

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

Volume Title: Business Cycles: The Problem and Its Setting

Volume Author/Editor: Wesley Clair Mitchell

Volume Publisher: NBER

Volume ISBN: 0-870-14084-1

Volume URL: <http://www.nber.org/books/mitc27-1>

Publication Date: 1927

Chapter Title: Introductory pages to "Business Cycles: The Problem and Its Setting"

Chapter Author: Wesley Clair Mitchell

Chapter URL: <http://www.nber.org/chapters/c0679>

Chapter pages in book: (p. -23 - 0)

BUSINESS CYCLES

The Problem and Its Setting

WESLEY C. MITCHELL

NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.
NEW YORK

Copyright, 1927, by
NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

All rights reserved

First Printing, July, 1927
Second Printing, August, 1927
Third Printing, November, 1927
Fourth Printing, March, 1928
Fifth Printing, October, 1928
Sixth Printing, January, 1930
Seventh Printing, June, 1930
Eighth Printing, December, 1930
Ninth Printing, January, 1932
Tenth Printing, October, 1932
Eleventh Printing, October, 1933
Twelfth Printing, December, 1936
Thirteenth Printing, May, 1949
Fourteenth Printing, September, 1954
Fifteenth Printing, May, 1956
Sixteenth Printing, May, 1959
Seventeenth Printing, April, 1961
Eighteenth Printing, June, 1963
Nineteenth Printing, April, 1966

Printed in United States of America

OP 2,001,202

Mitchell, Wesley Clair, 1874-1948.

Business cycles, the problem and its setting.

16th print. New York, National Bureau of

Economic Research, 1937, 1966.

xvii, 489 p. diagrs. 24 cm. (National

Bureau of Economic Research. Studies in busi-

ness cycles, no. 1)

A rewriting of pt. 1 of the author's Business

cycles (Berkeley, 1913)

1. Business cycles. 2. Economic history.

(Series)

HB 3743

3

NATIONAL BUREAU OF ECONOMIC RESEARCH

STUDIES IN
BUSINESS CYCLES

No. 1

THE PROBLEM AND ITS SETTING

NATIONAL BUREAU OF ECONOMIC RESEARCH

1965

OFFICERS

Frank W. Fetter, *Chairman*
Arthur F. Burns, *President*
Theodore O. Yntema, *Vice-President*
Donald B. Woodward, *Treasurer*
William J. Carson, *Secretary*
Geoffrey H. Moore, *Director of Research*
Douglas H. Eldridge, *Executive Director*
Hal B. Lary, *Associate Director of Research*
Victor R. Fuchs, *Associate Director of Research*

DIRECTORS AT LARGE

Robert B. Anderson, *New York City*
Wallace J. Campbell, *Foundation for Cooperative Housing*
Erwin D. Canham, *Christian Science Monitor*
Solomon Fabricant, *New York University*
Marion B. Folsom, *Eastman Kodak Company*
Crawford H. Greenewalt, *E. I. du Pont de Nemours & Company*
Gabriel Hauge, *Manufacturers Hanover Trust Company*
A. J. Hayes, *International Association of Machinists*
Walter W. Heller, *University of Minnesota*
Albert J. Hettinger, Jr., *Lazard Frères and Company*
H. W. Laidler, *League for Industrial Democracy*
Geoffrey H. Moore, *National Bureau of Economic Research*
Charles G. Mortimer, *General Foods Corporation*
J. Wilson Newman, *Dun & Bradstreet, Inc.*
George B. Roberts, *Larchmont, New York*
Harry Scherman, *Book-of-the-Month Club*
Boris Shishkin, *American Federation of Labor and Congress of Industrial Organizations*
George Soule, *South Kent, Connecticut*
Gus Tyler, *International Ladies' Garment Workers' Union*
Joseph H. Willits, *Langhorne, Pennsylvania*
Donald B. Woodward, *A. W. Jones and Company*

DIRECTORS BY UNIVERSITY APPOINTMENT

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

DIRECTORS BY APPOINTMENT OF OTHER ORGANIZATIONS

Percival F. Brundage, *American Institute of Certified Public Accountants*
Nathaniel Goldfinger, *American Federation of Labor and Congress of Industrial Organizations*
Harold G. Halcrow, *American Farm Economic Association*
Murray Shields, *American Management Association*
Willard L. Thorp, *American Economic Association*
W. Allen Wallis, *American Statistical Association*
Harold F. Williamson, *Economic History Association*
Theodore O. Yntema, *Committee for Economic Development*

DIRECTORS EMERITI

Shepard Morgan, *Norfolk, Connecticut*
N. I. Stone, *New York City*
Jacob Viner, *Princeton, New Jersey*

RESEARCH STAFF

Moses Abramovitz
Gary S. Becker
Gerhard Bry
Arthur F. Burns
Phillip Cagan
Frank G. Dickinson
James S. Earley
Richard A. Easterlin
Solomon Fabricant
Albert Fishlow
Milton Friedman
Victor R. Fuchs
H. G. Georgiadis
Raymond W. Goldsmith
Jack M. Guttentag
Challis A. Hall, Jr.
Daniel M. Holland
Thor Hultgren
F. Thomas Juster
C. Harry Kahn
John W. Kendrick
Irving B. Kravis
Hal B. Lary
Robert E. Lipsey
Ruth P. Mack
Jacob Mincer
Ilse Mintz
Geoffrey H. Moore
Roger F. Murray
Ralph L. Nelson
G. Warren Nutter
Richard T. Selden
Lawrence H. Seltzer
Robert P. Shay
George J. Stigler
Norman B. Ture
Herbert B. Woolley
Victor Zarnowitz

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 and revised February 6, 1933
and February 24, 1941)*



PREFACE

Much has been learned about business cycles since 1913, when my first book on that problem was published. Economic theorists have been studying the phenomena with increasing energy and thoroughness—Albert Aftalion and Jean Lescure in France; Mentor Bouniatian and S. A. Pervushin in Russia; Gustav Cassel in Sweden; John Maurice Clark, William T. Foster, Waddill Catchings, Alvin H. Hansen, and Henry L. Moore in America; R. H. Hawtrey, John A. Hobson, A. C. Pigou, and Dennis H. Robertson in England; Emil Lederer, Joseph Schumpeter and Arthur Spiethoff in Germany, to name but a few. Economic statisticians have made rapid progress in analyzing time series—witness the accomplishment of Warren M. Persons and his many co-workers here and abroad. Most important of all in promise for the future, the leading commercial nations are learning to keep more adequate records of their economic activities. Of the extraordinary business fluctuations through which the world has been passing of late, we have fuller knowledge than of any earlier cycles.

For perhaps ten years my unwieldy quarto has been out of print. At least as long it has been out of date. Nor could it be brought abreast of current research by mere revision. It became plain that if I could add anything of value to the work in process it would be only by writing a new book. But single-handed, I could not manage the wealth of new materials, or apply the improved methods of statistical analysis. From this quandary I was rescued by the National Bureau of Economic Research, which offered to collect and analyze the data I needed, and to supply the gaps in my equipment.

Despite the National Bureau's efficient aid, my resurvey of the field is taking more time than the first survey took. This work has been my chief concern since 1923, yet only one volume is ready for publication. It deals, as the sub-title indicates, with "The Problem and its Setting." A second volume on "The Rhythm of Business Activity" will follow as soon as I can finish it.

The present treatise resembles its forerunner in general plan. But the statistical data prove so extensive that they must be pub-

lished separately in a series of volumes, instead of being included as before with the theoretical discussion. There is the more reason for this change in that the National Bureau's collection of tables promises to be a source book of great value to many workers concerned with other problems than business cycles. Also, the collection of annals, which in the earlier treatise covered only four countries and 23 years, has grown into a survey embracing 17 countries and extending back to 1790 in the United States and England. That collection, made by Dr. Willard L. Thorp, has already appeared in print.

I have not been able to devise a new way of conducting the inquiry which seemed better than the way followed in 1913. My earlier impressions that business cycles consist of exceedingly complex interactions among a considerable number of economic processes, that to gain insight into these interactions one must combine historical studies with quantitative and qualitative analysis, that the phenomena are peculiar to a certain form of economic organization, and that understanding of this scheme of institutions is prerequisite to an understanding of cyclical fluctuations—these impressions have been confirmed by my efforts to treat the subject in a simpler fashion. Hence the new version is not shorter or easier than its predecessor. Much to my regret, it makes even heavier demands upon a reader's time and effort.

From the Staff and the Directors of the National Bureau of Economic Research I have had most generous help. Among the staff members Drs. Frederick C. Mills, Willford I. King, Willard L. Thorp and Simon S. Kuznets have put their technical skill freely at my disposal. Among the Directors, Professor Allyn A. Young and Colonel Malcolm C. Rorty have made especially searching criticisms of the first draft. Dr. Edwin F. Gay, Director of Research, has been my mainstay for counsel from the beginning of the undertaking. Several other friends have read parts of the manuscript and suggested improvements—Messrs. Carl Snyder and Karl Karsten, Professors Walter F. Willcox, Warren M. Persons, Vladimir G. Simkhovitch, and James W. Angell. The Harvard Committee on Economic Research through its chairman Professor Charles J. Bullock, the American Telephone and Telegraph Company through its statistician Mr. Seymour L. Andrew, Sir William Beveridge, Mr. Snyder, and Dr. Dorothy S. Thomas have kindly consented to the free use I have made of their contributions. Miss Edith Handler of the National

Bureau has made most of the charts. My secretary, Miss Catherine Lochhead, has shared in the labors of proof reading and indexing.

To all these men and women, and to the many co-workers by whose criticisms and constructive suggestions I have sought to profit, my hearty thanks are due.

WESLEY C. MITCHELL

New York City, June 1st, 1927.

P.S. Inasmuch as the National Bureau hopes to publish a second volume of this treatise at no distant date it seems time to place the words Volume I upon the title page. A few typographical errors have been corrected in this printing but no thorough revision has been undertaken.

W. C. M.

December 1, 1936.

Note to the Nineteenth Printing

This edition is an offset reproduction of the 1936 reprinting of this volume. The list of National Bureau officers and directors has been brought up to date. Following page 489, National Bureau publications especially concerned with business cycles are listed.



CONTENTS

	PAGE
CHAPTER I. THE PROCESSES INVOLVED IN BUSINESS CYCLES	
I. The Plan of Attack	1
II. The Discovery of the Problem	3
III. The Multiplying Solutions	7
IV. The Theories now Current	11
1. The Weather	12
2. Uncertainty	16
3. The Emotional Factor in Business Decisions	17
4. Innovations, Promotion, Progress	20
5. The Processes of Saving and Investing	23
6. Construction Work	26
7. Generalized Over-Production	29
8. Banking Operations	31
9. Production and the Flow of Money Incomes	35
10. The Rôle Played by Profit-Making	42
V. Plans for Further Work	
1. Problems Raised by the Diversity of Explanations	47
2. A Classification of the Theories	49
3. The Necessity for Making Measurements	53
4. Causal Theory and Analytic Description	54
5. History and Theory	55
6. The Framework of the Investigation	58
CHAPTER II. ECONOMIC ORGANIZATION AND BUSINESS CYCLES	
I. The Historical Connection between Business Cycles and the Use of Money	61
1. A Preliminary Statement	61
2. The Meaning of "Business Economy"	63
3. The Evolution of Business Economy	66
4. When Business Cycles First Appear	75
II. The Modern Organization for Making Money	82
1. The Money-Making Population	82
2. The Business Enterprise	86

	PAGE
3. The Size of Business Enterprises and Business Cycles	86
4. Economic Resources and the National Dividend	90
5. The Interdependence of Business Enterprises	100
6. Profits as the Clue to Business Fluctuations	105
7. Factors Affecting Business Profits	107
III. The System of Prices	108
1. The Prices of Consumers' Commodities	108
2. The Prices of Producers' Goods in Relation to the Prices of Consumers' Commodities	110
3. The Prices of Producers' Goods in Relation to Ante- cedent Prices	110
4. The Prices of Business Enterprises	111
5. The Prices of Services to Persons	112
6. The Interrelations Among Prices	113
7. The Rôle of Prices in Economic Life	116
IV. The Monetary Mechanism	116
1. Ambiguity of the Terms "Money" and "Currency"	117
2. The Relative Importance of Checks and of Coin and Paper Money in Making Payments	117
3. The Elasticity of the Circulating Medium	119
4. The Velocity of Circulation	122
5. The Quantity Theory and Business Cycles	128
V. The Flow of Money Payments	139
1. Production and Purchasing Power	139
2. The Flow of Money Incomes to Individuals	140
3. The Outflow of Personal Incomes	146
4. The Flow of Payments Among Business Enterprises	149
5. Saving and Spending	151
VI. The Guidance of Economic Activity	154
1. The Problem of Adjusting Supply to Demand in a Business Economy	154
2. The Rôle Played by Business Managements	157
3. The Rôle Played by Technical Experts	159
4. The Rôle Played by Lenders	162
5. The Rôle Played by Consumers	163
6. The Rôle Played by Government	167
7. The Alleged "Planlessness" of Production	169

CONTENTS

XV

	PAGE
VII. International Differences in Economic Organization	174
1. The Uneven Development of Business Economy	174
2. The Proportion of the Workers Engaged in Farming	175
3. Enterprise and Thrift	177
4. Monetary and Banking Systems	178
5. Government's Share in Directing Economic Activity	179
VIII. Conclusion	180
1. The <i>Raison d'Être</i> of Chapter II	180
2. A Summary	182
3. The Conception of Equilibrium	186
CHAPTER III. THE CONTRIBUTION OF STATISTICS	
I. The Current Distinction between Theoretical and Statistical Work	189
II. Development of the Statistical Approach	190
1. Why the Early Writers upon Business Cycles Made Slight Use of Statistics	190
2. The Growth of Statistical Technique	193
3. The Accumulation of Statistical Data	197
4. The Present Situation	199
III. The Analysis of Time Series	202
1. The Quality and Quantity of Economic Statistics	202
2. Time Series in Their Raw State	205
3. The Problem of Secular Trends	212
(1) The Empirical Approach to the Problem	213
(2) The Interpretation of Secular Trends	221
(3) The Hypotheses of "Secondary Trends" and of "Long Waves"	226
(4) Conclusion	230
4. The Problem of Seasonal Variations	233
(1) The Causes and Pervasiveness of Seasonal Variations	236
(2) Methods of Measuring Average Seasonal Variations	240
(3) Efforts to Measure Changing Seasonal Variations	243
(4) Conclusion	245
5. The Problem of Irregular Fluctuations	249
(1) The Concept of Irregular Fluctuations	249

	PAGE
(2) Irregular Fluctuations in the Theory of Business Cycles	252
6. The Problem of Isolating Cyclical Fluctuations	255
IV. On Measuring the Relationships Among Time Series	261
1. The Correlation of Time Series and Its Pitfalls	262
2. Transformations of Time Series in the Investigation of their Relationships	265
3. Conclusion	269
V. The Amplitude and the Timing of Cyclical-Irregular Fluctuations in Different Processes	270
1. The Amplitude of Cyclical-Irregular Fluctuations	271
2. The Time Sequence of Cyclical-Irregular Fluctuations	280
VI. Indexes of Business Conditions	290
1. A Collection of Indexes of Business Conditions	291
(1) Beveridge's Chart of "The Pulse of the Nation," Great Britain, 1856-1907	291
(2) Persons' "Index of General Business Conditions," United States, 1903-1914	293
(3) The American Telephone and Telegraph Company's "Index of General Business Compared with Normal," United States, 1877 to date	294
(4) Snyder's "Index of the Volume of Trade," United States, 1919-1925	295
(5) Persons' "Index of Trade," United States, 1903-1925	297
(6) Miss Thomas' Quarterly Index of "British Business Cycles," 1855-1914	299
(7) Axe and Flinn's "Index of General Business Conditions for Germany," 1898-1914	302
(8) Annual Indexes of Business Cycles	302
(9) Snyder's "Clearings Index of Business," United States, 1875-1924	304
(10) Frickey's "Index of Outside Clearings," United States, 1875-1914	305
(11) Snyder's "Index of Deposits Activity," United States, 1875-1924	307
2. A Critique of the Indexes of Business Conditions	307
(1) Indexes of the Pecuniary Volume of Business	312

CONTENTS

xvii

	PAGE
(2) Indexes of the Physical Volume of Trade or of Production	315
(3) Indexes of "General Business Conditions"	320
(4) Forecasting Sequences	324
3. What the Indexes of Business Conditions Show about Business Cycles	326
(1) The "Saw-Tooth" Contour of the Business In- dexes	329
(2) Month-to-Month Changes	330
(3) On Identifying Business Cycles by the Use of the Business Indexes	334
(4) Time Relationships Among the Business Indexes	336
(5) Duration of Periods of Expansion and Contraction	337
(6) The Duration of Business Cycles	339
(7) The Amplitude of Business Cycles	343
(8) The Distinctive Character of Each Business Cycle	354
VII. The Need of Combining Theory, Statistics and History	357
CHAPTER IV. THE CONTRIBUTION OF BUSINESS ANNALS	
I. The National Bureau's Collection of Business Annals	361
II. The Trustworthiness of the Annals	363
1. Sources and Methods of Compilation	363
2. A Comparison of Business Annals and Business Indexes	365
III. The Cyclical Character of Business Fluctuations	376
1. The "Normal State of Trade" a Figment	376
2. Use of the Term "Cycles"	377
3. The Phases of Business Cycles	378
4. "Crises" and "Recessions"	378
5. "Prosperity" and "Depression"	381
6. The Uniformity and Variability of Business Cycles	382
IV. The Duration of Business Cycles	383
1. Current Estimates of Average Length	383
2. Measurements Based upon the Annals	386
3. Frequency Distributions of the Measurements Based upon the Annals	391
4. The Relative Duration of Prosperity and Depression	407

LIST OF TABLES

	PAGE
5. Secular Changes in the Average Duration of Business Cycles	412
6. Conclusions	416
V. International Relationships Among Business Cycles . . .	424
1. A Conspectus of Business Conditions in Different Countries	424
2. How Closely the Cycles in Different Countries Agree .	438
3. Domestic and Foreign Factors in Business Cycles . .	446
 CHAPTER V. RESULTS AND PLANS	
I. The Concept of Business Cycles	451
1. Evolution of the Concept	451
2. A Working Concept of Business Cycles	455
(1) Elements Derived from Business Reports . . .	455
(2) Elements Derived from Theories of Business Cycles	459
(3) Elements Derived from Statistical Analysis .	463
3. Two Criticisms Considered	464
4. A Definition of Business Cycles	468
II. Tentative Working Plans	469
 ADDENDA	 475
INDEX	481

LIST OF TABLES

Table 1. A Conspectus of the Population of the United States in 1920	83
Table 2. Cyclical Decline in the Volume of Employment Offered by Different Industries, and by Establishments of Different Sizes, from the Peak of Prosperity in 1920 to the Trough of Depression in 1921-1922	88
Table 3. The Velocity of Deposit Currency, Estimated from Total Payments by Check and Average Deposits Subject to Check. The United States, 1919-1926	126
Table 4. Estimates of Income Received in Money by Individuals. The United States, 1919-1926	141
Table 5. Personal Incomes Reported to the United States Bureau of Internal Revenue, Classified by Sources. 1919-1924	142

LIST OF TABLES

xix

	PAGE
Table 6. Relative Variability of the Flow of Money Incomes from Different Sources. The United States, 1919-1924	144
Table 7. Channels Through Which Family Expenditures Flow	147
Table 8. Estimated Proportion of Income Received in Money Spent in Retail Shops. The United States, 1919-1923	148
Table 9. Comparison of the Estimated Volume of Payments, Income Received in Money, and Volume of Retail Sales. The United States, 1919 to 1923 or 1926	150
Table 10. Proportion of Gainfully Employed Males Engaged in Agricultural Pursuits in Various Countries	176
Table 11. Relative Amplitude of the Cyclical-Irregular Fluctuations of Various Economic Processes	273
A. American Series, 1860, 1862 or 1866 to 1880	273
B. American Series, 1903-1914 or 1903-1918, by months	274
C. American Series, 1879-1896 and 1897-1913	274
D. American National Banking Series, 1901-1914, by 5 "calls" yearly	275
E. Velocity of Bank Deposits in American Cities, by Months, 1919-February, 1923	275
F. American Series Showing Volume of Wholesale and Retail Trade by Months, 1919-1925	276
G. British Series, by Quarters, before 1850	276
H. British Series, by Quarters, 1903-June 30, 1914	277
I. British Series, by Years, various dates to 1913	277
J. British Series, by Quarters, various dates to 1914	278
K. German Series, by Quarters or Months, various dates to 1913-14	278
Table 12. Time Sequences in the Cyclical-Irregular Fluctuations of Various Economic Series	282
A. American Series, by Months, January, 1903-July, 1914	282
B. American Series, by Months, January, 1902-December, 1908	283
Table 13. Coefficients of Correlation between the Cyclical-Irregular Fluctuations of Industrial Stock Prices and an Index of "General Business"	284
Table 14. Dates of the Troughs and the Crests of American Business Cycles in 1878-1924 according to Five Monthly Indexes of Business Activity	335
Table 15. Duration of Alternate Periods of Business Expansion and Business Contraction in the United States, 1878-1923, according to Five Indexes of Business Activity	338

	PAGE
Table 16. Duration of Business Cycles in the United States, 1878-1925, according to Five Indexes of Business Activity	340
Table 17. Percentage Deviations from their Base Lines of Five Indexes of Business Activity at the Crests and Troughs of Successive Business Cycles. United States, 1878-1923	346
Table 18. Amplitude of the Rise from Trough to Crest and of the Decline from Crest to Trough in the American Business Cycles of 1878-1923, as shown by Five Indexes of Business Activity	347
Table 19. Dates of the Most and the Least Violent Cyclical Fluctuations in American Business, 1878-1923, according to Five Indexes of Business Activity	348
Table 20. Amplitude of Combined Rise and Fall in Violent Business Cycles, according to Five Indexes of Business Activity	348
Table 21. Frequency Distributions of 111 Observations upon the Amplitude of the Percentage Deviations of Five Business Indexes from their Respective Trends at the Troughs and Crests of American Business Cycles: 1878-1923	351
Table 22. Frequency Distribution of 106 Observations made from Five Indexes of Business Conditions, upon the Amplitude of the Rise from Trough to Crest and the Decline from Crest to Trough in American Business Cycles, 1878-1923, reckoned in Percentages of Trend Values	353
Table 23. Business Recessions in the United States and Approximate Duration of Business Cycles, 1790-1925	387
Table 24. Business Recessions in England and Approximate Duration of Business Cycles, 1790-1925	390
Table 25. Dates of Business Recessions in Fifteen Countries: Various Years to 1925	391
Table 26. Frequency Distribution of Business Cycles according to Duration in Years	398
Table 27. Frequency Distribution of Business Cycles according to Approximate Duration in Years: by Countries, Groups of Countries and Periods	399
Table 28. Relative Duration of Different Phases of Business Cycles in Seventeen Countries, 1890-1925	408
Table 29. Relative Duration of the Prosperous and Depressed Phases in the Business Cycles of Seventeen Countries during Various Periods	410
Table 30. Relative Duration of the Prosperous and the Depressed Phases of Business Cycles in Periods of Rising and Declining Trends of Wholesale Prices: England and the United States, 1790-1925	411

LIST OF CHARTS

xxi

	PAGE
Table 31. Relative Duration of Phases of Depression and Phases of Prosperity in Business Cycles Lasting Nine Years or More . . .	412
Table 32. Conspectus of Business Fluctuations in Various Countries	425
Table 33. Agreement and Difference of Phase in English, French, German, Austrian and American Business Cycles. Various Periods	441

LIST OF CHARTS

Chart 1. Sample Time Series Plotted on a Logarithmic Vertical Scale	211
Chart 2. Examples of Secular Trends of Time Series Fitted by Various Methods	217
Chart 3. Samples of Time Series Plotted as Deviations from Secular Trends Represented by Horizontal Lines	222
Chart 4. A Collection of Time Series to Illustrate Differences in Seasonal Variations	234
Chart 5. Examples of Seasonal Variations which Have Changed in the Course of Time	241
Chart 6. Indexes of Seasonal Variations Made by the Moving-average median Method and the Link-relative Method	246
Chart 7. Indexes of Seasonal Variations Made by Various Methods .	248
Chart 8. Residual Fluctuations of Time Series after Elimination of Trends and Seasonal Variations	258
Chart 9. Sir William H. Beveridge's Chart of "The Pulse of the Nation"	292
Chart 10. Persons' "Index of General Business Conditions" . . .	294
Chart 11. The American Telephone and Telegraph Company's Index, of "General Business Compared with Normal"	296
Chart 12. Carl Snyder's Index of the Volume of Trade	298
Chart 13. Persons' Index of Trade	300
Chart 14. Miss Thomas' Index of "British Business Cycles" . . .	301
Chart 15. Axe and Flinn's "Index of General Business Conditions for Germany"	303
Chart 16. Snyder's "Clearings Index of Business" and Frickey's "Index of Outside Clearings"	306
Chart 17. Snyder's "Index of Deposits Activity" compared with his "Clearings Index of Business"	308

	PAGE
Chart 18. One Business Cycle, United States, 1919-1921, shown by a Plot of 27 of its Components	310
Chart 19. Frequency Distribution of Month-to-Month Changes in Five Indexes of Business Activity	332
Chart 20. Frequency Distribution of 101 Observations upon the Duration of Business Cycles: United States, 1878-1923	344
Chart 21. Business Fluctuations in the United States, as shown by the Annals and by Two Statistical Indexes, 1875-1925	368
Chart 22. Business Fluctuations in England, as shown by the Annals and Dr. Dorothy S. Thomas' "Quarterly Index of British Cycles," 1855-1914	372
Chart 23. Approximate Duration of Business Cycles, arranged in Chronological Sequence	393
Chart 24. Percentage Distribution of Business Cycles in Various Countries and Various Periods according to their Approximate Duration in Years	402
Chart 25. Logarithmic Normal Curve Fitted by Davies' Method to the Frequency Distribution of 166 Observations upon the Duration of Business Cycles	419
Chart 26. Percentage Distribution of Measurements of the Duration of Business Cycles in the United States, based upon Business Indexes, 1875-1925, and Business Annals, 1790-1925	423
Chart 27. Conspectus of Business Cycles in Various Countries, 1790-1925	444