

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

Volume Title: Postwar Cycles in Manufacturers' Inventories

Volume Author/Editor: Thomas M. Stanback, Jr.

Volume Publisher: NBER

Volume ISBN: 0-870-14094-9

Volume URL: <http://www.nber.org/books/stan62-1>

Publication Date: 1962

Chapter Title: Front matter, tables of content Postwar Cycles in Manufacturers' Inventories

Chapter Author: Thomas M. Stanback, Jr.

Chapter URL: <http://www.nber.org/chapters/c1997>

Chapter pages in book: (p. -16 - 0)

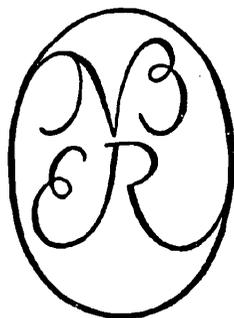
Postwar Cycles in
Manufacturers' Inventories

NATIONAL BUREAU OF ECONOMIC RESEARCH
Studies in Business Cycles

1. *Business Cycles: The Problem and Its Setting*, by Wesley C. Mitchell
2. *Measuring Business Cycles*, by Arthur F. Burns and Wesley C. Mitchell
3. *American Transportation in Prosperity and Depression*, by Thor Hultgren
4. *Inventories and Business Cycles, with Special Reference to Manufacturers' Inventories*, by Moses Abramovitz
5. *What Happens during Business Cycles: A Progress Report*, by Wesley C. Mitchell
6. *Personal Income during Business Cycles*, by Daniel Creamer with the assistance of Martin Bernstein
7. *Consumption and Business Fluctuations: A Case Study of the Shoe, Leather, Hide Sequence*, by Ruth P. Mack
8. *International Financial Transactions and Business Cycles*, by Oskar Morgenstern
9. *Federal Receipts and Expenditures During Business Cycles, 1879-1958*, by John M. Firestone
10. *Business Cycle Indicators: Volume I, Contributions to the Analysis of Current Business Conditions; Volume II, Basic Data on Cyclical Indicators*; edited by Geoffrey H. Moore
11. *Postwar Cycles in Manufacturers' Inventories*, by Thomas M. Stanback, Jr.

Postwar Cycles
in
Manufacturers'
Inventories

By Thomas M. Stanback, Jr.



NATIONAL BUREAU OF ECONOMIC RESEARCH

1962

**LIBRARY OF CONGRESS CATALOG
CARD NUMBER 62-12891**

EXTRACT

From materials prepared for the Joint Economic Committee, Congress of the United States, Eighty-seventh Congress, First Session, Pursuant to Sec. 5 (a), Part 1, "Postwar Fluctuations in Business Inventories."

NOT PRINTED AT GOVERNMENT EXPENSE

NATIONAL BUREAU OF ECONOMIC RESEARCH, 1961

OFFICERS

Harold M. Groves, *Chairman*
Arthur F. Burns, *President*
Albert J. Hettinger, Jr., *Vice President*
Murray Shields, *Treasurer*
Solomon Fabricant, *Director of Research*
Geoffrey H. Moore, *Associate Director of Research*
Hal B. Lary, *Associate Director of Research*
William J. Carson, *Executive Director*

DIRECTORS AT LARGE

Wallace J. Campbell, Nationwide Insurance
Erwin D. Canham, Christian Science Monitor
Solomon Fabricant, New York University
Marion B. Folsom, Eastman Kodak Co.
Crawford H. Greenewalt, E. I. du Pont de Nemours & Co.
Gabriel Hauge, Manufacturers Hanover Trust Co.
A. J. Hayes, International Association of Machinists
Albert J. Hettinger, Jr., Lazard Frères & Co.
H. W. Laidler, League for Industrial Democracy
George B. Roberts, Larchmont, N. Y.
Harry Scherman, Book-of-the-Month Club
Boris Shishkin, American Federation of Labor and Congress of Industrial Organizations
George Soule, South Kent, Conn.
Joseph H. Willits, Armonk, N. Y.
Donald B. Woodward, A. W. Jones & Co.
Theodore O. Yntema, Ford Motor Co.

DIRECTORS BY UNIVERSITY APPOINTMENT

V. W. Bladen, Toronto	Gottfried Haberler, Harvard
Arthur F. Burns, Columbia	Walter W. Heller, Minnesota
Lester V. Chandler, Princeton	Maurice W. Lee, North Carolina
Melvin G. de Chazeau, Cornell	Lloyd G. Reynolds, Yale
Frank W. Fetter, Northwestern	Theodore W. Schultz, Chicago
R. A. Gordon, California	Willis J. Winn, Pennsylvania
Harold M. Groves, Wisconsin	

DIRECTORS BY APPOINTMENT OF OTHER ORGANIZATIONS

Percival F. Brundage, American Institute of Certified Public Accountants
Harold G. Halcrow, American Farm Economic Association
Theodore V. Houser, Committee for Economic Development
S. H. Ruttenberg, American Federation of Labor and Congress of Industrial Organizations
Murray Shields, American Management Association
Willard L. Thorp, American Economic Association
W. Allen Wallis, American Statistical Association
Harold F. Williamson, Economic History Association

DIRECTORS EMERITI

Oswald W. Knauth, Beaufort, S. C. Shepard Morgan, Norfolk, Conn.
N. I. Stone, New York City

RESEARCH STAFF

Moses Abramovitz	Milton Friedman	Ilse Mintz
Gary S. Becker	Raymond W. Goldsmith	Geoffrey H. Moore
William H. Brown, Jr.	Millard Hastay	Roger F. Murray
Gerhard Bry	Daniel M. Holland	Ralph L. Nelson
Arthur F. Burns	Thor Hultgren	G. Warren Nutter
Phillip Cagan	F. Thomas Juster	Richard T. Selden
Joseph W. Conard	C. Harry Kahn	Lawrence H. Seltzer
Frank G. Dickinson	Hal B. Lary	Robert P. Shay
James S. Earley	Robert E. Lipsey	George J. Stigler
Richard A. Easterlin	Ruth P. Mack	Norman B. Ture
Solomon Fabricant	Jacob Mincer	Herbert B. Woolley

**RELATION OF THE DIRECTORS
TO THE WORK AND PUBLICATIONS
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 National 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 National 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 to 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,
as revised February 6, 1933, and February 24, 1941)*

LETTER OF TRANSMITTAL

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.,
New York, N.Y., October 17, 1961.

HON. WRIGHT PATMAN,
*Chairman, Joint Economic Committee,
House Office Building,
Washington, D.C.*

DEAR REPRESENTATIVE PATMAN: On behalf of the National Bureau of Economic Research I am happy to transmit to you, in response to your request of September 5, 1961, the report "Postwar Cycles in Manufacturers' Inventories," by Dr. Thomas M. Stanback, Jr.

Dr. Stanback's report is the culmination of several years of careful and systematic research, which he began as a research associate at the National Bureau in 1955-56 and continued since despite the pressure of teaching duties. He is presently associate professor of economics at New York University. Fortunately the completion of his work on the study earlier this year coincided with the plans of the Joint Economic Committee for a comprehensive study of the subject of inventories. We are therefore glad to make the report available to the committee. The report will also be published separately by the National Bureau as one of its studies in business cycles.

As the report itself indicates, it has had the benefit of a thorough review by members of the National Bureau's staff and board. The cooperation of the Office of Business Economics of the Department of Commerce was invaluable. Of great assistance, too, in the planning and conduct of the study, was the earlier work by Prof. Moses Abramovitz, issued by the National Bureau in 1950, under the title "Inventories and Business Cycles." Many of Abramovitz' findings, based on prewar information, are verified in Stanback's study, some are modified, and a number of new results are reported.

We hope that the report will be of assistance to the committee in its investigation of this important subject.

Very truly yours,

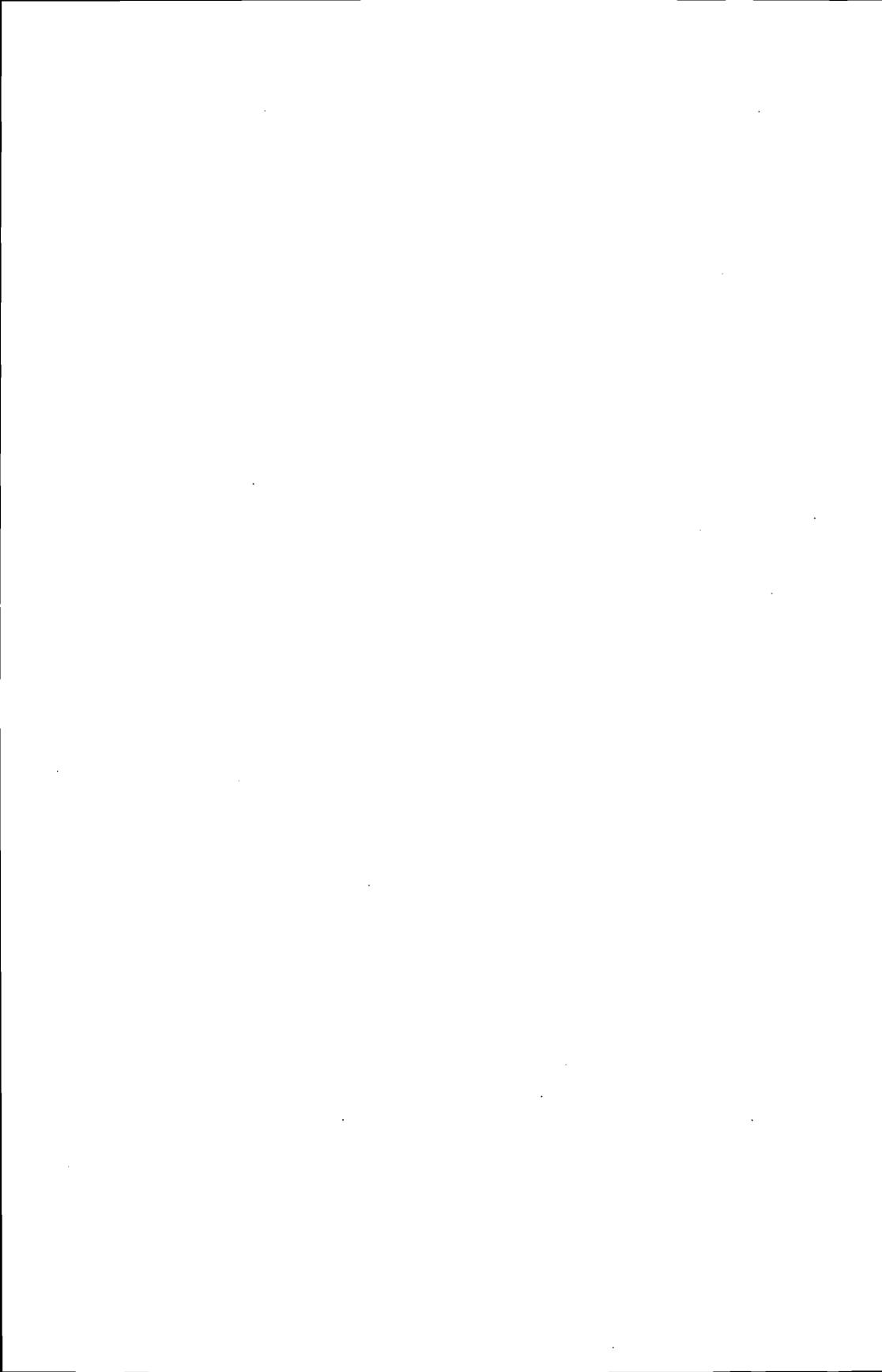
SOLOMON FABRICANT,
Director of Research.

ACKNOWLEDGMENTS

This study was begun in the academic year 1955-56, while the author was a research associate at the National Bureau of Economic Research, and was continued thereafter under Bureau sponsorship. At almost every stage the work benefited from the assistance, criticism, and encouragement of members of the Bureau staff. My obligations are many—more than I can fully acknowledge here.

My greatest debt is to Geoffrey H. Moore, who followed the study from the beginning, giving unstintingly of his time in reading and criticizing the various versions of the manuscript. Ruth Mack, Moses Abramovitz, and Victor Zarnowitz comprised the staff reading committee; R. A. Gordon, Maurice Lee, and George B. Roberts, the Board of Directors' review committee. I am grateful to all of these persons for their careful reading of the manuscript and for the many helpful suggestions which were offered. Thanks go also to Dorothy Suchman, who was my research assistant; to Johanna Stern, who was helpful in many ways in assembling the data; and to Irving Forman, who drew the charts. Joan Tron's high standard of editorial craftsmanship contributed immeasurably to the final product. Finally, I wish to express my gratitude to my wife for her patience and confidence over the extended period of preparation of this study.

THOMAS M. STANBACK, Jr.



CONTENTS

	Page
Acknowledgments	ix
1. Introduction and summary	1
2. The role of inventory investment in business cycles: A preliminary view	5
Inventory investment during contractions	5
Inventory investment during expansions	9
Manufacturers' inventory investment	12
3. Manufacturers' inventories and inventory investment	17
Timing comparisons	17
Cyclical sensitivity of durable goods	23
Composition of manufacturers' stocks	25
4. Purchased-materials inventories and inventory investment	27
Behavior of inventories	28
Timing and conformity of inventories: Comparisons with sales turns	28
Timing and conformity of inventories: Comparisons with reference turns	31
Behavior of inventory investment	34
Timing and conformity of investment: Comparisons with sales turns	34
Timing and conformity of investment: Comparisons with reference turns	37
Cyclical amplitude of inventory investment	39
Timing and conformity of investment: Comparisons with rates of change in output	40
Factors influencing the behavior of purchased materials	40
Unfilled order backlogs	41
Availability of materials	47
Price movements	51
Inventory objectives and the purchasing process	52
Movements in new orders and purchased-materials invest- ment	52
Cyclical changes in purchasing policy	54
Summary and conclusions	58
5. Finished-goods inventories and inventory investment	61
Composition of stocks	61
The staple, made-to-stock inventory series	64
Timing and conformity of stocks during activity cycles	64
Total finished-goods inventories	66
Timing and conformity of stocks: Comparisons with sales and reference turns	66
The staple, made-to-stock inventory investment series	70
Inventory investment and rates of change in activity	71
Relation between staples made to stock and total manufac- turers' finished goods	74
Total finished-goods inventory investment	76
Investment and rates of change in sales	76
Timing of investment during business cycles	79
Timing and conformity of investment: Comparison with sales turns	80
Timing and conformity of investment: Comparison with ref- erence turns	81
Amplitude of durables and nondurables investment during cycles	82
Summary	83

CONTENTS

	Page
6. Goods-in-process inventories and inventory investment	85
Abramovitz' theory of goods-in-process behavior	85
Goods-in-process inventories	86
Major patterns of movement in stocks	87
Timing and conformity of stocks: Comparison with output and sales turns	90
Timing of stocks during business cycles	90
Goods-in-process inventory investment	92
Timing and conformity of investment: Comparison with output, sales, and reference turns	93
Analysis and revision of Abramovitz' theory	95
Summary	98
7. Cyclical behavior of inventory and inventory investment movements at the three stages of fabrication: Summary	101
Purchased materials	105
Finished goods	106
Goods in process	106
Total stocks and inventory investment	106
Amplitude of investment movements compared	107
Postwar and prewar timing compared	108
Conclusion	110
8. How inventory movements contribute to instability	111
Metzler's inventory cycle theory	111
Observations on the validity of Metzler's theory	113
Behavior of consumption and saving	114
Timing of inventory investment and rates of change in final purchases	116
Behavior of inventory investment under conditions of changing inventory objectives	121
The occurrence of "extra" investment cycles	122
The relative importance of changes in investment during recession	123
Factors contributing to turning points	124
Conclusions	126

APPENDIXES

A. Sources and processing of data	128
B. Inventory data	132

TABLES

1. Changes in gross national product and nonfarm inventory investment, 1919-60	6
2. Ranking of eight contractions according to magnitude of change in nonfarm inventory investment relative to change in final purchases, 1920-58	9
3. Annual changes in gross national product and nonfarm inventory investment compared, 1919-33, 1945-60	10
4. Changes in final purchases and nonfarm inventory investment, eight expansions, 1919-60	11
5. Changes in gross national product and manufacturers' inventory investment, 1919-60	13
6. Annual changes in gross national product and manufacturers' inventory investment compared, 1919-33, 1945-60	14
7. Analysis of relative size of cyclical changes in manufacturers' inventory investment, 1919-60	15
8. Timing and conformity of manufacturers' total inventory at reference and activity turns; comprehensive series	18
9. Timing and conformity of manufacturers' total inventory investment at reference and activity turns; comprehensive series	22
10. Analysis of percentage of change in total manufacturers' inventory investment accounted for by inventory investment of durables manufactures, 1919-61	26

CONTENTS

	Page
11. Timing and conformity of manufacturers' purchased-materials inventories at sales turns.....	29
12. Timing and conformity of manufacturers' purchased-materials inventories at reference turns.....	32
13. Timing and conformity of manufacturers' purchased-materials inventory investment to sales turns.....	34-35
14. Timing and conformity of manufacturers' purchased-materials inventory investment at reference turns.....	38
15. Amplitude of change in purchased-materials inventory investment cycles, by phase, 1948-58.....	39
16. Timing of purchased-materials inventory investment to rates of change in output.....	40
17. Timing of vendor performance series to quarterly change in unfilled orders and unfilled-orders-to-shipments ratios, all manufacturers, 1947-58.....	49
18. Timing of purchased-materials inventory investment to new orders.....	53
19. Timing comparisons: Vendor performance, purchased-materials investment, total manufacturers new orders, purchasing policy series, 1946-58.....	57
20. Estimated composition of finished-goods stocks, 1939 and 1947.....	63
21. Timing and conformity of 25 commodities at activity turns, 1947-55.....	65
22. Timing and conformity of manufacturers' finished-goods inventories at sales turns.....	68
23. Timing and conformity of manufacturers' finished-goods inventories at reference turns.....	69
24. Distribution of timing of inventory investment turns (inverted) by quartile intervals of activity cycles, 25 finished goods, 1947-55.....	70
25. Timing of finished-goods investment to rate of change in sales.....	79
26. Timing and conformity of manufacturers' finished-goods inventory investment at sales turns.....	80-81
27. Timing and conformity of manufacturers' finished-goods inventory investment at reference turns.....	82
28. Amplitude of change in finished-goods inventory investment cycles, by phase, 1948-58.....	83
29. Timing and conformity of manufacturers' goods-in-process inventories at output and sales turns.....	89
30. Timing of manufacturers' goods-in-process inventories at reference turns.....	91
31. Timing and conformity of manufacturers' goods-in-process inventory investment at output and sales turns.....	93-94
32. Timing of manufacturers' goods-in-process inventory investment at reference turns.....	94
33. Timing of inventories and inventory investment at business cycle turns: Summary.....	101-102
34. Amplitude of change in inventory investment cycles, by phase, 1948-58.....	107
35. Amplitude of change in inventory investment cycles, 1948-58, as percent of mean level of inventories during each phase.....	108
36. Timing of selected inventory investment series to related purchase or sales series.....	117

APPENDIX TABLES

A-1. Weights and turnover periods assigned to industry deflators.....	130
A-2. Index numbers and weights used in constructing industry deflators.....	131
B-1. Total manufacturing, inventories.....	132-133
B-2. Durable-goods industries, total inventories.....	134-135
B-3. Nondurable-goods industries, total inventories.....	136-137
B-4. Nonfarm inventory investment.....	138-139
B-5. Inventory investment: Summary.....	140-144

CONTENTS

CHARTS

	Page
1. Gross national product, final purchases and inventory investment, annual totals, 1919-60.....	7
2. Gross national product, final purchases and inventory investment, quarterly at annual rates, 1947-61.....	8
3. Inventories and sales: Total manufacturing, durable- and nondurable-goods industries, 1945-61.....	19
4. Inventory investment: Total manufacturing, durable- and nondurable-goods industries, 1945-61.....	23
5. Purchased-materials inventories and sales: Total manufacturing, durable- and nondurable-goods industries, 1946-58.....	33
6. Purchased-materials inventory investment, new orders, and change in index of industrial production, 1946-58.....	35-37
7. Manufacturers' unfilled orders, ratios of unfilled orders to sales, new orders, and purchased-materials investment, 1946-58.....	43-45
8. Vendor performance and change in unfilled orders and ratios of unfilled orders to sales, all manufacturers, 1946-58.....	50
9. Purchasing policy, vendor performance, total manufacturers' purchased-materials investment, and new orders, 1946-58.....	55
10. Finished-goods inventories and sales: Total manufacturing, durable- and nondurable-goods industries, 1946-58.....	67
11. Finished-goods inventory investment and change in manufacturing activity: 25 commodities.....	73
12. Finished-goods investment: Total manufacturing and cumulated net percentage of investment series expanding (25 commodities).....	75
13. Finished-goods inventory investment and quarter-to-quarter change in sales, 1946-58.....	77-78
14. Goods-in-process inventories and sales: Total manufacturing, durable- and nondurable-goods industries, 1946-58.....	88
15. Goods-in-process inventory investment: Total manufacturing, durable- and nondurable-goods industries, 1946-58.....	92
16. Manufacturers' inventory investment: Summary.....	103-105
17. Quarter-to-quarter change in final purchases and sales, and inventory investment, selected series, 1946-58.....	118-119