

# MACROECONOMICS

*Seventh  
Edition*



ROBERT J. GORDON

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*Seventh  
Edition*

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~~Macroeconomics~~

# *Macroeconomics*

Macroeconomics

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*with love, for Julie*

# *Preface: To The Instructor*

Students come to their intermediate macroeconomics course in the late 1990s in an understandable state of confusion. They hear media reports about the “Cinderella economy,” which month after month displays the lowest unemployment rate since 1973 and the lowest inflation rate since the early 1960s. They and their families may be among those Americans who respond on surveys that they find jobs unusually easy to get. Some students may have parents who own or manage small businesses and who have found that, as a result of low unemployment, good workers are hard to find and hard to replace when they quit.

Despite this ebullient economic performance, students may also sense that all is not well in the Cinderella economy. A friend or family member may have been among the millions who lost their jobs in the 1990s. Students and their parents alike have experienced apparent stagnation in real wages and family incomes. Productivity growth in the 1990s has been slower than in the 1970s and 1980s, not to mention slower than in the “golden age” of rapid productivity and real wage growth prior to 1972. Further, as a result of the growing inequality of income, growth in the median wage fell short of growth in the mean wage, which was bolstered by disproportionate income gains of those in the top 10 percent of the income distribution.

Why has the unemployment and inflation performance of the American economy been so outstanding in the mid-1990s, yet was so poor in the 1970s and early 1980s? Why was an unemployment rate close to 5 percent accompanied by accelerating inflation during 1987-90 but by stable inflation in 1996-97? Should this performance be attributed to brilliant monetary policy, a set of lucky breaks, or both?

## **Unique Features of This Text**

This macroeconomics textbook is unique in providing answers to questions like these in a linear and well-integrated treatment of the business cycle, unemployment, inflation, and economic growth. A number of distinctive features allow this text to deliver not just theories and concepts but also possible explanations to the central macroeconomic puzzles that are introduced in the first few pages of the book.

## **Early, Unified Development of Core Business Cycle Theory**

The basic organizational principle of the text has been consistent in all its editions: Take the student directly from national income accounting (which develops the principles that income equals expenditure and leakages equal injections) without detours through the tried-and-true *IS-LM* model of income determination. After an introduction to macroeconomic issues and measurement, the closed- and open-economy versions of the *IS-LM* model are devel-

oped in Chapters 3-6, followed by Chapter 7 on the *AS-AD* model and Chapter 8 with the dynamic Phillips curve model (*SP-DG*), which begins with an explicit graphical derivation of the short-run Phillips curve from the *AS-AD* diagram. This organizational principle can be likened to the “inverted pyramid” principle of journalism—put the most important topics first, and place the less essential topics last so that instructors facing time constraints can teach the book in order while covering all the most critical material. In contrast, virtually every other leading text takes numerous detours *between* the measurement chapter and the *IS-LM* model into topics that are either unrelated or inessential at that early point in the book, including the production function, growth theory, theories of frictional unemployment, classical theories of inflation, role of financial intermediaries, the money-creation multiplier, open-market operations, and the detailed theory of consumption and investment expenditures and the demand for money.

In response to numerous requests from users and reviewers, the development of the elementary model of income determination and the initial development of the *IS-LM* model uses a running numerical example, which maintains the same basic parameter values throughout and varies those parameters to illustrate the workings of the multiplier and of monetary and fiscal policy. Then, in order to avoid unnecessary details, in Chapter 5 the numerical example is dropped in favor of a qualitative analysis of strong and weak effects of monetary and fiscal policy.

### **New Perspectives on Inflation, Unemployment, Growth, and Productivity**

This is the first macroeconomics text that not only *describes* the Cinderella confluence of low unemployment and inflation in the 1990s but actually *explains* it in terms of the theory developed in the text. The benign behavior of inflation, which allowed monetary policymakers to tolerate unusually low unemployment rates without raising interest rates, is attributed to a specific set of beneficial supply shocks that are explained within the same theoretical model as the adverse supply shocks of the 1970s. The author, whose research has been at the forefront of empirical investigations of the U. S. inflation-unemployment relation for more than two decades, shows that economic performance throughout the postwar period can be explained by a single consistent model, once the natural rate of unemployment is allowed to vary over time.<sup>1</sup>

Macroeconomics is concerned not just with business cycles, but also with economic growth. Even as the U.S. economy succeeded in achieving an unusually favorable combination of low unemployment and low inflation in the mid-1990s, concern continued about abysmally slow growth in productivity and the stagnation of real wages. This text provides a new perspective on the interrelations among growth theory, the productivity growth slowdown, and real wage stagnation.

The novel treatment of these issues in Chapters 9-11 links both the traditional and new theories of economic growth to productivity and real wage

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<sup>1</sup>For background and supplementary reading, see Robert J. Gordon, “The Time-Varying NAIRU and its Implications for Economic Policy,” *Journal of Economic Perspectives*, vol. 11 (February 1997), pp. 11-32.



growth, long-run aspects of fiscal policy, and to measurement errors—a field in which the author is an internationally recognized expert. A new chapter (Chapter 10) explores the sources of America’s malaise—the slow growth in productivity and real wages—and develops a simple theoretical demonstration that there is no simple cause-and-effect from slow productivity growth to slow real wage growth. Productivity and the real wage are like chicken and egg; they are both endogenous variables with feedback going each way between them. Unique among macro texts, this chapter shows that increasing income inequality matters for macro performance, since it causes the median real wage to grow more slowly than the mean real wage and thus is relevant for understanding the behavior of real wage growth for the median American household.

### **Internationalization of Macroeconomics**

For several editions, this text has been a leader in setting American economic problems in an international context. This leadership continues in the seventh edition, with the treatment of macro theory integrating international macro throughout. Unlike many other approaches, net exports are introduced at the very beginning, rather than “tacked on” later. Net exports and the foreign sector appear in the circular-flow treatment of national income accounting (Chapter 2) and in the expenditure function of the Keynesian cross model and multiplier (Chapter 3); net exports are also included among the variables that can shift the *IS* curve in the *IS-LM* model (Chapters 4-5). A new open-economy Chapter 6 directly after the development of the *IS-LM* model introduces the balance of payments, determination of the exchange rate, exchange rate systems, links between exchange rates, interest rates, and net exports, capital mobility, and the Mundell-Flemming version of the *IS-LM* analysis.

In addition, International Perspective boxes compare U.S. macro performance and problems with those of other leading industrial nations. These vignettes compare the performance of the U.S. economy with that of Europe and Japan along many dimensions, including unemployment, inflation, monetary and fiscal policy, saving, investment, productivity growth, real wage growth, and changes in inequality.

### **Case Studies**

The seventh edition continues to emphasize substantive case studies. These case studies are numbered text sections (not boxes) that appear in the middle of chapters adjacent to the relevant theoretical sections. The case studies continually remind the student that the theory helps explain real-world episodes. As in previous editions, many of the case studies use consistent data series developed in the author’s research on the natural unemployment rate, natural real GDP, and the natural employment deficit. This research has recently been updated to allow the natural rate of unemployment to vary through time, and this edition incorporates new series on natural real GDP and the GDP gap that are consistent with the time-varying natural rate of unemployment.

## Modern Treatment of Stabilization Policy

The debate between rules and activism, now treated in Chapter 14, is becoming obsolete. More relevant is the question of whether rules or activism can be implemented. The new treatment shows that there is “slippage,” taking the form of money supply shocks, commodity demand shocks, money demand shocks, and supply shocks, which intervene between the policy instruments directly controlled by the Fed and the ultimate goals of policy such as inflation and unemployment. Policymakers face a tradeoff between loose control or no control over the goal variables—they can follow rules for a policy instrument, or they can attempt to establish a rule for a goal variable that may be infeasible and require unstable behavior by the policy instruments. The treatment of monetary policy contrasts the challenges faced by the Federal Reserve in the United States, where beneficial supply shocks have eased its task of achieving low unemployment and low inflation, with the quite different environment of central banks in Europe, which have allowed unemployment rates to rise as a consequence of policies adopted to prepare for European Monetary Union.

## Unity from Beginning to End

As before, the book opens with six central macro concepts and six associated puzzles concerning their behavior. Unlike most books that “just stop,” this edition (like the last) has a final wrap-up chapter, which goes back to the six puzzles and asks, “What have we learned?”, “What do we know?”, and “What are the remaining macro mysteries?” This last question is examined in a section exploring unsettled issues that continue to be the subject of lively debate as we move toward the twenty-first century.

## Changes in the Seventh Edition

The traditional core of macroeconomics—the study of income determination, the causes of business cycles, and the potential for stabilization policy—is less controversial today than at any time in the past twenty-five years. The new-classical revolution has come and gone,<sup>2</sup> and a new consensus has emerged for the macroeconomics of the late 1990s. The American economy is resolutely Keynesian, characterized by sticky prices and markets that do not clear promptly. The economy’s operation is described with a surprising degree of accuracy and insight by the *IS-LM* model, together with a dynamic Phillips curve that incorporates both supply and demand shocks.

As discussed previously, a consistent strength of the approach in this text has been its early development of the *IS-LM* model and the dynamic Phillips curve. In this edition the *IS* and *LM* curves cross on page 114. The seventh edition accentuates this strength and reflects the de-emphasis on

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<sup>2</sup>Robert Lucas has recently admitted that “monetary shocks just aren’t that important. That’s the view I’ve been driven to. There’s no question, that’s a retreat in my view,” (John Cassidy, “The Decline of Economics,” *The New Yorker*, December 2, 1996, p. 55.)

macroeconomic controversy by condensing the treatment of new-classical and new-Keynesian macroeconomics from two chapters to one and moving it to a new unit at the back of the book (Chapter 17). This allows the treatment of the dynamic Phillips curve (Chapter 8) to follow directly after the development of the static aggregate demand-supply model (Chapter 7).

The unit on growth, real wage stagnation, and long-run fiscal policy is moved earlier to Chapters 9-11. The growth theory chapter (Chapter 9) features an added section called “Puzzles that Solow’s Theory Cannot Explain” to motivate the new endogenous growth theory. It also contains a new case study on “The Economic Miracle of the Four Tigers,” which broadens the discussion beyond the old and new growth theories to incorporate government policy, property rights, income equality, and other aspects of the East Asian miracle.

The most important advance in the treatment of growth is Chapter 10, “Explanations of Slow Growth in Productivity and Real Wages,” which is almost entirely new. It goes far beyond the treatment of these topics in previous editions, and indeed in any other text, by examining reverse feedback from low real wages to low productivity, discrepancies between data on productivity and the real wage, and the radical implications of the recent report of the CPI Advisory Commission implying that growth in both productivity and real wages has been substantially understated.

The treatment of international macroeconomics is unified in a new Chapter 6, which integrates and further develops material on the balance of payments, exchange rates, and open-economy macroeconomic adjustment that was formerly split between the last part of Chapter 5 and the first part of Chapter 14. The chapter on stabilization policy (Chapter 14) now contrasts the traditional analysis of rules vs. discretion in a closed-economy setting with the quite different orientation of policymakers in open economies, such as the European countries preparing for European monetary union. A set of 21 International Perspectives boxes, many of them new, and international case studies are provided on such topics as “Why Higher Income Raises the Trade Deficit,” “How Japan Uses Fiscal Policy,” “Did Disinflation in Europe Differ from that in the United States?,” “The Economic Miracle of the Four Tigers,” “Is the U. S. Productivity Slowdown Unique?,” “The Indexed Bond Has Arrived,” “Where in the World Is All the U. S. Currency?,” and “A Single European Currency as a Monetary Policy Rule.” Almost every box is illustrated with a graph that vividly illustrates how the nations compare.

The treatment of measurement in Chapter 2 includes a new box explaining the calculation of the new official “chain-weighted” measures of real GDP and the GDP deflator. Chapter 2 also incorporates a unified treatment of the measurement of unemployment previously split between here and later in the book. New material on sources of bias in the Consumer Price Index, developed in part by the author as a member of the recent Boskin Commission, is included both in Chapter 2 and, in the context of real wage growth, in Chapter 10.

## **Pedagogy**

The seventh edition retains the main pedagogical features of the previous editions to aid student understanding. Color is used consistently in diagrams, with red lines identifying demand curves and black lines identifying supply

curves. Key terms are introduced in bold type, defined in the margin, and listed at the end of each chapter. The glossary at the end of the book provides an alphabetical list of all these definitions with cross-references to the sections where terms are introduced. Each chapter is broken up with at least three self-test questions so that students can immediately determine whether they understand what they have read. Each chapter ends with a summary, list of key terms, a revised set of questions and problems, and answers to the self-test questions. Finally, a revised set of data appendixes is provided, covering annual data for the U. S. back to 1875, quarterly data back to 1947, and annual data since 1960 for other leading nations.

Other pedagogical features, carried over from the previous edition, include:

1. *Notation.* As in the previous edition,  $Y$  is used for real GDP,  $X$  for nominal GDP,  $NX$  for net exports, and  $z$  for the influence of supply shocks on the rate of inflation.
2. *Learning About Diagrams Boxes.* Each of these boxes covers on a single page every aspect of the key schedules, including  $IS$ ,  $LM$ ,  $AS$ ,  $AD$ , and  $SP$ , including why they slope as they do, what makes them rotate and shift, and what is true on and off the curves.
3. *Diagrams* have been completely replotted, using modern computer technology to ensure accuracy, and take into account the 1996 and 1997 revisions in the National Income and Product Accounts. Theoretical diagrams have been redrawn, incorporate a new consistency in the use of color, and in many cases have new explanatory boxes to explain the meaning of shifts and new equilibrium points.

## Ancillary Material

The Study Guide has been completely and thoroughly updated to reflect the new and reorganized content of the seventh edition. Andrew Foshee of McNeese State University prepared the revision. The study guide segments each chapter of the main text into a series of main questions, with each question covering a specified topic. Students are asked to fill in blanks (from one word or numerical value to a short essay), circle correct answers, draw graphs, or use current data.

The Instructor's Manual with Transparency Masters has been thoroughly revised for the seventh edition. The Instructor's Manual portion, revised by Jim Eaton of Bridgewater College, provides chapter outlines, chapter overviews, a discussion of changes in the seventh edition from the sixth edition, answers to end-of-chapter questions and problems, and additional questions that instructors may wish to use for homework assignments, classroom discussion, or essay examination questions.

The transparency masters are enlarged versions of figures from the text. They may be used to create transparency acetates suitable for overhead projection in the classroom.

The Test Bank, revised by Andrew Foshee of McNeese State University, combines previous Test Banks 1 and 2 for a total of over 2,000 multiple-choice questions.

The Computerized Test Bank is available for both Windows and Macintosh, and contains all questions from the print version. The testing soft-

ware (TestGen-EQ with Quizmaster) is fully networkable. The interface enables instructors to easily view, edit, and add questions; transfer questions to tests; and print tests in a variety of fonts and forms. Search-and-sort features let the instructor quickly locate questions and arrange them in a preferred order. Quiz Master-EQ automatically grades the exams, stores results on disk, and allows the instructor to view or print a variety of reports.

The PowerPoint Presentation CD-ROM contains the full set of figures from the book with chapter outlines. Add your own lecture notes to customize the presentation to fit your class. Transparency masters can be created by printing from the presentation, and these can be used to make overhead transparencies or student handouts from customized, individual slides.

A Web site has been developed for this book. It contains links to relevant sites on the Internet for gathering data and doing research in macroeconomics, plus other interesting features. Visit the site at <http://hepg.awl.com/gordon/macro>.

A set of videos, selected from the MacNeil/Lehrer Business Reports New Hour and featuring correspondent Paul Solman, complements the text.

## Acknowledgments

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

Above all, I am grateful to Jim Wilcox, of the Haas School of Business at the University of California at Berkeley, who has joined the project as co-author of Chapters 13-16 in this edition. Jim's extensive experience in teaching finance and monetary economics, as well as macroeconomics, brings a fresh eye and new insight to the many issues, new and old, that are treated in these chapters.

I am also grateful to Jim Eaton of Bridgewater College for his many contributions to the seventh edition. Jim checked every page of manuscript as it was being copy-edited, revised and rewrote end-of-chapter questions and problems, checked answers to self-tests, and scrutinized every piece of page proof for any errors, large or small. He has also revised the Instructor's Manual. Thanks go also to Andrew Foshee for revising the Test Bank and the Study Guide.

The development of the seventh edition was greatly aided by a substantial number of reviews of the previous edition by both users and non-users alike. Several reviewers of this edition made valuable suggestions during the writing process. The reviewers of this edition were John P. Burkett, University of Rhode Island; Oscar Brookins, Northeastern University; Richard Cebula, Georgia Institute of Technology; Abdur Chowdhury, Marquette University; M. O. Clement, Dartmouth College; Steven Cobb, Xavier University; Donald Dutkowsky, Syracuse University; Jim Eaton, Bridgewater College; Dave Findlay, Colby College; John Graham, Rutgers University; Philip J. McLewin, Ramapo College; W. Douglas McMillin, Louisiana State University; Jerry Miner, Syracuse University; Farrokh Nourzad, Marquette University; Richard Rosenberg, University of Wisconsin, Parkside; Alden Shiers, California Polytechnic State University; Allan Stone, Southwest Missouri State University; Nora Underwood, University of California, Davis; and John Veitch, University of San Francisco.



The book contains a great deal of data, some of it originally created for this book, both in the text and data appendixes. Tomonori Ishikawa developed all the data, tables, and graphs, as well as the Data Appendixes. All data were provided electronically to ST Associates, who rendered new versions of every piece of art in the book.

Thanks go to the staff at Addison Wesley Longman and their predecessors at HarperCollins. Bruce Kaplan and Lisa Pinto at HarperCollins conceived the process of reviewing the previous edition and contributed a set of priorities for the current revision. Denise Clinton at Addison Wesley Longman picked up the ball when the former HarperCollins college division was acquired by AWL and coordinated the final set of changes in concept and organization.

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*Robert J. Gordon  
Evanston, IL  
September, 1997*

# *Preface: To the Student*

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 covered in every principles course. By the end of Chapter 3, all students will have learned the concepts essential to understanding the new material to be developed.

This book has been carefully designed to look and read like a principles text. The entire presentation is graphic, with simple ninth-grade algebra used only in the review of elementary ideas. Examples are used frequently. Most chapters have at least one “case study” that gives you a breather from the analysis and shows how the ideas of the chapter can be applied to real-world episodes. “International Perspective” boxes show you how U.S. economic performance compares with that in other nations, such as Germany and Japan. To help with vocabulary problems, new words are set off in boldface type and defined both in the margins and in the Glossary in the back of the book. Many end-of-chapter questions provide numerical examples for you to solve, in order to cement your understanding of the theory. Finally, end-of-chapter appendixes for Chapters 5 and 8 provide optional algebraic treatments of the theory, available for assignment by instructors or for those students who want to do independent work that will deepen their command of the material.

A unique feature of this textbook is the set of “Self-Test” questions. These questions, which appear three or four times in each chapter, test your understanding of the main point of the preceding section. Write down your answers on a sheet of paper and compare them with those provided at the end of each chapter. You will quickly see whether you have understood what you have been reading, or whether you need to review the material again.

## 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. On the first reading, use the Self-Test questions and answers to check whether you understand what you have been reading. Then, after completing your first reading of the chapter, study the Summary and try to answer the end-of-chapter questions, marking those points you do not understand. Finally, go back for a second reading, paying attention to the discussion of issues you may not have grasped fully at first.

Always try to write out answers to the questions and problems. Those who have purchased the accompanying *Study Guide* 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, in addition to the Self-Test questions. 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. (The Glossary will also help you tackle any outside readings assigned by your instructor.) A Guide to Symbols on the back inside covers of the book will help you with the alphabetical symbols that are used in equations or in diagrams as labels.

## Optional Material

Footnotes and chapter appendixes have been provided as a place to put more difficult or less important material. Your instructor will decide whether an appendix is to be assigned, but even if not assigned, tackle it on your own when you have mastered the ideas in 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 in the book.

Finally, notice that tables in the appendix contain historical data starting with 1875 and updated to mid-1997. 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.

The World Wide Web has made it much easier for you to locate recent data to update the graphs and tables in this book. For information on using the Web to find data, turn to pages 34-35.

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