

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

Volume Title: The Pattern of Corporate Financial Structure: A Cross-Section
View of Manufacturing, Mining, Trade, and Construction, 1937

Volume Author/Editor: Walter A. Chudson

Volume Publisher: NBER

Volume ISBN: 0-870-14135-X

Volume URL: <http://www.nber.org/books/chud45-1>

Publication Date: 1945

Chapter Title: Front matter, preface, acknowledgement, table of contents

Chapter Author: Walter A. Chudson

Chapter URL: <http://www.nber.org/chapters/c9208>

Chapter pages in book: (p. -13 - 0)

**NATIONAL BUREAU OF
ECONOMIC RESEARCH**

Financial Research Program

NATIONAL BUREAU OF ECONOMIC RESEARCH

OFFICERS

N. I. STONE, *Chairman*
SHEPARD MORGAN, *President*
H. M. GROVES, *Vice-President*
GEORGE B. ROBERTS, *Treasurer*
W. J. CARSON, *Executive Director*
MARTHA ANDERSON, *Editor*

DIRECTORS AT LARGE

CHESTER I. BARNARD, *President, New Jersey Bell Telephone Company*
OSWALD W. KNAUTH, *New York City*
H. W. LAIDLER, *Executive Director, League for Industrial Democracy*
SHEPARD MORGAN, *Vice-President, Chase National Bank*
GEORGE B. ROBERTS, *Vice-President, National City Bank*
BEARDSLEY RUMI, *Treasurer, R. H. Macy and Company*
HARRY SCHERMAN, *President, Book-of-the-Month Club*
GEORGE SOULE, *Director, The Labor Bureau, Inc.*
N. I. STONE, *Consulting Economist*
J. RAYMOND WALSH, *Economist, Congress of Industrial Organizations*
LEO WOLMAN, *Columbia University*

DIRECTORS BY UNIVERSITY APPOINTMENT

E. W. BAEKE, *Yale*
C. C. BALDERSTON, *Pennsylvania*
W. L. CRUM, *Harvard*
GUY STANTON FORD, *Minnesota*
H. M. GROVES, *Wisconsin*
CLARENCE HEER, *North Carolina*
WESLEY C. MITCHELL, *Columbia*
PAUL M. O'LEARY, *Cornell*
T. O. YNTEMA, *Chicago*

DIRECTORS APPOINTED BY OTHER ORGANIZATIONS

PERCIVAL F. BRUNDAGE, *American Institute of Accountants*
FREDERICK C. MILLS, *American Statistical Association*
BORIS SHISHKIN, *American Federation of Labor*
WARREN C. WAITE, *American Farm Economic Association*
DONALD H. WALLACE, *American Economic Association*

RESEARCH STAFF

WESLEY C. MITCHELL, *Director*
MOSES ABRAMOVITZ
ARTHUR F. BURNS
MORRIS A. COPELAND
SOLOMON FABRICANT
MILTON FRIEDMAN
THOR HULTGREN
SIMON KUZNETS
RUTH P. MACK
FREDERICK C. MILLS
GEOFFREY H. MOORE
RAYMOND J. SAULNIER
GEORGE J. STIGLER
DONALD S. THOMPSON
LEO WOLMAN

RALPH A. YOUNG

Relation of the Directors to the Work of the National Bureau of Economic Research

1. The object of the National Bureau of Economic Research is to ascertain and to present to the public important economic facts and their interpretation in a scientific and impartial manner. The Board of Directors is charged with the responsibility of ensuring that the work of the Bureau is carried on in strict conformity with this object.

2. To this end the Board of Directors shall appoint one or more Directors of Research.

3. The Director or Directors of Research shall submit to the members of the Board, or to its Executive Committee, for their formal adoption, all specific proposals concerning researches to be instituted.

4. No report shall be published until the Director or Directors of Research shall have submitted to the Board a summary drawing attention to the character of the data and their utilization in the report, the nature and treatment of the problems involved, the main conclusions and such other information as in their opinion would serve to determine the suitability of the report for publication in accordance with the principles of the Bureau.

5. A copy of any manuscript proposed for publication shall also be submitted to each member of the Board. For each manuscript to be so submitted a special committee shall be appointed by the President, or at his designation by the Executive Director, consisting of three Directors selected as nearly as may be one from each general division of the Board. The names of the special manuscript committee shall be stated to each Director when the summary and report described in paragraph (4) are sent him. It shall be the duty of each member of the committee to read the manuscript. If each member of the special committee signifies his approval within thirty days, the manuscript may be published. If each member of the special committee has not signified his approval within thirty days of the transmittal of the report and manuscript, the Director of Research shall then notify each member of the Board, requesting approval or disapproval of publication, and thirty additional days shall be granted for this purpose. The manuscript shall then not be published unless at least a majority of the entire Board and a two-thirds majority of those members of the Board who shall have voted on the proposal within the time fixed for the receipt of votes on the publication proposed shall have approved.

6. No manuscript may be published, though approved by each member of the special committee, until forty-five days have elapsed from the transmittal of the summary and report. The interval is allowed for the receipt of any memorandum of dissent or reservation, together with a brief statement of his reasons, that any member may wish to express; and such memorandum of dissent or reservation shall be published with the manuscript if he so desires. Publication does not, however, imply that each member of the Board has read the manuscript, or that either members of the Board in general, or of the special committee, have passed upon its validity in every detail.

7. A copy of this resolution shall, unless otherwise determined by the Board, be printed in each copy of every National Bureau book.

*(Resolution adopted October 25, 1926, and revised
February 6, 1933, and February 24, 1941)*

Financial Research Program: Committee

In the planning and conduct of all research under the Financial Research Program the National Bureau benefits from the advice and guidance of its Committee on Research in Finance. The functions of this committee are to review and supervise the specific research activities of the Program staff.

- RALPH A. YOUNG, Chairman pro tempore—*University of Pennsylvania; Director, Financial Research Program*
- RAYMOND J. SAULNIER, Secretary—*Barnard College, Columbia University; Research Staff, National Bureau of Economic Research*
- BENJAMIN HAGGOTT BECKHART—*Columbia University; Director of Research, Chase National Bank*
- WILLIAM J. CARSON—*University of Pennsylvania; Executive Director, National Bureau of Economic Research*
- ERNEST M. FISHER—*Director, Research in Mortgage and Real Estate Finance, The American Bankers Association*
- DAVID FRIDAY—*Consulting Economist; Director, National Bureau of Economic Research*
- E. A. GOLDENWEISER—*Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System*
- F. CYRIL JAMES—*Principal and Vice-Chancellor, McGill University*
- WALTER LICHTENSTEIN—*Vice-President, First National Bank of Chicago*
- WALTER L. MITCHELL, JR.—*Director of Surveys, Research and Statistical Division, Dun & Bradstreet, Inc.*
- WESLEY C. MITCHELL—*Columbia University; Director of Research, National Bureau of Economic Research*
- SHEPARD MORGAN—*Vice-President, Chase National Bank; President, National Bureau of Economic Research*
- WILLIAM I. MYERS—*Dean, College of Agriculture, Cornell University*
- JACK H. RIDDLE—*Economic Adviser, Bankers Trust Company*
- GEORGE BASSETT ROBERTS—*Vice-President, The National City Bank; Treasurer, National Bureau of Economic Research*
- WOODLIEF THOMAS—*Director, Division of Research and Statistics, Board of Governors of the Federal Reserve System*
- DONALD S. THOMPSON—*Research Staff, National Bureau of Economic Research*
- ROBERT B. WARREN—*Institute for Advanced Study*
- JOHN H. WILLIAMS—*Dean, Littauer School, Harvard University; Vice-President, Federal Reserve Bank of New York*
- LEO WOLMAN—*Columbia University; Research Staff, National Bureau of Economic Research*
- DONALD B. WOODWARD—*Research Assistant to the President, Mutual Life Insurance Company of New York*

STUDIES IN BUSINESS FINANCING

THE PATTERN
OF CORPORATE
FINANCIAL STRUCTURE

A Cross-Section View of Manufacturing, Mining, Trade,
and Construction, 1937

by

WALTER A. CHUDSON

NATIONAL BUREAU OF ECONOMIC RESEARCH
NEW YORK

1945

PREFACE

THIS STUDY IS ONE OF A SERIES prepared under the Financial Research Program's Business Financing Project, an investigation of changes in the financial structure of American business, 1900-1940, begun early in 1940 with the support of grants from the Association of Reserve City Bankers and the Rockefeller Foundation.

The project has had the following objectives: first, to determine from statistical analysis of business accounting records the general character of the financing services obtained by business enterprise from financial institutions currently and in the past; second, to trace the structural and cyclical changes that have occurred in business credit demands since the turn of the century; and third, to describe the adaptations that institutions providing short- and medium-term credit to business have made in recent years in response to changing credit demands.

Work on these objectives has been organized into two divisions: one entitled "Changes in the Financing of Business Enterprise, 1900-1940", and devoted to the first and second objectives; the other entitled "Business Financing Tendencies and the Emerging Problems of Commercial Banks," and concerned primarily with the third objective, but also to some degree with the first. The procedure followed has been to develop, from separate bodies of primary materials, special technical studies whose findings are to be integrated into a single analysis. The present report is one of the technical studies made under the first division of the work.

When work on the Business Financing Project was initiated, no comprehensive tabulations of corporate financial data, compiled according to uniform standards and covering a long period of time, were available as a basis for analysis. The first problem, therefore, was to test the usefulness of existing compilations, and to build up new materials to supplement and extend those already available. With the cooperation of a number of public and private agencies, several additional samples of business financial data were developed from state tax report files, federal corporate income

tax returns, industrial loan files of the Federal Reserve Banks of New York and Philadelphia, Dun and Bradstreet reports, bank credit files, and other sources.

Variations in the coverage and characteristics of the data thus assembled presented many statistical problems. As the analysis of our samples of data progressed, it became increasingly clear that we urgently needed a comprehensive picture, for one recent year, of the distinguishing financial features of incorporated manufacturing and trade enterprise, grouped by industry, size of corporation, and profitability. Detailed knowledge of the pattern of variation of balance-sheet accounts, systematic and otherwise, according to industry, size of corporation, and profitability, would aid in the comparative interpretation of our various samples of corporate financial data for long periods, since both the quantity and quality of these historical data diminish as one moves back in time.

Walter A. Chudson, who has collaborated in the project from the outset, undertook the responsibility for preparing such a study, and after some exploration he came to the conclusion that the most promising sources on which to base the study were the *Statistics of Income* of the Bureau of Internal Revenue and the *Statistics of American Listed Corporations* of the Securities and Exchange Commission. The year 1937 was selected as the one for reference analysis because it was in general a year of high business activity, and our long-period study of changes in financial structure was being developed on the basis of data pertaining to selected years of "peak" business activity over the period 1900-1940. In addition, the compilations for 1937 were the most recent ones available when the study was begun, and had the advantage of providing a more detailed classification of balance-sheet accounts, particularly current liabilities, than the tabulations for previous years. Dr. Chudson has also used data for other years, notably 1931, in his study, but his use of such data has been largely for purposes of testing the findings from his more intensive analysis for 1937.

Dr. Chudson has been concerned with a variety of interesting and highly relevant questions. How do manufacturing and trade corporations, differing in size and profitability and belonging to different industries, vary with respect to the composition of their assets and liabilities? Do they differ systematically in respect to inventory holdings, cash, and accounts receivable? Do large cor-

porations have a higher turnover of their current or working assets than do medium-sized and small corporations? Is the proportion of current assets and liabilities more directly related to type of industry or to size of corporation? How are different levels of industrial profitability reflected in balance-sheet ratios? Is the proportion of short-term debt—i.e., trade credit and notes payable to banks and other institutions—related more closely to business holdings of inventory, or to other characteristics?

In answering such questions Dr. Chudson has employed the ratio method of balance-sheet analysis, using as his bases both total assets and sales. This method, though conventional, is especially well adapted to the questions on which Dr. Chudson has focused his analysis. In evaluating his findings, it must be recalled that his objective is limited to determining the cross-section pattern of variation in financial structure with respect to industry, corporate size, and reported profitability. The data with which he has worked have not been all that one would hope to have, and they were not compiled to order. The significance of the findings, however, fully justifies their use for the purposes in mind. Appendices A, B, C, and D contain a detailed discussion of the characteristics of the data and of the methods of analysis, which will be of particular interest to technical readers in appraising the findings.

We are indebted to the Bureau of Internal Revenue and to the Securities and Exchange Commission for help in the assembly of materials for this study. The Bureau of Internal Revenue permitted us to make transcriptions of tables covering the financial statements of minor industrial divisions from its *Source Book of Statistics of Income*. The Division of Research and Statistics of the SEC kindly prepared for our use some supplementary tabulations of data for corporations covered in the Division's Survey of American Listed Corporations for 1937.

The tables on which the analysis is based are not contained in this volume. They are to be made available, along with other basic corporate financial data compiled under the Business Financing Project, in a separate volume entitled *Corporate Financial Data for Studies in Business Finance*.

RALPH A. YOUNG

Director, Financial Research Program

January 1945

AUTHOR'S ACKNOWLEDGMENTS

IN THIS STUDY I HAVE PROFITED considerably from the generous counsel and encouragement of Ralph A. Young, Director of the National Bureau's Financial Research Program, and of Winfield W. Riefler, Chairman of the Committee on Research in Finance.

In preparing the manuscript, which is one of a series dealing with the financial structure of American corporations, I have gained much assistance from the constant interchange of ideas with my colleagues, Sidney S. Alexander, Carl Kaysen, Albert R. Koch, Charles L. Merwin, and Raymond J. Saulnier, who have been working on related aspects of the subject. I am especially grateful to Carl Kaysen for advice in dealing with statistical problems.

I also owe much to the statistical and clerical staffs of the Financial Research Program for the cooperation which has made possible such a large-scale quantitative analysis, particularly to Sophie Polah, under whose direction the tables were prepared and checked, to Renée Courtney, who put the tables in their final form, and to Helen Morphy, who executed the charts. In addition I am indebted to Lorine Pruette, who edited a preliminary version of the manuscript, and to Dorothy Wescott, who was in full charge of the editing for publication.

A substantial part of the data has been derived from unpublished sources, and I wish to express my thanks to E. D. White, of the Bureau of Internal Revenue, and to Raymond A. Goldsmith, of the Securities and Exchange Commission, for making these materials available to me.

WALTER A. CHUDSON

CONTENTS

PREFACE	vii
AUTHOR'S ACKNOWLEDGMENTS	x
LIST OF TABLES	xiii
LIST OF CHARTS	xiv
1. A SURVEY OF CORPORATE FINANCIAL STRUCTURE	(1-16)
Basic Features of Financial Structure	3
Industry, Size, and Profitability as Determinants of Financial Structure	7
<i>Industrial Variations</i>	7
<i>Variations with Corporate Size</i>	12
<i>Variations with Profitability</i>	14
2. INVENTORY	(17-33)
Industrial Variations	18
Variations with Corporate Size	25
Variations with Profitability	29
3. CASH, MARKETABLE SECURITIES, AND RECEIVABLES	(34-45)
Cash and Marketable Securities	34
<i>Industrial Variations</i>	35
<i>Variations with Corporate Size</i>	38
<i>Variations with Profitability</i>	40
Receivables	41
<i>Industrial Variations</i>	41
<i>Variations with Corporate Size</i>	44
<i>Variations with Profitability</i>	45
4. CURRENT LIABILITIES	(46-66)
Notes Payable	46
<i>Industrial Variations</i>	47
<i>Variations with Corporate Size</i>	53
<i>Variations with Profitability</i>	56
<i>Borrowing and Nonborrowing Corporations</i>	57
Accounts Payable	58
<i>Industrial Variations</i>	60
<i>Variations with Corporate Size</i>	63
<i>Variations with Profitability</i>	65
Accrued Liabilities	66

5. THE CURRENT RATIO AND INTERRELATIONSHIPS OF WORKING CAPITAL ITEMS	(67-80)
The Current Ratio	67
<i>Industrial Variations</i>	67
<i>Variations with Corporate Size</i>	71
<i>Variations with Profitability</i>	71
Interrelationships of Working Capital Items	73
<i>Accounts Receivable and Accounts Payable</i>	73
<i>Inventory and Notes Payable</i>	77
<i>Accounts Payable and Notes Payable</i>	79
<i>Cash and Marketable Securities</i>	79
<i>Cash and Notes Payable</i>	79
6. FIXED CAPITAL ASSETS AND LONG-TERM INVESTMENTS	(81-93)
Fixed Capital Assets	81
<i>Industrial Variations</i>	81
<i>Variations with Corporate Size</i>	84
<i>Variations with Profitability</i>	87
Long-Term Investments	87
<i>Industrial Variations</i>	88
<i>Variations with Corporate Size</i>	89
<i>Variations with Profitability</i>	89
<i>Other Aspects of Intercorporate Investments</i>	90
Intangibles	91
7. LONG-TERM DEBT AND NET WORTH	(94-109)
Debt and Equity Capital	94
The Composition of Net Worth	98
<i>Industrial Variations</i>	98
<i>Variations with Corporate Size</i>	100
<i>Variations with Profitability</i>	101
Long-Term Debt	102
<i>Industrial Variations</i>	102
<i>Variations with Corporate Size</i>	103
<i>Variations with Profitability</i>	105
<i>The Frequency of Long-Term Debt</i>	105
Invested Capital and Capital Assets	109
APPENDIX A—CHARACTERISTICS OF THE DATA	(111-20)
APPENDIX B—ASPECTS OF THE CROSS-SECTION ANALYSIS OF FINANCIAL STRUCTURE	(121-28)
APPENDIX C—A COMPARISON OF CONSOLIDATED AND UNCONSOLI- DATED BALANCE SHEETS	(129-37)
APPENDIX D—COEFFICIENTS OF RANK CORRELATION	(138-40)
APPENDIX E—CLASSIFICATION OF INDUSTRIES BY MAJOR AND MINOR INDUSTRIAL GROUPS	(141-43)
INDEX	144

LIST OF TABLES

1. Comparisons of Ratios of Balance-Sheet Accounts, 1937, by Industry, Size, and Profitability	8
2. Range of Variation of Balance-Sheet Ratios among Minor Industrial Divisions, 1937	10
3. Distribution of Marketable Securities for American Listed Corporations, 1937, by Kind of Industry and by Income and Deficit Divisions, and for Listed Manufacturing Corporations, by Asset Size	37
4. Distribution of Notes Payable for Income and Deficit Corporations Combined, 1937, by Industrial Divisions	48
5. Dollar Volume and Percentage Distribution of Notes Payable for Nonfinancial Corporations, 1937, by Asset Size	53
6. Relative Frequency of Notes Payable for Listed Corporations, 1937, by Industrial Groups	58
7. Relative Frequency of Notes Payable for Major Industrial Groups of Listed Corporations, 1937, by Asset Size and by Profitability	59
8. Creditor-Debtor Relationships among Income and Deficit Corporations, 1937, by Asset Size	76
9. Ratio of "Other Assets" to Fixed Capital Assets, 1937, by Industrial Groups	92
10. Ratio of Short-Term Debt to Long-Term Debt, of Long-Term Debt to Net Worth, and of Long-Term Debt to Fixed Capital Assets, for Income and Deficit Divisions of All Manufacturing Corporations, 1937, by Asset Size	104
11. Percentage of Listed Manufacturing Corporations Having Long-Term Debt, and the Ratio of Funded Debt to Other Long-Term Debt, 1937 by Asset Size	106
12. Percentage of Listed Corporations Having Long-Term Debt, 1937, by Industrial Groups	107
13. Types of Capital Structure, All Listed Corporations, 1937	108
C-1 Balance-Sheet Effect of Elimination of Consolidated Returns, Combined with Temporal Change, 1933-34, All Manufacturing Corporations	130
C-2 Temporal Change in Balance Sheets of Corporations Unconsolidated in 1933 and 1934, All Manufacturing Corporations	131
C-3 Effect of Deconsolidation on the Financial Structure of Manufacturing Corporations as Shown by Industrial Classifications of 1933 and 1934	132
C-4 Gross Effect of Elimination of Consolidated Returns, Combined with Temporal Change, 1933-34, All Manufacturing Corporations	133
C-5 The Industrial Distribution of Subsidiaries, 1933	134
C-6 Variation with Corporate Size of the Ratio of Intercompany Investments to Total Assets, Consolidated and Unconsolidated Balance Sheets	135
C-7 Variation with Corporate Size of the Ratio of Receivables and of Payables to Total Assets, Consolidated and Unconsolidated Balance Sheets	136
D-1 Coefficients of Rank Correlation for Selected Financial Ratios among Minor Industrial Divisions	138
D-2 Coefficients of Rank Correlation between Selected Balance-Sheet Ratios	140

LIST OF CHARTS

1. Ratio of Average Inventory to Sales for Income and Deficit Groups of Minor Industrial Divisions, 1937	19
2. Ratio of Inventory to Total Assets for Income and Deficit Groups of Minor Industrial Divisions, 1937	23
3. Ratio of Average Inventory to Sales for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	26
4. Ratio of Accounts Receivable to Sales for Income and Deficit Groups of Minor Industrial Divisions, 1937	42
5. Ratio of Notes Payable to Sales for Income and Deficit Groups of Minor Industrial Divisions, 1937	51
6. Ratio of Notes Payable to Total Assets for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	55
7. Ratio of Accounts Payable to Sales for Income and Deficit Groups of Minor Industrial Divisions, 1937	61
8. Ratio of Total Current Assets to Total Current Liabilities for Income and Deficit Groups of Minor Industrial Divisions, 1937	69
9. Ratio of Total Current Assets to Total Current Liabilities for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	72
10. Ratio of Fixed Capital Assets to Total Assets for Income and Deficit Groups of Minor Industrial Divisions, 1937	83
11. Ratio of Fixed Capital Assets to Sales for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	85
12. Ratio of Net Worth to Total Assets for Income and Deficit Groups of Minor Industrial Divisions, 1937	95
13. Ratio of Net Worth to Total Assets for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	97
B1. Ratio of Total Assets to Sales for Income and Deficit Groups of Major Industrial Divisions, 1937, by Asset Size	123

STUDIES IN BUSINESS FINANCING

**THE PATTERN OF CORPORATE
FINANCIAL STRUCTURE**

**A Cross-Section View of Manufacturing, Mining,
Trade, and Construction, 1937**

NBER FINANCIAL RESEARCH PROGRAM