

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

Volume Title: Financing Small Corporations in Five Manufacturing Industries, 1926-36

Volume Author/Editor: Charles L. Merwin

Volume Publisher: NBER

Volume ISBN: 0-870-14130-9

Volume URL: <http://www.nber.org/books/merw42-1>

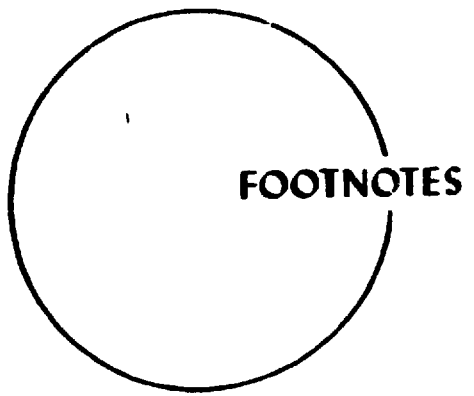
Publication Date: 1942

Chapter Title: Footnotes

Chapter Author: Charles L. Merwin

Chapter URL: <http://www.nber.org/chapters/c9393>

Chapter pages in book: (p. 140 - 162)



## CHAPTER ONE

- 1 Based on Twentieth Century Fund, Big Business, Its Growth and Its Place (New York 1937) Table 25. The "under \$1,000,000" asset size class shown in that table was further broken down, by the same method used by the Twentieth Century Fund, to obtain an estimate for the "under \$250,000" class, and it was assumed that the great majority of the unincorporated enterprises had total assets of less than \$250,000 each.
- 2 For an especially illuminating discussion of the business population in this country see the testimony of Willard L. Thorp before the Temporary National Economic Committee, Hearings, Part 1, "Economic Prologue," 75th Congress, 3rd Session (Washington 1939).
- 3 Estimated from Biennial Census of Manufactures data for 1937 in Department of Commerce, Statistical Abstract of the United States, 1940 (Washington 1941) p.603, by assuming that the establishments whose value of product is under \$500,000 are roughly the same as those whose assets are under \$250,000.
- 4 These observations are equally valid for 1929 and 1939. See Department of Commerce, multilith report on "Types of Organization of Manufacturing Establishments" (Census of Manufactures: 1939, 16th Census of the U. S., 1940), dated October 1941, p. 3.
- 5 State laws of incorporation generally require three directors.
- 6 This factor alone may not be the whole explanation of why small manufacturing enterprises incorporate, in the face of the added tax liability which incorporation frequently involves for such companies. Perhaps there is a certain class consciousness in business organization which prompts small manufacturers to like the appearance of "Inc." in their business name.
- 7 These conclusions appear to hold, with relatively minor modifications, for the various customary definitions of profit rate: the ratio of net income after income taxes to net worth (the one on which the above description is based), or to total capital, or to total assets, or to total sales. The increase of profitability with asset size appears to be most marked for the last-mentioned of these ratios, net income to sales. The findings are not altered by taking net income before income taxes, or before income taxes and interest payments, but for manufacturing corporations the profit rate tends to decline slightly as asset size increases if net income is taken before income taxes, interest and officers' compensation. The peculiar role played by officers' compensation in the profitability of small corporations is elaborated below.
- 8 For details on asset size differences in profit rate see W. L. Crum, Corporate Size and Earning Power (Cambridge, Mass., 1939), especially Chapter 19; Twentieth Century Fund, How Profitable is Big Business? (New York 1937), especially Part 2; and Temporary National Economic Committee, Monograph 15, Financial Characteris-

- tics of American Manufacturing Corporations, by Charles L. Merwin (Washington 1940), especially Chapter 2. For discussions of pre-1931 data see W. L. Crum, Corporate Earning Power (Stanford University 1929), especially pp. 145-53; National Bureau of Economic Research, Industrial Profits in the United States, by R. C. Epstein (New York 1934), especially pp. 131-40, and Corporate Profits as Shown by Audit Reports, by W. A. Paton (New York 1935), especially pp. 76, 77; and Donald Woodward, testimony of June 22, 1939, in Hearings of a subcommittee of the Senate Committee on Banking and Currency (76th Congress, 1st Session), on S. 1482 and S. 2343 (introduced by Senator James M. Mead, of New York), especially pp. 374-79.
- 9 The distinction here is between a combination of plants making products in successive stages of manufacture and a combination operating in the same stage of manufacture.
- 10 The Federal Trade Commission, which has been tabulating corporation statements for narrowly defined manufacturing industries, pertaining to the year 1940, had released reports on seven such groups by June 1942. Three, including two relating to industries covered in this study (furniture, 71 companies; machine tool accessory and machinists' precision tool, 29 companies; and fruit and vegetable canning, 49 companies), showed a definite and persistent tendency for the rate of return on total investment to increase with asset size. Two industries (bolt, nut, washer and rivet, 33 companies; and steel castings, 39 companies) showed a tendency for this rate to decline. In the two remaining groups (rayon and allied products, 14 companies; and screw machine products, 25 companies) the concerns were divided into three asset size classes; the large and small companies showed about the same rate of return, and the medium-size companies were the most profitable. Rate of return was interpreted as the ratio of net income plus long-term debt interest to net worth plus long-term debt. The above observations remain the same whether net income is taken before or after income taxes. The asset size classes were so chosen as to include, for a given industry, approximately the same number of companies in each class. See Federal Trade Commission, Corporation Reports, 1940 series (undated photostats of typescript).
- 11 Very small concerns, those with assets of \$10,000 to \$25,000, have a relatively small amount of debt. But the proportion of total debt to total assets rises rapidly, reaching a peak in the \$100,000 to \$250,000 asset class, and then declines as asset size increases. See National Bureau of Economic Research (Financial Research Program), Industrial and Commercial Debt - A Balance Sheet Analysis, 1939, by Carl Kayser (ms. 1942).
- 12 See National Bureau of Economic Research (Financial Research Program), The Financial Structure of Incorporated Business, A Cross-Section View, 1937, by Walter A. Chudson (ms. 1942); and W. L. Crum, The Effect of Size on Corporate Earnings and Condition, Harvard University Business Research Study No. 8 (June 1934).

- 13 This is not intended to imply that surplus constitutes a liquid reserve out of which operating losses may be financed and dividends paid. Actually, the funds needed to pay operating expenses and dividends during unprofitable years must come from asset liquidation or borrowing, once cash balances have been drawn down to the minimum. Surplus is convenient as an account against which such operating losses and dividends can be charged. See O. J. Curry, Utilization of Corporate Profits in Prosperity and Depression, University of Michigan Business Studies, vol. 9, no. 4 (Ann Arbor 1941), especially Chapters 1, 5, 6.
- 14 National Bureau of Economic Research, Business Cycles: The Problem and Its Setting, by Wesley C. Mitchell (New York 1927) vol. 1, pp. 86-90. Professor Mitchell states (p. 88) that "as a rule, large establishments were more affected by the depression than medium-sized establishments, and the latter were more affected than small establishments." It appears that during cyclical contraction large companies either have more flexible costs than small enterprises, or have more liquid assets with which to finance operating losses. Perhaps both forces are at work, with the result that during cyclical contraction production falls off more sharply in large than small companies, and discontinuances are more common among small than large enterprises. This suggestion, however, requires further study before it can be considered established.
- 15 See Treasury Department, Statistics of Income for 1936, Part 2 (Washington 1939) Table 6.
- 16 Temporary National Economic Committee, Monograph 15, Financial Characteristics of American Manufacturing Corporations, by Charles L. Merwin (Washington 1940), cited hereafter as TNEC Monograph 15. Certain of the figures in the basic tables in Appendix F of Monograph 15 were revised after publication. Further tabulations pertaining to the corporations covered in the present study are collected in a separate volume, available to those who wish to examine the data in greater detail: National Bureau of Economic Research (Financial Research Program), Data for Studies in Business Finance (ms. 1942), hereafter referred to as Data Book. For a detailed description of the source and nature of the tabulations see Appendix A of the present study.
- 17 Appendix B contains detailed estimates of sample coverage for the companies in the 1926 drawing that continued in existence through 1936.
- 18 Based on Table A-4 in Appendix A.
- 19 Based on Table A-4 in Appendix A.
- 20 After payment of income taxes but before disbursement of dividends; profits and losses from real estate sales also have been excluded. This definition of net income is followed in the present study wherever reference is made to the sample companies.

- 21 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. These figures are not averages of annual ratios, but, for each industry, the ratio of average profit or loss over the 11 years as a whole to the average of the year-end net worth figures over the same period.
- 22 Based on the same source and computed in the same manner as the figures referred to in footnote 21.
- 23 Another determinant, but one of considerably less importance, is the fact that unearned income of individuals (for example, dividends) is taxed at a somewhat higher rate than earned income (such as salaries).
- 24 Even this may not represent the upper limit in those cases where the owners of these enterprises have misreported certain of their living expenses as business costs. Such misreporting may not be uncommon among small corporations, and would result in an understatement of the profit rates actually earned by the business enterprises.
- 25 Based on the same source and computed in the same manner as the figures referred to in footnote 21. Strictly speaking, net worth may not be the proper denominator for the present ratios, but it has been used in order to clarify the comparison with the profit rates shown on an earlier page.
- 26 These conclusions regarding the profitability of the small manufacturing corporations in the sample are not altered seriously if profits are compared with sales or total assets rather than with net worth. These alternative profit ratios have not been shown here, but they may be derived from the basic data.
- 27 That is, net worth minus intangibles such as goodwill.
- 28 Based on TNEC Monograph 15, Table 73 in Appendix F. The figures given here are exclusive of companies with negative net worth.
- 29 National Bureau of Economic Research (Financial Research Program), The Financial Structure of American Business, by Sidney S. Alexander (ms. 1942).

## CHAPTER TWO

- 1 Most of these industries, and also a large number of others, are described in considerable detail in various "Evidence Studies" and "Work Materials" prepared by the National Recovery Administration. A complete file of this material is available in the Department of Commerce library in Washington.
- 2 Rough estimates of the coverage of the samples are presented in Appendix B.
- 3 See Work Projects Administration, National Research Project, Pro

duction, Employment and Productivity in 59 Manufacturing Industries, by Harry Magdoff, Irving H. Siegel, and Milton B. Davis (Philadelphia 1939) Part 2, p. 18.

- 4 Based on National Recovery Administration, Division of Review, The Baking Industry, Evidence Study No. 46 prepared by the Industry Statistics Unit (mimeograph, October 1935) p. 21, derived from a special tabulation made for the NRA by the Bureau of the Census, covering "bakery products other than biscuits and crackers." Establishments with annual production of less than \$5000 are not included.
- 5 Ibid., p. 24. About two-thirds of the 14,483 bakeries covered had 5 or fewer wage-earners in 1933.
- 6 Continuous ovens have been introduced in many bakeries, but it is likely that quite a few of the small companies in the sample discussed here did not have such ovens.
- 7 From the NRA report cited above it may be inferred (p. 23) that none of the companies in our sample was likely to employ more than 50 persons. Undoubtedly the majority employed far fewer.
- 8 The 1939 Census of Manufactures indicates that in the bread-baking industry there is, on the average, about one salaried officer per incorporated establishment.
- 9 The baking companies' long-term debt is large only in comparison with that of other small manufacturing corporations. In absolute terms the long-term debt of small companies is characteristically small, for reasons given in Chapter 3.
- 10 Of the raw material expenditures of the entire baking industry (including biscuits and crackers) 55 percent were for flour in 1929, with white flour by far the most important type bought; we may assume that for the bread-making division of the industry, the importance of flour purchases was even greater. Expenditures for butter, lard, their substitutes and other shortening constituted 15 percent of the total, outlays for milk (in all forms) another 5 percent, and purchases of sugar and eggs about 10 percent each. See Department of Commerce, Bureau of the Census, Manufactures, 1929, vol. 2 (Washington 1933) pp. 59, 60. These figures are based on reports from about half the establishments in the industry, but the value of their products amounted to 91 percent of the aggregate for the industry. The other establishments did not report their cost of materials in sufficient detail for the purposes of this tabulation.
- 11 Figures based on TNEC Monograph 15, Table 1-A in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified inventory amounted to about 4 percent of the aggregate inventory of all 81 companies. Except for a slightly larger proportion of supplies and smaller proportion of raw materials, the inventory breakdown for a group of large bread-makers is similar

to that given here; see Federal Trade Commission, "Bread and Bakery Products Manufacturing Corporations," Industrial Corporation Reports (October 22, 1940) p. 9, which covers 7 of the principal concerns in the industry.

- 12 Among the entire group of companies that produce "bakery products other than biscuits and crackers" the value added by manufacture represented 52 percent of the value of products in 1933. The figures varied as follows, for companies of different sizes: companies with no wage-earners, 42 percent; with 1 to 5 wage-earners, 46 percent; with 6 to 20 wage-earners, 48 percent; with 21 to 50 wage-earners, 51 percent; with 51 or more wage-earners, 56 percent. See NRA, op. cit., p. 23. The value added by manufacture is the difference between the value of product (at factory selling price) and the cost of materials, containers, fuel and purchased electric energy. The above figures indicate that for the small bakeries the cost of materials was somewhat higher than for the large ones, in relation to the value of their products.
- 13 Figures based on TREC Monograph 15, Table 1-A in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified land and plant amounted to about 15 percent of the aggregate land and plant of all 81 companies.
- 14 Even such items as depreciation and officers' compensation are not fully segregated on income tax returns, but they are more complete than a separate series on wages or materials cost is likely to be.
- 15 See, for example, the wholesale prices of Kansas City winter straights wheat flour, compiled in Department of Labor, Bureau of Labor Statistics, Wholesale Prices in the United States (issued monthly), December issues for each year.
- 16 For wholesale prices of white bread, as reported in Chicago and New York, see ibid.
- 17 See TREC Monograph 15, Table 24 in Appendix F.
- 18 The average business life of the manufacturing unit in the men's clothing industry has been estimated at seven years. See National Recovery Administration, Division of Review, The Men's Clothing Industry, by J. W. Mathcock, Work Materials No. 58 (mimeograph, March 1936) p. 52.
- 19 This characteristic is still more common among women's clothing manufacturers, whose product is subject to an even more fickle market demand.
- 20 The integration inaugurated by the chains has multiplied the problems of many of the larger as well as the smaller companies in the industry.
- 21 Especially during the 1923-29 period the men's clothing industry



- displayed a notable tendency to move out of the major manufacturing centers into smaller cities and even country districts. See Hathcock, op. cit., p. 97.
- 22 It has been argued, however, that these seasonal fluctuations are being smoothed, especially with respect to manufacturing and financing. See Hathcock (ibid., p. 66): "Today [1936], with less favorable [credit] arrangements with the mills, higher labor costs, and shorter working weeks, most manufacturers of men's clothing find themselves producing garments twelve months a year, largely for stock, with two selling seasons, and no period when the average plodding manufacturer is able to liquidate a sufficient proportion of his larger inventories to get out of debt to his bank."
- 23 The 1939 Census of Manufactures indicates that in the men's clothing industry (excluding contract factories) there are, on the average, about two salaried officers per incorporated establishment.
- 24 Figures based on TNEC Monograph 15, Table 1-B in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified land and plant amounted to about 14 percent of the aggregate land and plant of all 46 companies.
- 25 For contract factories the materials cost is naturally a much smaller proportion of the value of products than it is for regular factories (about 6 or 7 percent as against 50 percent).
- 26 Based on TNEC Monograph 15, Table 1-B in Appendix F.
- 27 See Federal Trade Commission, "Men's, Youths' and Boys' Clothing Manufacturing Corporations," Industrial Corporation Reports (January 21, 1941) p. 12.
- 28 See, for example, the wholesale prices of 13-ounce unfinished worsted suiting at factory, in Bureau of Labor Statistics, Wholesale Prices ..., cited above.
- 29 For average hourly earnings in the men's clothing industry in 1926, 1928, 1930 and 1932 see Bureau of Labor Statistics, Bulletin 524; for 1934-36 see Bureau of Labor Statistics, "Hours and Earnings in Manufacturing and Nonmanufacturing Industries, 1932 to 1940" (mimeograph, December 1941) p. 23.
- 30 See, for example, the wholesale prices of men's 3-piece 13-ounce blue serge suits (Chicago) and of men's 4-piece 15-ounce blue serge suits (New York), in Bureau of Labor Statistics, Wholesale Prices ..., cited above.
- 31 Hathcock, op. cit., p. 61. These tabulations were prepared for the NRA by the National Credit Office, Inc., in New York City. It is not clear whether profits were taken before or after income taxes. Interesting breakdowns of these 243 companies' net profit in percent of sales, according to their net worth and the

selling price of their products, are also given in this source for 1933 (pp. 61 and 63 respectively), as follows. The profit rate

<u>Net Worth</u> (000)	<u>No. of Cos.</u>	<u>Profit in % of Sales</u>	<u>% of Cos. Showing Profit</u>	<u>Selling Price Ranges</u>	<u>No. of Cos.</u>	<u>Profit in % of Sales</u>	<u>% of Cos. Showing Profit</u>
Up to \$25	62	2.1%	79%	Up to \$10	56	2.2%	96%
25 - 50	98	2.3	91	10.50- 15	77	2.8	90
50 - 75	41	2.0	95	15.50- 22.50	87	2.2	86
75 & up	42	2.6	93	22.50 & up	23	1.3	76

did not rise or fall persistently with an increase in net worth, but it is significant that the largest companies had the highest profit rate and the smallest size class had the lowest proportion of profit-making companies. Manufacturers of suits wholesaling for less than \$22.50 were definitely more profitable in 1933 than those making more expensive grades.

32 Ibid., p. 60.

33 See TNEC Monograph 15, Table 24 in Appendix F.

34 The 1939 Census of Manufactures indicates that in the furniture industry there are, on the average, about two salaried officers per incorporated establishment.

35 See Table A-3 in Appendix A.

36 Walter L. Mitchell, Jr., Director of Research, Dun & Bradstreet, Inc., New York City.

37 In 1914 the 9 states that were the largest producers of furniture (including store and office fixtures) accounted for 81 percent of the total value of products; in 1935 the 9 top states accounted for 72 percent. The 5 states mentioned above retained their share almost intact, however, accounting for 53 percent in 1914 and 51 percent in 1935. See Bureau of the Census, Census of Manufactures, 1914, vol. 2, pp. 958-61, and Biennial Census of Manufactures, 1932, p. 453.

38 See National Business Year Council, "Furniture Manufacturers," Bulletin No. 11 (Dun & Bradstreet, Inc., March 1939).

39 The seasonal indices of retail furniture sales made by a group of New England department stores during the years 1926-30 showed an average deviation of 21.8; for furniture plant operations in the Grand Rapids district during the years 1923-31 the corresponding figure was 2.7. See National Bureau of Economic Research, Seasonal Variations in Industry and Trade, by Simon Kuznets (New York 1933) pp. 395, 409.

40 Including fuel and purchased electric energy, which together constituted no more than 4 percent of the total cost of materials.

- 41 Figures based on TNBC Monograph 15, Table 1-C in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified land and plant amounted to about 6 percent of the aggregate land and plant of all 66 companies.
- 42 Ibid. In 1936 the total unclassified inventory amounted to about 28 percent of the aggregate inventory of all 66 companies. Proportions slightly different from those given above were found for a sample of 15 larger furniture manufacturers in 1939: for this group finished goods amounted to 32 percent of total inventory, work-in-process 23 percent, and raw materials plus supplies 45 percent. See Federal Trade Commission, "Furniture Manufacturing Corporations," Industrial Corporation Reports (June 3, 1941) p. 12.
- 43 See, for example, the wholesale prices of wooden beds, dining room chairs (sets of six) and living room davenport, in Bureau of Labor Statistics, Wholesale Prices ..., cited above.
- 44 The Bureau of Labor Statistics compiles several series of lumber prices, but none of piece goods or upholstery fabric prices over the period covered by this study.
- 45 The net income figure shown in Table 7 is exclusive of realized capital gains and losses. In the sample studied here profits and losses from the sale of real estate are normally so small as to be insignificant. Only a handful of companies report any gain or loss, and these, combined, had only an \$11,000 gain in 1926, a \$12,000 gain in 1931, and a \$10,000 loss in 1933. In other years the item ran even smaller - except in 1929, when a capital gain of \$1,093,000 was reported. This bonanza appears to have been absorbed by an increase in cash and government bond holdings and by investments in other enterprises, cash dividends, officers' compensation and income taxes. Because of the two latter items this inordinate gain is reflected as a loss in Table 7.
- 46 For an index of average hourly earnings in the furniture manufacturing industry see National Industrial Conference Board, Wages, Hours, and Employment in the United States, 1914-1936, by M. Ada Beney (New York 1936) pp. 104-07.
- 47 This discussion centers primarily around the industrial situation of brick and tile manufacturers, since it is mainly they who constitute the present sample.
- 48 National Research Project, Brick and Tile, by Miriam E. West (Philadelphia 1939) p. 12. In that study the output of the brick and tile industry is converted into units of 1,000 common brick, on the basis of the average relative values of the various products; for a detailed description consult ibid., pp. 23, 24, 194, 195.
- 49 The 1939 Census of Manufactures indicates that in the brick industry there is, on the average, about one salaried officer per incorporated establishment.

- 50 For example, deposits of Darlington clay, widely used for face brick, are found primarily in eastern Ohio and western Pennsylvania.
- 51 West, op. cit., pp. 29-35.
- 52 Figures based on TNEC Monograph 15, Table 1-D in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified land and plant amounted to about one-fifth of the aggregate land and plant of all 70 companies.
- 53 Depletable assets were not shown separately on the income tax return balance sheet until 1935, and in the present study were tabulated with "all other capital assets" throughout the period covered.
- 54 Figures based on TNEC Monograph 15, Table 1-D in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified inventory amounted to about 17 percent of the aggregate inventory of all 70 companies.
- 55 For a sample of 6 principal manufacturers in the clay products industry the inventory composition differed somewhat from that shown here. Finished goods constituted roughly 60 percent of total inventory, raw materials about 30 percent, work-in-process about 10 percent, and supplied a scant 2 to 4 percent; see Federal Trade Commission, "Clay Products (Other than Pottery) Manufacturing Corporations," Industrial Corporation Reports (December 24, 1940) p. 14. These differences, however, may merely indicate differences in the two industries.
- 56 For composite wholesale prices of brick and tile see Bureau of Labor Statistics, Wholesale Prices ..., cited above.
- 57 For composite wholesale price of bituminous coal, mine run, see ibid.
- 58 West, op. cit., p. 84, observes that "Prices in the [brick and tile] industry are more stable than production, reflecting the relative inelasticity of demand and elasticity of supply which operate drastically when prices fall below the cost of production."
- 59 For average hourly earnings in 1929 and 1935 see ibid., p. 143; for average hourly earnings in the brick, tile and terra cotta industry, 1932-36, see Bureau of Labor Statistics, "Hours and Earnings ..." (cited above) p. 16.
- 60 The significance of business conditions in this industry as a cyclical indicator is attested by the fact that an index of machine tool orders running back as far as 1919 is widely circulated.
- 61 This is the effect of the so-called acceleration principle. For a highly simplified illustration of this principle we may assume

a machine tool manufacturer A, a textile machine manufacturer B, and a textile mill C, with B and C under the necessity of replacing their machines every 10 years. If the demand for C's products falls 5 percent C can curtail half his machinery purchases from B, other things remaining equal, because he can use machines that would otherwise be idle instead of replacing those that are worn out. This, however, is sufficient inducement for B to stop all purchases of machine tools from A. Actually, of course, the operation of the principle is much more complex than this illustration suggests.

- 62 Based on the 1930 inventory of metal working equipment reported in American Machinist (February 12, 1931), cited in C. E. Fracer and G. F. Doriot, Analyzing Our Industries (New York: 1932) p. 189.
- 63 For example, that followed in the Tariff Act of 1922 and the Census of Manufactures. The definition of machine tools followed by the National Machine Tool Builders Association excludes such items as forging machines and presses.
- 64 Higher-class, more accurate lathes are usually constructed by manufacturers that operate on a larger scale and are more fully equipped than most of the companies in our sample.
- 65 The 1939 Census of Manufactures indicates that in the machine tool industry there are, on the average, about two salaried officers per incorporated establishment.
- 66 See Manufactures, 1929 (cited above) vol. 2, pp. 1155, 1162.
- 67 Figures based on TWSC Monograph 15, Table 1-E in Appendix F, where the breakdown is presented by years. In 1936 the total unclassified land and plant amounted to about 6 percent of the aggregate land and plant of all 118 companies.
- 68 Ibid. In 1936 the total unclassified inventory amounted to almost a third of the aggregate inventory of all 118 companies. This meagreness of classification is probably to be attributed to the length of the manufacturing process as well as to carelessness in reporting.
- 69 Figures for 1939 covering 8 large manufacturers of machine tools and 7 large manufacturers of accessories show the work-in-process component to constitute 51 percent of total inventory for the former and 39 percent for the latter; see Federal Trade Commission, "Machine Tool Manufacturing Corporations" and "Machine-Tool Accessory and Machinists' Precision Tool Manufacturing Corporations," Industrial Corporation Reports (December 31, 1940, p. 12, and April 1, 1941, p. 12, respectively).
- 70 This is not so true of accessory manufacturers.
- 71 For average hourly earnings in the "machines and machine tools" industry see Boney, op. cit., pp. 88-91.

- 72 Since the workers who were dismissed during the early part of the depression were those that received relatively low wages the average hourly earnings of the remaining workers increased.
- 73 The figures are presented and analyzed in C. L. Sutula, "Machine Tool Companies, 1936-1940" (ms., April 17, 1941), a report prepared in the Research and Statistics Subdivision of the Securities and Exchange Commission.
- 74 For tabulations covering these samples of 18 registered and 6 un-registered companies see ibid.

## CHAPTER THREE

- 1 Strictly speaking the 1926-29 period was not entirely one of expansion; there was a mild recession in 1927. But the 1927 decline was not marked in the annual data analyzed here, and for convenience in analysis we have grouped all four years, 1926-29, into one period.
- 2 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. These financial ratios, and also most of the others analyzed in this report, are ratios of aggregates. For the distinction between a ratio of aggregates and a mean ratio see Appendix C.
- 3 Mean ratios, based on TNEC Monograph 15, Table 67 in Appendix F.
- 4 See Tables 2, 4, 6, 8 and 10 in Chapter 2.
- 5 Tables B-10 to B-14 in Data Book (see footnote 16 of Chapter 1).
- 6 See TNEC Monograph 15, Tables 1-A to 1-E in Appendix F.
- 7 Further evidence of this attitude is the fact that these small enterprises also had very little preferred stock in their capital structure, as will be shown presently.
- 8 A contributing cause may be the fact that instalment purchases of equipment are fairly common among bakeries.
- 9 It is true that some of the largest companies are too big for even the capital market to treat them in an "impersonal and standardized" manner. But the distinction brought out above has general validity.
- 10 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F.
- 11 Federal income tax regulations require that they be capitalized.
- 12 A net contraction of fixed property occurs when the depreciation charge exceeds fixed property expenditures. The term "outlays" is frequently used in the text as synonymous with "expenditures," although in accounting practice a distinction is sometimes made between the two.

13 This is a simplified statement, for it assumes that no undepreciated retirements are charged to the profit and loss account, and it excludes from fixed property expenditures an amount equal to the total of any cash sales of land and plant that may have occurred. See detailed explanation in Data Book, discussion of Tables B-10 to B-21.

14 Depreciation charges are notoriously defective as measures of obsolescence, and wear and tear of plant and equipment. It is especially hazardous to rely on them in an analysis of the income tax returns of small companies, such as those in the present sample, for such establishments tend to charge all the depreciation the Bureau of Internal Revenue will allow. In a random and fairly large group of companies this overstatement of depreciation is probably minimized by the fact that under the regulations no further depreciation is allowed on fully depreciated property. The Bureau of Internal Revenue's depreciation allowances are not necessarily liberal; indeed, some accountants regard them as inadequate. Nevertheless, the amounts reported may deviate widely from actual capital consumption, not only because of misreporting but also because the statutory concept of depreciation is not wholly in accordance with the economic concept.

A disturbing factor of somewhat greater importance is the understatement of depreciation resulting from the inclusion of this item in "cost of operations" or "other deductions." Since this charge is important in the determination of taxable income, there is considerable pressure to show it separately somewhere on the return, and where this was done it has been picked up and included in the present tabulations. Cases undoubtedly exist, however, where depreciation was lumped with some other deduction, and hence could not be identified.

A guess as to the net effect of all these forces on the reliability of the depreciation estimates shown here would be hazardous. Some of them make for an overstatement, others for an understatement. In the present situation the depreciation charges of these companies are taken to represent anticipated capital consumption because they are business data (on which most of this study is based) and because they are the nearest approximations to the desired figures on anticipated requirements for plant replacements. For a thorough discussion of this problem see National Bureau of Economic Research, Capital Consumption and Adjustment, by Solomon Fabricant (New York 1938).

15 There is also another qualification, elaborated below, regarding the validity of attributing all of the accounting revaluations made during the period 1927-36 to capital consumption occurring in this period.

16 Based on Tables B-10 to B-20 in Data Book. A special adjustment, explained there, has been made in the figures for the furniture sample.

17 For annual data on writ-ups and writedowns see Tables B-15 to B-19 in Data Book.

- 18 The sharp falling off of fixed property expenditures in 1930 is in conspicuous contrast to the experience of large corporations, whose expenditures of this nature declined a bare 4 percent in that year. See National Bureau of Economic Research (Financial Research Program), Financing Large Corporations, 1920-39, by Albert R. Koch (ms. 1942).
- 19 The validity of this assumption is examined below.
- 20 For a group of 62 of the 118 machine tool companies the increase continued through 1939, the last year for which data are available; the figure rose steadily from 15 percent in 1936 to nearly 22 percent in 1939. See Table B-6 in Data Book.
- 21 It should be noted that these proportions are derived from averages of individual company ratios rather than from ratios of aggregate accounts payable or aggregate notes payable to aggregate total assets. These so-called mean ratios have been used here because they give no more weight to the experience of relatively large companies in the samples than to that of relatively small ones, and because they permit calculations of the statistical significance of the ratio movements - a consideration of some importance in this instance.
- 22 In this industry the figures appear to indicate a considerable change, but because of the sample's large standard deviation for this particular ratio, the change is not statistically significant. The movements of the ratios for baking, men's clothing and machine tool are significant even at the 5 percent level, which is rigorous for financial statements data; for stone-clay the change is significant at the 6 percent level, and for furniture only if the criterion be raised to 11 percent. For a detailed discussion of the test see Appendix C.
- 23 Among large corporations - those of more than several million dollars in assets - accounts payable seem to have decreased during this period, in relation to total assets. See Koch, op. cit., Chapter 4.
- 24 The supplementary ratios discussed here can be derived from TREC Monograph 15, Tables 1-A to 1-E in Appendix F.
- 25 Based on Tables B-10 to B-14 in Data Book. The figures have been adjusted for accounting revaluations, as explained there.
- 26 Federal Trade Commission, Industrial Corporation Reports, pertaining to "Bread and Bakery Products Manufacturing Corporations" (October 22, 1940), "Men's, Youths' and Boys' Clothing Manufacturing Corporations" (January 21, 1941), "Furniture Manufacturing Corporations" (June 3, 1941), "Clay Products (Other than Pottery) Manufacturing Corporations" (December 26, 1940), "Machine Tool Manufacturing Corporations" (December 31, 1940), and "Machine-Tool Accessory and Machinists' Precision Tool Manufacturing Corporations" (April 1, 1941), Exhibit A in each report.



- 27 See National Bureau of Economic Research (Financial Research Program), Capital and Credit Requirements of Federal Reserve Bank Industrial Loan Applicants, by Charles L. Merwin and Charles H. Schmidt (ms. 1942) Table D-1 in Appendix D.
- 28 It might be contended that the year-end data analyzed here can give no accurate indication of changes in the sources of short-term credit, since they do not reflect the seasonal patterns of these industries. In none of the five industries, however, was there a marked change in seasonal pattern. There is statistical evidence that the amplitude of the seasonal fluctuation diminished somewhat in brick production (see National Research Project, Brick and Tile, by Miriam E. West, Philadelphia 1939, p. 35); and one writer (see National Recovery Administration, Division of Review, The Men's Clothing Industry, by J. W. Hathcock, Work Materials No. 58, mimeograph, March 1936) has alluded to a flattening of the production seasonal in men's clothing. But changes of this character could have had only a negligible effect on short-term financing requirements over the 1926-36 period, and in the other industries there was either no seasonal pattern to speak of (baking and machine tool) or no apparent change in the pattern (furniture).
- 29 Based on Tables B-10 to B-14 in Data Book.
- 30 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. Of the sample of 118 machine tool companies a group of 62 reported the following percentages for subsequent years: 15.5 for 1936; 19.1 for 1937; 19.4 for 1938; and 19.5 for 1939. These figures are based on Table B-6 in Data Book.
- 31 See Department of Labor, Bureau of Labor Statistics, Wholesale Prices in the United States (issued monthly).
- 32 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. Of the sample of 118 machine tool companies a group of 62 reported the following percentages for subsequent years: 11.0 for 1936; 12.2 for 1937; 17.6 for 1938; and 14.3 for 1939. These figures are based on Table B-6 in Data Book.
- 33 A similar conclusion respecting the decline of the commercial loan from 1928 to 1937 has been advanced in another study of the National Bureau's Financial Research Program, The Financial Structure of American Business, by Sidney S. Alexander (ms. 1942). There it is suggested that even though notes payable may not have fallen sharply in relation to total assets, there was a sizable fall of total assets and a corresponding fall in commercial loans. The principal decline in the commercial loan, however, is attributed by Alexander to the large corporations in the period 1920-27.
- 34 This discussion of trade credit terms is based largely on interviews with specialists at the National Credit Office, Inc., and at Dan & Bradstreet, Inc., in New York City, and on letters from trade association officers and others in the industries concerned.

- 35 These terms represent 10 percent discount if payment is received in 10 days from date of invoice, 8 percent in 60 days, or 7 percent in 4 months; if the 7/4 terms are chosen, the invoice is dated December 1 or June 1, depending on whether the goods are shipped in the fall season or the spring season.
- 36 Slide fasteners (such as Talon), which came onto the market in the early 1930's, have consistently sold on terms of n/25 proximo (net on the 25th of the following month).
- 37 Bakers frequently purchase ovens, machinery and other equipment on instalment terms, and some of these purchases (but probably not many) may enter into their accounts payable. Sellers of such equipment try to get 10 to 25 percent down, with the balance payable in from 12 to 36 months, in equal monthly instalments at a charge of 6 percent. Such terms are as liberal now as before the depression of the 1930's.
- 38 These terms, introduced in the late 1920's, mean that the discount is granted if parts shipped from the 1st to the 15th of the month are paid for by the 25th, and if parts shipped after the 15th of the month are paid for by the 10th of the following month.
- 39 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. Of the sample of 118 machine tool companies a group of 62 reported the following percentages for subsequent years: 139 for 1936; 125 for 1937; 109 for 1938; and 120 for 1939. These figures are based on Table B-6 in Data Book.
- 40 Based on TNEC Monograph 15, Tables 1-A to 1-E in appendix F. Of the sample of 118 machine tool companies a group of 62 reported the following percentages for subsequent years: 160 for 1936; 121 for 1937; 105 for 1938; and 102 for 1939. These figures - which are based on Table B-6 in Data Book - suggest that in the machine tool group the excess of outstanding customer credit over mercantile credit virtually vanished after 1936.
- 41 Based on TNEC Monograph 15, Tables 1-A to 1-E in Appendix F. These are book figures; accounting revaluations have not been eliminated.
- 42 Such statements sometimes do show, as a current asset, the margin of receivables withheld by the factor, or the money left on deposit with him.
- 43 Accounts receivable financing is relatively common among small, undercapitalized enterprises, but while it is known that the companies in the present sample are small, it is not certain that they are also undercapitalized. See National Bureau of Economic Research (Financial Research Program), Accounts Receivable Financing, by Raymond J. Saulnier and Neil H. Jacoby (ms. 1942).
- 44 The receivables of large manufacturers, too, appear to have declined. Cf. Koch, op. cit.

- 45 Non-durable includes semi-durable (men's clothing) as well as perishable (baking).
- 46 Corresponding data for the machine tool industry are not available because of the heterogeneity of the products.
- 47 See National Bureau of Economic Research, The Output of Manufacturing Industries, 1899-1937, by Solomon Fabricant (New York 1940) p. 294.
- 48 It is not possible to make a detailed comparison of the cyclical turns in the business done by the sample companies and by the industries they represent, because the value of products series for the industries as a whole are biennial rather than annual.
- 49 Based on Table B-14 in Data Book, where the nature of the sources and uses of funds statement is explained.
- 50 Based on Table B-13 in Data Book.
- 51 On the other hand, not all the consumption of fixed assets could be called productive; some of the depreciation charged by these companies undoubtedly represents the expiration of fixed assets in idle capacity.
- 52 Based on Tables B-10 to B-14 in Data Book. The figures have been adjusted for accounting revaluations, as explained there.
- 53 See National Bureau of Economic Research (Financial Research Program), Term Lending to Business, by Neil H. Jacoby and Raymond J. Saulnier (New York 1942) and Merwin and Schmidt, op. cit.

## CHAPTER FOUR

- 1 The Robert Morris Associates, under the leadership of Alexander Wall, have pioneered in the work of credit analysis. The method they follow is that of preparing average balance sheet and income account relationships for each of many industries. These relationships, expressed in the form of a common-size balance sheet and income account, may then be used by credit managers of the client banks in order to ascertain whether the financial ratios of a loan applicant are above or below the average in the given industry. The data underlying the Robert Morris Associates' tabulations are taken from the financial statements in the credit files of the client banks.
- 2 The possibility that a few companies discontinued for technical or voluntary reasons makes it necessary to refer to the group as "discontinuances" rather than use the much more convenient term "failures." To the extent that the group includes such companies our findings represent an understatement of the portents of actual failure.

- 3 It was assumed that discontinuance occurred during the twelve months following the year covered by the last income tax return, unless that return contained a definite indication to the contrary. Thus a company whose last return covered 1934 was presumed to have disappeared in 1935; its first year before disappearance was 1934, its second 1933, and so on. A corporation that filed a 1936 return was regarded as a surviving company even though it may have gone out of business in 1937 or thereafter; the year 1936 does not figure in any of the year-before-discontinuance tabulations of the present sample. R. F. Smith and A. N. Winakor, in their pioneering study entitled Changes in the Financial Structure of Unsuccessful Industrial Corporations (University of Illinois, Bureau of Business Research, Bulletin 51, 1935), seem to have been the first to use this type of analysis. Their study covers 185 companies that failed some time during the period 1921-31.
- 4 Strictly speaking, some of these financial statements covered a 12-month period other than the calendar year; these have been grouped with the statements covering the nearest calendar year.
- 5 Comparable tabulations for all the disappearing companies, covering up to ten years before discontinuance, also are available (see TMC Monograph 15), but have not been used in this study because the tables covering the identical sample are more admissible to analysis. The two samples, identical and non-identical, show, however, essentially the same picture. A student who wishes to extend the analysis presented here by bringing in other financial statement items, more years before discontinuance, and larger samples, may safely be referred to the larger body of tabulations.
- 6 Current liabilities plus long-term debt. In computing the net worth to total debt ratio credit analysts commonly restrict the numerator to tangible items by subtracting from the net worth shown on the books any intangibles, such as goodwill, that appear on the asset side of the balance sheet. Limitations of the available data prevented us from following the same procedure here.
- 7 Current assets minus current liabilities.
- 8 Details of the differences between the financial structures of the discontinuing and continuing small corporations are presented in Tables B-22 to B-26 in Data Book (see footnote 16 of Chapter 1).
- 9 The method of deriving the estimated normal is explained in detail in Appendix D.
- 10 The analysis in this chapter is based on ratios of aggregates unless otherwise indicated. For the distinction between mean ratios and aggregate ratios see Appendix C.
- 11 For details of this test see Appendix D. There were not enough

cases to apply this test of significance to each industry separately.

- 12 R. F. Smith and A. H. Winakor, op. cit., found that in their sample this ratio gave the first indication of approaching failure.

## APPENDIX A

- 1 Willard Thorp, then Director of TNEC studies in the Department of Commerce, originally proposed these tabulations; the undertaking was supervised by Robert R. Nathan, then chief of the National Income Division of the Bureau of Foreign and Domestic Commerce.
- 2 In Monograph 15, published by the TNEC under the title Financial Characteristics of American Manufacturing Corporations, by Charles L. Merwin (Washington 1940), these tabulations were examined cursorily; their compilation was described in detail in Appendix D of that monograph (pp. 183-95), and the more important tables were presented in full in Appendix F (pp. 199-416). Before their publication the Department of Commerce made all of these tabulations available to the National Bureau of Economic Research for analysis in connection with a study of the financial requirements of business. All the tables, whether or not published in the monograph just cited, are available to accredited students in the Source Book of Statistics of Income, maintained in worksheet form by the Treasury Department in Washington. Adaptations of Monograph 15 tables, for the purposes of the present study, and also certain basic tables not published in the monograph, are collected in National Bureau of Economic Research (Financial Research Program), Data for Studies in Business Finance (ms. 1942), referred to in this study as Data Book.
- 3 A great deal of care was taken in this process, which included not only a thorough search of the Bureau of Internal Revenue files in Washington but also a check of the Collectors' records in the districts covered.
- 4 The collection districts represented by the samples are:  
 New England - Massachusetts; Rhode Island (for machine tools only).  
 East - New York second and third; Pennsylvania first.  
 Middle West - Ohio first, tenth, eleventh and eighteenth;  
 Illinois first and eighth; Missouri first and sixth.  
 South - North Carolina; South Carolina; Georgia; Kentucky;  
 Alabama; Texas first and second.  
 West - California first and sixth; Colorado.
- 5 The regions, and their component states, are:  
 New England - Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut.  
 East - New York, New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia.

Middle West - Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska and Kansas.

South - Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma and Texas.

West - Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon and California.

- 6 By special request of the Securities and Exchange Commission the Treasury-WPA Income Tax Study carried forward through 1939 the tabulations for an identical sample of 62 of the 118 small corporations manufacturing machine tools. See Table B-6 in Data Book for basic data on this special tabulation.
- 7 The tabulations for this sample are available, however, in TNEC Monograph 15.
- 8 These tabulations are not presented in Monograph 15 because they were compiled after its publication. They are available, however, in the Source Book of Statistics of Income, mentioned above (footnote 2). The original tabulations, which show an asset-size breakdown, cover, in addition to the sample used in the present study, another sample identical for the last five (rather than the last six) years before discontinuance. Naturally the samples covering only five years before discontinuance are somewhat larger than those covering six.
- 9 Based on TNEC Monograph 15, Table 7-9 in Appendix F.
- 10 Ibid.
- 11 The ratios used in the text are calculated from the dollar figures available in TNEC Monograph 15; their calculation from the percentages given in the Data Book tables will sometimes give slightly different results.

#### APPENDIX B

- 1 In using the Statistics of Income data, volume of business has been interpreted as gross sales plus gross receipts from operations: in using the Census of Manufactures data it has been interpreted as value of product.

#### APPENDIX C

- 1 The arithmetic mean ratio is the average of the ratios for the individual companies, each company being weighted equally. For example, the arithmetic mean ratio of A to B for 5 companies is

$$\frac{A_1/B_1 + A_2/B_2 + A_3/B_3 + A_4/B_4 + A_5/B_5}{5}$$

- 2 Standard references on this subject include: R. A. Fisher, *Statistical Methods for Research Workers* (London and Edinburgh, 6th ed. 1936) Chapter 5; G. Udny Yule and H. G. Kendall, *An Introduction to the Theory of Statistics* (London, 11th ed. 1937) Chapters 20 and 23; and George W. Snedecor, *Statistical Methods Applied to Experiments in Agriculture and Biology* (Ames, Iowa, 1937) Chapters 2, 3 and 4.
- 3 The ratios tested here are presented in Tables B-7 and B-8 in the Data Book, and pertain to all continuing companies in each sample, not only to those that reported accounts payable separately.
- 4 For the men's clothing companies the percentage changes given here are based on estimates, because a relatively large number of companies fell in the open-end class.
- 5 The indicated probability is based on the null hypothesis that the ratios for the universes remained constant.
- 6 On men's clothing see footnote 4 above; for the larger men's clothing companies the ratio moved downward rather than upward.
- 7 This term is used in its statistical sense, to mean universe of discourse, which in the present instance includes all the incorporated enterprises with assets under \$250,000 in the precise industries represented by these samples.
- 8 This principle is used also in Appendix D, in testing the significance of the divergence between selected ratios for continuing and disappearing companies, a divergence that widens persistently as year of disappearance draws near.
- 9 For this ingenious formula the writer is indebted to Sidney S. Alexander and Carl Kayser, of the Financial Research staff of the National Bureau of Economic Research.
- 10 Total assets were frequently employed in Chapters 2 and 3 as the denominator or base of reference, and therefore this limitation of applicability is not serious in the present instance.
- 11 Presented in TNEC Monograph 15, Tables 6-A to 6-E in Appendix F.

## APPENDIX D

- 1 The analysis in this appendix is based on ratios of aggregates; the distinction between mean ratios and aggregate ratios was discussed in Appendix C.
- 2 Based on TNEC Monograph 15, Table 1-A in Appendix F. Since the tabulations covering the identical sample of discontinuances do not show government bonds separately from other investments, the current ratio for the discontinuing companies does not include government bonds in the numerator. Therefore in computing esti-

mated normals this item has been omitted from the current assets of the identical sample of continuing companies.

- 3 Milton Friedman, "Use of Ranks to Avoid the Assumption of Normality Implicit in the Analysis of Variance," in Journal of the American Statistical Association, vol. 32 (1937) pp. 675-701.
- 4 When the values of the differences in two, or more, years before discontinuance are equal, each is given the same rank, that rank being an average of the combined ranks which the values could be assigned. For example, if the values of the differences in the sixth and third years before discontinuance were equal and the lowest of all the values appearing, each would be given a rank of 5.5 as the average of the two ranks to be shared, 5 and 6.