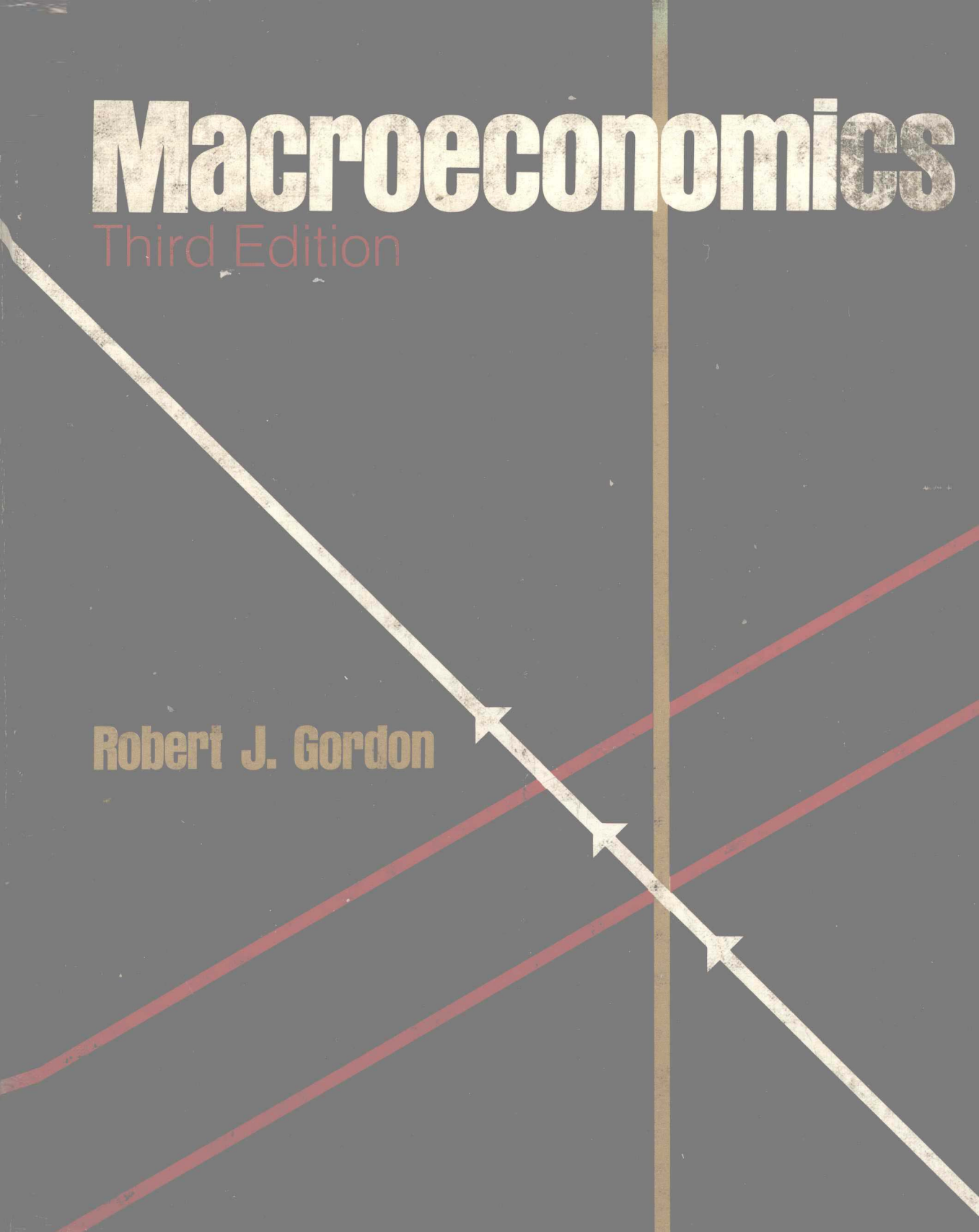


# Macroeconomics

Third Edition

Robert J. Gordon



**Third Edition**

# **Macroeconomics**

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*with love, for Julie*



# Preface: To the Instructor

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This third edition of *Macroeconomics* has been guided, like its predecessors, by the basic idea that macroeconomics is about both aggregate supply and aggregate demand, not just aggregate demand. Inflation and unemployment are treated as core topics, not as appendages and afterthoughts as in some “demand-only” textbooks. The tried-and-true *IS-LM* theory of income determination is presented concisely and then linked clearly to the causes of inflation and unemployment. The book is organized to bring the treatment of inflation and unemployment “up front” to Chapters 7–11, thus relegating several topics of secondary importance to later chapters.

In the years since the publication of the second edition we have witnessed the most severe recession of the postwar era, measured either by the level to which the unemployment rate rose (10.7 percent in December 1982) or by the depths to which the “output ratio” ( $Q/Q^N$ ) fell (90.5 percent by my measure in the fourth quarter of 1982). Users of the second edition of this textbook could observe that, as the recession unfolded, the predictions of its basic inflation-unemployment analysis proved to be on target. The economy in 1981–82 mimicked the theory, exhibiting the sharp decline on both the inflation rate and the output ratio that was predicted in advance.

The events of 1980–83 provided new evidence to validate the basic analytical framework of this book, which has remained unchanged in each edition. By identifying both demand and supply shocks as equally important sources of shifts in inflation and output, the analysis can explain with equal ease the episodes of 1973–75 and 1979–80, when inflation and output moved in opposite directions, or of 1981–82, when inflation and output declined together. Because there has been no need to alter or patch the

theoretical analysis to accommodate the variety of macroeconomic disturbances that have occurred since it was first written in 1977, the book stands as a rejoinder to those laymen, journalists, and even some economists who have criticized macroeconomics as being in a state of disarray.

As before, the book is designed so that by the end of Chapter 9 the student will fully understand the main causes of inflation and unemployment and their responses to monetary and fiscal policy. Student attention is focused on the key relationships among money, interest rates, fiscal policy, inflation, and output. This early treatment of inflation and unemployment is achieved by moving to the second half of the book the details of income determination theory, in particular, the permanent-income theory of consumption, the accelerator theory of investment, and the details of money demand theory.

But these traditional topics are not neglected; rather, they are integrated by use of a common theme linking Chapters 12 through 17: the controversy over activist stabilization policy. This book is neither monetarist nor non-monetarist in orientation. Instead the interpretation of the debate between the two camps in Chapter 12 ties together the chapters on consumption, investment, money demand, monetary policy, and fiscal policy. In each chapter the main emphasis is on locating the main sources of instability in the economy and assessing the likelihood that government intervention will do more harm than good.

## **IMPROVEMENTS IN THE THIRD EDITION**

The third edition, like the second, has been revised in response to reviews and letters from scores of instructors and students. As before, these letters have generally endorsed the main innovations of the book, including the central emphasis on inflation and unemployment, the balanced treatment of demand and supply disturbances, the interpretation of the monetarist-nonmonetarist debate, and the extensive use of case studies.

The remaining suggestions have centered on pedagogy. There has been a widespread desire for an improved treatment of the aggregate supply curve, including an explicit treatment of the production function. Several instructors criticized the absence of a detailed treatment of the change in natural real GNP following a supply shock. Others have asked for a further simplification of the dynamic theory of inflation adjustment.

In response to these requests a unifying theme of five macroeconomic puzzles has been added to integrate further the theory presented in the book. The theory of the static aggregate supply curve (*SS*) has been completely rewritten. The dynamic theory of inflation adjustment based on *DG* and *SP* curves has been simplified and improved. And, finally, the novel features of the economy's performance in the early 1980s are examined in new case studies.

## THE FIVE MACROECONOMIC PUZZLES

Five puzzles are introduced in Chapter 1; then summaries of the analysis and proposed solutions for each puzzle are highlighted throughout the book by repeating the appropriate puzzle in the margin. The puzzles help to focus the student's attention on the main issues in macroeconomics, and the solutions help to provide a sense of accomplishment as the student proceeds through the book.

The five puzzles and the sections where their solutions are summarized are as follows:

1. Why has unemployment been so high and so variable? (5–9; 9–8)
2. Why has the inflation rate been so high and so variable? (9–8; 11–7)
3. Why has productivity grown so slowly? (18–6)
4. Why were interest rates in 1980–83 higher than ever before? (5–9; 16–9)
5. Why has the exchange rate of the dollar been so volatile? (19–8)

Further, there is a complete summary of the solutions to the five puzzles provided at the very end of the last chapter, in section 19–9.

## AGGREGATE SUPPLY AND NATURAL OUTPUT

The key improvement in Chapter 7, suggested by Professor Alan Rabin (University of Tennessee at Chattanooga), is to recast the theory to make the nominal wage rather than the expected price level the variable that shifts the aggregate supply curve up and down. This allows a much neater and more concise treatment of the sources of fluctuations in employment over the business cycle as a result of stickiness in wage-setting due to multi-period labor contracts. It also allows an improved treatment of supply shocks, which shift the equilibrium real wage rate. The central issue in the economy's adjustment to supply shocks, which determines the decline in the level of natural real GNP ( $Q^N$ ), is whether the actual real wage declines as much as the equilibrium real wage. This question can be examined directly in the new diagrams of Chapter 7. The old treatment, based on the expected price level as the shift variable for the aggregate supply curve, was confusing, because the aggregate supply curve depends on the expected price level only in the case (relevant for demand shocks but not supply shocks) where the equilibrium expected real wage remains constant.

Few instructors will lament the passing of the four-quadrant diagrams 7-4 and 7-6 in the second edition. In their place is a more traditional four-quadrant diagram that corresponds to the way I and many other instructors teach in the classroom. This contains labor demand and supply curves in one quadrant, a production function in a second quadrant, and the aggregate supply curve in a third quadrant (the fourth quadrant is a 45-degree line). As introduced in Figures 7-4 and 7-5, this diagram shows clearly what happens in the labor market when an increase in the nominal wage rate shifts the

aggregate supply curve upward. Then Figure 7–11 shows the effects of an adverse supply shock on the production function and the labor demand curve, along with the importance of real wage flexibility in determining the extent of the resulting decline in natural real GNP.

## **THE REAL WAGE RATE AND THE NON-MARKET-CLEARING MODEL**

A traditional dilemma in the conventional treatment of the labor market is created by the assumption that the economy is always on its downward-sloping labor-demand curve. This requires that the real wage rate decline in business-cycle expansions and increase during recessions. Rather than sweeping the dilemma under the rug, as in past editions and most other textbooks, the third edition copes with it in two ways.

First, there is a new case study (section 7–7) that reviews the behavior of the real wage rate in the U.S. during the postwar era. This allows for another application of the main theme of the book, that demand disturbances and supply shocks have different effects.

Second, Chapter 7 now includes an optional boxed section on the non-market-clearing model of Clower, Patinkin, and Barro-Grossman. The exposition is presented in the simplest possible form and stresses the distinction between the “effective” and “notional” labor demand curves. Movements in the effective labor demand curve caused by sales constraints explain why employment might change without any necessary change in the real wage rate.

## **SIMPLIFICATION OF THE THEORY OF INFLATION AND UNEMPLOYMENT**

A central contribution of the book, and one that accounts for its ability to explain and interpret real-world episodes, is the *DG-SP* diagrammatic apparatus in Chapter 8. While the theory and construction of the curves remain unchanged from the second edition, the exposition has been improved and simplified. First, shifts in the *DG* line are linked explicitly to changes in the money supply and in autonomous spending, the factors that shift the static aggregate demand curve (*DD*). Second, the factors that account for the slope and for shifts in the *DG* line are explained more clearly than before. Third, the concept of “adjusted nominal GNP growth” has been removed from the body of Chapters 8 and 9 and instead is developed in the appendix to Chapter 9. This allows the discussion in the text of those chapters to be more concise. Finally, the appendix is more complete than before and presents an integrated treatment of both the algebraic and geometric versions of the theory. A detailed presentation of how to shift both the *SP* and *DG* lines is presented there along with the related algebra. The economy’s response to both demand and supply shocks is presented in parallel graphs and tables.



A new element in Chapter 9 is a recapitulation of all the possible sources of shifts in the *DG* and *SP* lines. What events, or combinations of events, would cause the economy to shift north, south, east, west, northeast, southwest, northeast, and southeast on the *DG-SP* diagram? This new summary section is illustrated with simplified diagrams and provides the solution to the first two puzzles introduced at the beginning of the book.

## **REAGANOMICS, BUDGET DEFICITS, AND HIGH INTEREST RATES**

A new feature of U.S. economic performance during the 1981–83 period was a combination of high real interest rates, an appreciating dollar, and the emergence of “structural” budget deficits associated with the Reagan administration’s economic program. The unprecedented high level of real interest rates in 1981–83 is identified as the fourth puzzle of Chapter 1. The point of departure for the analysis of Reaganomics is the standard *IS-LM* analysis of changes in the monetary-fiscal policy mix, already contained in the first two editions of the book.

Inserted as section 5–9 is a new case study on the interaction between monetary and fiscal policy during the 1981–82 recession. Included are measures of key monetary and fiscal variables, an analysis of tight money in 1981, a section on “crowding out through flexible exchange rates” that focuses on the prominent role of foreign trade on contributing to the weakness of the economy in 1981–82, and a distinction between cyclical and structural government budget deficits. An innovation in the third edition is the introduction of the government budget line in section 5–9, to integrate much earlier into the discussion this key tool of fiscal policy analysis.

In keeping with the increased attention recently focused on budget deficits, the third edition highlights the concept of the government budget deficit wherever it is relevant. This includes the text and appendix of Chapter 3 covering the traditional Keynesian multiplier analysis. Chapter 17 also contains a new section (17–7) on “Supply-Side Economics and the Reagan Deficits,” including an analysis of the Laffer Curve, alternative stimuli to saving, and effects of large deficits on the economic recovery, inflation, and capital accumulation.

## **FINANCIAL DEREGULATION AND NEW TYPES OF DEPOSIT ACCOUNTS**

The continuing process of financial deregulation has changed the context of macroeconomic analysis. Analyses of the demand for money have traditionally been based on the idea that transactions balances pay no interest. Now the student, who is aware that it is possible to write checks on accounts that pay interest, must be convinced that the traditional theory is still relevant.

The third edition integrates the effects of financial deregulation throughout the book. Sections of Chapter 4 on the *LM* curve, Chapter 11 on the

costs of inflation, Chapter 15 on the demand for money, and Chapter 16 on monetary policy refer explicitly to the process of financial deregulation and its implications for theory and policy. A central theme is the role of financial deregulation in contributing to the increased level and volatility of interest rates, and its role in reducing the cost of an ongoing anticipated inflation.

## **ECONOMIC GROWTH AND THE PRODUCTIVITY SLOWDOWN**

In the years since the publication of the second edition, several prominent investigators (including John W. Kendrick and Edward F. Denison) have produced new studies of the post-1973 slowdown in output and productivity growth in the major industrialized countries. Their result and insights have allowed me to write a new case study of the sources of the productivity slowdown in the U.S., Germany, and Japan. Included also in Chapter 18 is a new section that provides a review and summary of alternative hypotheses that have been suggested to explain the productivity slowdown.

## **NEW CASE STUDIES**

A unique feature of the book since its inception has been case studies of historical episodes containing diagrams showing how the behavior of central variables has compared to the predictions of theory. Some of the data have been collected especially for the book; other data are rearrangements of official government series. All of the case studies have been revised to present the latest available numbers. Historical case studies have been adjusted to incorporate data revisions contained in the 1981 revisions of the National Income and Product Accounts. Most case studies covering the early 1980s contain data current to 1983:Q2. The historical time series of natural real GNP and the natural unemployment rate have been revised back to 1900 to reflect research I have completed since the second edition went to press.

The following list highlights the new case studies included in the third edition:

- 5-9 Monetary and Fiscal Policy in the 1981-82 Recession
- 6-8 Interest Rates, Output, and Prices during the Great Depression (combines and integrates two separate studies from the second edition)
- 7-7 Behavior of the Real Wage Rate in the Postwar United States
- 8-7 Supply Shocks and Their Reversal, 1977-83
- 8-9 Inflation in Postwar Recessions
- 10-10 The Costs of Recessions (contains a new section with examples of the human costs of the 1981-82 recession)
- 15-7 Money Demand Puzzles

- 16-7 Monetary Policy and the Velocity Recession of the 1980s  
18-4 Sources of U.S. Growth and the Post-1973 Productivity Slowdown

## **PEDAGOGICAL FEATURES**

A feature of the third edition is the use of third-level headings and new summary paragraphs to break up long sections and to provide a running commentary on the main points. Other pedagogical features remain as in the second edition. Color is used consistently, with red lines to identify demand curves and black lines to identify supply curves. Diagrams use labels to help the student distinguish between the sources of shifts in curves and movements along curves. Each chapter ends with a summary, a list of new concepts introduced in the chapter, and a set of discussion questions (in many chapters the set of questions is expanded from those contained in the second edition). Each equation in the text and appendixes is presented twice, in its general form and with a numerical example. A single running numerical example links the text and figures of Chapters 3-6.

Other student aids are included. A glossary in the back of the book contains a cross-reference to the section where each term is first introduced. Terms with glossary definitions are identified in boldface type when they are first introduced. A dictionary of symbols is included in the endpapers. A two-part data appendix is included, with one table of annual data back to 1900 and another containing quarterly data back to 1947. Sources of specially constructed data are described, and all data sources reflect the latest revisions.

Ancillary material includes the instructor's manual, which includes suggestions on how to use the book and how to teach each chapter, answers to discussion questions in the text, and numerous objective and numerical questions for use as class exercises or tests. An unusually complete student workbook is available, written as before by John Gemello and R. Newby Schweitzer of San Francisco State. The *Gordon Update* will be issued each spring and fall semester, just as it has been since the spring of 1981, to provide a review of recent events in the context of the theory developed in the text.

## **ACKNOWLEDGEMENTS**

I remain grateful to all those who were thanked in the preface of the first two editions. Space limitations prevent me from repeating all of those acknowledgements.

My greatest debt in preparing the third edition goes to the reviewers. Several of them went far beyond the call of duty by providing extremely

detailed and insightful comments on the whole book, not just the material added in this edition. I hope they will be surprised by how many of their suggestions I adopted. Time constraints prevented serious attention to every point, so I am saving some of the comments for the fourth edition. The reviewers were: Bruce Bolnick (UNC—Chapel Hill), Robert Chirinko (Cornell University), Lucia Dunn (University of Florida), John Flanders (Central Methodist College), William R. Hart (Miami University), Stanley Kaish (Rutgers State University), Frederick Mishkin (Columbia University), Brian Moehring (University of Redlands), Alan Rabin (University of Tennessee—Chattanooga), David Small (University of Wisconsin—Madison), and J. Kirker Stephens (University of Oklahoma).

Over the past three years a number of instructors have written to me with questions and protests about the second edition. Their letters have helped me to develop many of the major changes summarized above, and innumerable smaller changes. Some of the most valuable letters came from those who were later asked to become reviewers. Others making helpful comments were: Roger B. Andreae (University of New Mexico, Albuquerque), Martin J. Bailey (University of Maryland), Charles Bischoff (State University of New York, Binghamton), James L. Butkiewicz (University of Delaware), Robert Eisner (Northwestern University), John A. Flanders (Central Methodist College), Kishore G. Kulkarni (University of Central Arkansas), Alvin L. Marty (Graduate School of the City University of New York), Thorkild H. Mathiasen (Denmark), W. Douglas McMillin (University of Kentucky), Joel Mokyr (Northwestern University), Don Nichols (University of Wisconsin—Madison), Michael H. Spiro (University of Pittsburgh), J. A. Stockfish (American Petroleum Institute), and John Tomer (University College, Schenectady). Several students, including Alan D. Fragen (Northwestern) and Alan Hyde (University of California—Berkeley), also raised questions that helped me to clarify particular passages.

This book contains a great deal of data, some of it originally created for the book, both in Appendix B and in individual case studies. John Veitch and his friendly computer terminal produced the data and graphs, while Nathan Balke produced the index.

The new sections of the book were typed by my secretary Joan Robinson with her usual astonishing speed and accuracy. I am grateful to her and to Elizabeth H. Johnson for their help in meeting numerous delivery dates for manuscript and proofs.

Thanks go to Will Ethridge, the Little, Brown economics editor, for nagging me to get the third edition finished and for organizing the production of the accompanying *Student Workbook*. I am grateful also to Jane Tufts, who spent hours reading my second edition and making important suggestions for improving style, clarity, and pedagogy. The book editor, Victoria Keirnan, tied together all the elements of the production process with great efficiency and surprising good cheer.

Finally, thanks go to my wife Julie for putting up with a book that filled our luggage on vacations and created the litter of manuscript and galley proof. As always, her unfailing encouragement and welcome diversions made the book possible.

Robert J. Gordon

Evanston, Illinois  
September 1983



# Preface: To the Student

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Macroeconomics is one of the most important topics for college students, because the health of the economy will have an influence on your whole life. The overall level of employment and unemployment will determine the ease with which you find a job after college and with which you will be able to change jobs or obtain promotions in the future. The inflation rate will influence the interest rate you receive on your savings and pay when you borrow money, and also the extent to which the purchasing power of your savings will be eroded by higher prices.

This macroeconomics text will equip you with the principles you need to make sense out of the conflicting and contradictory discussions of economic conditions and policies in newspapers and news magazines. You will be better able to appraise the performance of the president and Congress, and to predict the impact of their policy actions on your family and business.

## **WHO SHOULD READ THIS BOOK?**

Most college students taking this course will have taken a course in economic principles. But this book has been written to be read by *all* students, even those who have not previously enrolled in an economics course. How is this possible? In Chapters 1–3 we review material which is in every principles course. By the end of Chapter 3, all students will have learned the essential concepts they need to understand the material to be developed.

This book has been carefully designed to look and read like a principles book. The entire presentation is graphic, with simple ninth-grade algebra used only in the review of elementary ideas in Chapter 3. Examples are used frequently. Most chapters have one or more case studies to give you

a breather from the analysis and to show how the ideas of the chapter can be applied to real-world episodes. New words are set off in boldface type and defined in the Glossary in the back of the book, thus easing vocabulary problems. And the diagrams in the first part of the book as well as the text description itself use numerical examples instead of mathematical symbols to show movement of the economy from one situation to another.

## **HOW TO READ THIS BOOK**

Each chapter begins with an introduction, linking it to previous chapters, and ends with a “Summary.” When you begin a chapter, first read the introduction to make sure you understand how the chapter differs from the previous ones. Then plan to read each chapter twice, first for the main points. After the first reading, study the summary and then try to answer the questions, marking those points which you do not understand. Finally, go back for a second reading, paying special attention to the discussion of issues which you may not have grasped fully at first.

Always try to write out answers to the questions. Another aid to comprehension is to try to work through the chapter and substitute a different numerical example for the one used in the text. Those of you who have purchased the accompanying *Student Workbook* will find that the path to greater comprehension has been laid out for you in detail.

If you should get lost in the course of reading the text, remember that there are built-in study aids to help. If you don’t understand a particular section, turn to the Summary at the end of the chapter. If you forget the meaning of a word, turn to the Glossary at the back of the book. (The Glossary will also help you tackle assigned outside readings.) And there is a Guide to Symbols on the endpapers of the book to help you with the alphabetical symbols that are used in equations or in diagrams as labels.

## **OPTIONAL MATERIAL**

Footnotes and chapter appendices have been provided as a place to put more difficult or less important material. Your instructor will decide whether or not an appendix is to be assigned, but even if not assigned, feel free to tackle it on your own when you have mastered the ideas in the body of the chapter. Footnotes contain qualifications, bibliographical references (valuable if you ever need to write a term paper on these topics), and cross-references to related material and diagrams elsewhere in the book.

Finally, notice that tables in the back of the book contain historical data starting with the year 1900 and updated to mid-1983. These figures can help you determine what was going on in periods not covered by the case studies or can be used in outside assignments and term papers. Don’t forget possible applications in history, political science, and sociology courses.

# Macroeconomics

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