	31.4	.55
Other wood products, including wood buildings and mobile homes	56.7	27.2	.48	Miscellaneous nondurable goods; wholesale trade not allocable	53.4	36.2	.68
Furniture and fixtures	43.8	20.8	.47	Retail trade:			
Paper and allied products:				Building materials, garden supplies, and mobile home dealers:			
Pulp, paper, and board mills	52.9	13.7	.26	Building materials dealers	49.9	17.1	.34
Other paper products	49.4	21.0	.43	Hardware stores	47.3	20.7	.44
Printing and publishing:				Garden supplies and mobile home dealers ^e	74.8	22.3	.30
Newspapers	48.2	17.7	.37	General merchandise stores	65.6	11.9	.18
Periodicals	63.7	16.9	.26	Food stores:			
Books, greeting cards, and miscellaneous publishing	53.3	20.1	.38	Grocery stores	58.6	14.8	.25
Commercial and other printing and printing trade services	45.5	15.4	.34	Other food stores	60.2	21.7	.36
Chemicals and allied products:				Automotive dealers and service stations:			
Industrial chemicals, plastic materials and synthetics	52.8	12.2	.23	Motor vehicle dealers	82.2	15.2	.18
Drugs	44.7	22.3	.50	Gasoline service stations	61.8	26.3	.43
Soap, cleaners, and toilet goods	47.5	16.8	.35	Other automotive dealers	70.2	20.3	.29
Paints and allied products	42.0	17.4	.41	Apparel and accessory stores	45.4	20.7	.46
Agricultural and other chemical products	47.5	17.4	.37	Furniture and home furnishing stores	62.2	17.8	.29
Petroleum (including integrated) and coal products:				Eating and drinking places	55.0	21.0	.38
Petroleum refining (including integrated)	52.5	12.8	.24	Miscellaneous retail stores:			
Petroleum and coal products, not elsewhere classified	61.6	33.4	.54	Drug stores and proprietary stores	58.0	10.8	.19
Rubber and miscellaneous plastic products:				Liquor stores ^f	52.0	25.8	.49
Rubber products, plastic footwear, hose and belting	46.2	12.7	.27	Other retail stores	63.6	29.0	.46
Miscellaneous plastic products	60.2	24.0	.40	Wholesale and retail trade not allocable ^g	43.2	42.4	.98
Leather and leather products:				SERVICES			
Footwear except rubber	41.1	14.8	.36	Hotels and other lodging places	65.8	15.5	.24
Leather and leather products not elsewhere classified	57.8	30.3	.52	Personal services:			
Stone, clay, and glass products:				Business services:			
Glass products	52.7	13.7	.26	Advertising	76.5	11.9	.16
Cement, hydraulic	49.7	18.3	.37	Business services except advertising	75.0	34.5	.46
Concrete, gypsum, and plaster products	54.1	23.4	.43	Auto repair; miscellaneous repair services:			
Other nonmetallic mineral products	46.7	18.6	.42	Auto repair and services	76.7	16.0	.21
Primary metal industries:				Miscellaneous repair services ^h	81.6	48.5	.59
Ferrous metal industries; miscellaneous primary metal products	65.0	19.9	.31	Amusement and recreation services:			
Nonferrous metal industries	59.3	16.3	.27	Motion picture production, distribution, and services	69.4	28.8	.41
Fabricated metal products:				Motion picture theaters	72.4	23.5	.32
Metal cans and shipping containers	38.6	24.7	.64	Amusement and recreation services except motion pictures	85.8	33.1	.39
Cutlery, hand tools, and hardware; screw machine products, bolts, and similar products	46.6	26.4	.57	Other services:			
Plumbing and heating, except electric and warm air	38.8	18.4	.47	Offices of physicians, including osteopathic physicians ⁱ	88.5	11.6	.13
Fabricated structural metal products	49.2	10.8	.21	Offices of dentists ^j	-	-	-
Metal forgings and stampings	46.8	16.2	.39	Offices of other health practitioners ^k	-	-	-
Coating, engraving, and allied services ^l	44.3	22.5	.51	Nursing and personal care facilities	75.9	23.5	.31
Ordnance and accessories, except vehicles and guided missiles ^m	49.6	22.8	.46	Hospitals	65.4	19.2	.29
Miscellaneous fabricated metal products	67.0	22.7	.34	Medical laboratories ⁿ	31.7	6.2	.20
Machinery, except electrical:				Other medical services	62.0	29.1	.47
Farm machinery	59.6	18.6	.31	Legal services ^o	66.8	32.9	.49
Construction and related machinery	55.3	20.1	.36	Educational services	54.8	29.0	.53
Metallurgical machinery	50.5	19.5	.39	Social services ^p	-	-	-
Special industry machinery	69.3	17.7	.26	Membership organizations ^q	54.1	21.8	.40
General industry machinery	51.5	17.2	.33	Architecture and engineering services	64.3	23.2	.36
Office computing, and accounting machines	58.6	19.0	.32	Accounting, auditing, and bookkeeping services ^r	53.8	21.3	.40
Other machinery, except electrical	58.1	21.7	.37	Miscellaneous services (including veterinarians), not elsewhere classified	74.4	33.3	.45
Electrical and electronic equipment:				NATURE OF BUSINESS NOT ALLOCABLE^s			
Household appliances	50.7	19.3	.38		32.8	34.1	1.04

NOTE: Each industry is represented by its 20 largest corporations in terms of total assets, unless otherwise noted.
Mean leverage factor is the industry arithmetic mean, for the group of largest corporations, of the percent ratio of total debt to total assets.
Coefficient of variation is the ratio of industry standard deviation to industry arithmetic mean.

Source: Statistics of Income, IRS.

Footnotes

- a. 7 large corporations. d. 16 large corporations. g. 15 large corporations. j. 14 large corporations. m. 12 large corporations. p. 19 large corporations.
b. 16 large corporations. e. 15 large corporations. h. 6 large corporations. k. 12 large corporations. n. 5 large corporations. q. 5 large corporations.
c. 16 large corporations. f. 9 large corporations. i. 14 large corporations. l. no large corporations. o. Less than 5 large corporations. r. 14 large corporations.