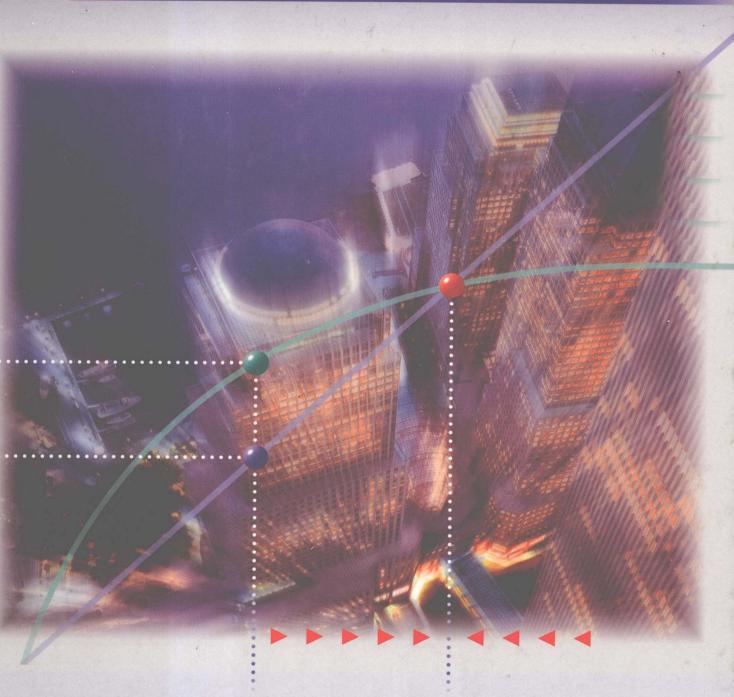
//ACROECONOMICS

FOURTH EDITION



ANDREW B. ABEL BEN S. BERNANKE

Macroeconomics

Fourth Edition

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The Wharton School of the University of Pennsylvania

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Macroeconomics

Fourth Edition

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Preface

he first three editions of *Macroeconomics* were extremely well received by instructors and students. In the Fourth Edition we have added new material to keep the text modern and fresh, while building on the strengths that underlie the book's lasting appeal, including:

- Real-world applications. A perennial challenge for instructors is to help students make active use of the economic ideas developed in the text. The rich variety of applications in this book shows by example how economic concepts can be put to work in explaining real-world issues such as the contrasting behavior of unemployment in the United States and Europe, the slowdown and revival in productivity growth, the link between the Social Security system and the Federal budget surplus, sources of international financial crises, and alternative approaches to making monetary policy. The Fourth Edition offers new applications as well as updates of the best applications and analyses of previous editions.
- Broad modern coverage. From its conception, Macroeconomics has responded to students' desires to investigate and understand a wider range of macroeconomic issues than is permitted by the course's traditional emphasis on short-run fluctuations and stabilization policy. This book provides a modern treatment of these traditional topics but also gives in-depth coverage of other important macroeconomic issues such as the determinants of long-run economic growth, the trade balance and financial flows, labor markets, and the political and institutional framework of policymaking. This comprehensive coverage also makes the book a useful tool for instructors with differing views about course coverage and topic sequence.
- Reliance on a set of core economic ideas. Although we cover a wide range of topics, we avoid developing a new model or theory for each issue. Instead we emphasize the broad applicability of a set of core economic ideas (such as the production function, the trade-off between consuming today and saving for tomorrow, and supply–demand analysis). Using these core ideas, we build a theoretical framework that encompasses all the macroeconomic analyses presented in the book: long-run and short-run, open-economy and closed-economy, and classical and Keynesian.
- A balanced presentation. Macroeconomics is full of controversies, many of which arise from the split between classicals and Keynesians (of the old, new, and neo-varieties). Sometimes the controversies overshadow the broad common ground shared by the two schools. We emphasize that common ground. First, we pay greater attention to long-run issues (on which classicals and Keynesians have less disagreement). Second, we develop the classical and Keynesian analyses of short-run fluctuations within a single overall framework, in which we show that the two approaches differ principally in their assumptions about how quickly wages and prices adjust. Where differences in viewpoint remain—for example, in the search versus efficiency-wage interpretations of unemployment—we present and critique both perspectives. This balanced approach exposes students to all the best ideas in modern macroeconomics. At the same time, an instructor of either classical or Keynesian inclination can easily base a course on this book.

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■ Innovative pedagogy. The Fourth Edition, like its predecessors, provides a variety of useful tools to help students study, understand, and retain the material. Described in more detail later in the Preface, these tools include Summary tables, Key Diagrams, Key Terms, and Key Equations to aid students in organizing their study; and four types of questions and problems for practice and developing understanding. New to this edition: The text now includes problems that encourage students to do their own empirical work, using Conference Board® data downloadable from the text Web site.

New and Updated Coverage

What is taught in intermediate macroeconomics courses—and how it is taught—has changed substantially in recent years. Previous editions of *Macroeconomics* played a major role in these developments. The Fourth Edition provides lively coverage of a broad spectrum of macroeconomic issues and ideas, including a variety of new and updated topics:

- Long-term economic growth. Because the rate of economic growth plays a central role in determining living standards, we devote much of Part 2 to growth and related issues. We first discuss factors contributing to growth, such as productivity (Chapter 3) and rates of saving and investment (Chapter 4); then in Chapter 6 we turn to a full-fledged analysis of the growth process, using tools such as growth accounting and the Solow model. Growth-related topics covered include the post-1973 productivity slowdown, growth "miracles," the factors that determine long-run living standards, convergence in growth rates, and government policies to stimulate growth. New to this edition: The text now includes falling computer prices and the measurement of economic growth (Chapter 2), a more extensive treatment of endogenous growth theory (Chapter 6), and the information technology revolution and the behavior of productivity (Chapter 6).
- International macroeconomic issues. We address the increasing integration of the world economy in two ways. First, we frequently use cross-country comparisons and applications that draw on the experiences of nations other than the United States. For example, in Chapter 3, we compare hours of work in nations around the world; in Chapter 6 we examine the growth experiences of the East Asian tigers; in Chapter 7 we compare inflation experiences among European countries in transition; in Chapter 12 we compare sacrifice ratios among various countries; and in Chapter 14 we discuss strategies used for making monetary policy around the world. Second, we devote two chapters, 5 and 13, specifically to international issues. In Chapter 5 we show how the trade balance is related to a nation's rates of saving and investment, and then apply this framework to discuss issues such as the 1994 Mexican crisis and the U.S. trade deficit. In Chapter 13 we use a simple supply-demand framework to examine the determination of exchange rates. The chapter features innovative material on fixed exchange rates and currency unions, including an explanation of why a currency may face a speculative run. New or substantially revised coverage: The text now covers Japanese monetary policy in the 1990s (Chapter

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- 11), the 1997–1998 financial crisis in East Asia (Chapter 13), and the adoption of the euro by the European Community in 1999 (Chapter 13).
- Business cycles. Our analysis of business cycles begins with facts rather than theories. In Chapter 8 we give a history of U.S. business cycles and then describe the observed cyclical behavior of a variety of important economic variables (the "business cycle facts"). In Chapters 9–11 we evaluate alternative classical and Keynesian theories of the cycle by how well they explain the facts.
- Monetary and fiscal policy. The effects of macroeconomic policies are considered in nearly every chapter, in both theory and applications. We present classical (Chapter 10), Keynesian (Chapter 11), and monetarist (Chapter 14) views on the appropriate use of policy. New or substantially revised coverage: The text now includes budget surpluses and the uses of saving (Chapter 2); sources of money demand instability in the 1990s (Chapter 7); tests of rational expectations (Chapter 10); the Taylor rule (Chapter 14); seignorage and hyperinflation in the Confederacy (Chapter 15); Social Security and the Federal budget (Chapter 15); and the generational accounts approach to fiscal policy evaluation (Chapter 15).
- Labor market issues. We pay close attention to issues relating to employment, unemployment, and real wages. We introduce the basic supply—demand model of the labor market and present a first-pass discussion of unemployment early, in Chapter 3. We discuss unemployment more extensively in Chapter 12, which covers the inflation—unemployment trade-off, the costs of unemployment, and government policies for reducing unemployment. Other labor market topics include efficiency wages (Chapter 11), hysteresis in unemployment (Chapter 12), and the effects of marginal and average tax rate changes on labor supply (Chapter 15). New or substantially revised coverage: The text now covers job creation and job destruction in manufacturing (Chapter 10) and the declining natural rate (Chapter 12).

Also New to the Fourth Edition

In preparing the Fourth Edition, we viewed our main objective to be keeping the book fresh and up-to-date. We have added new applications, boxes, and problems throughout and made many revisions of the text to reflect recent events and developments in the field. However, two changes made for this edition are worth emphasizing:

■ Better-integrated microfoundations. Previous editions contained material on the microfoundations of labor supply, consumption, saving, and other aspects of household and firm behavior. However, much of the discussion of the microfoundations of household behavior was contained in a separate, optional chapter. The Fourth Edition features better-integrated microfoundations, with enhanced discussions of the labor supply decision in Chapter 3 and of consumption and saving behavior in Chapter 4. The optional chapter has been eliminated, with its more technical material (on budget constraints and indifference curves) now appearing in the appendix to Chapter 4. This rearrangement gives students more exposure to the basic microeconomics of household decisions, without an increase in technical difficulty and without the need to cover an optional chapter.

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■ Increased use of the Internet. The Fourth Edition has been Web-enabled in several ways. First, throughout the text students are referred to useful Web sites—to help them find the most recent data or just to learn more about a subject. Second, The Conference Board[®] problems at the end of each chapter ask students to solve problems using real macroeconomic data, easily downloadable from the textbook's companion Web site, whose other tools and resources are described later in the section "Supplementary Materials."

A Flexible Organization

Other than the incorporation of the microfoundations material in Chapters 3 and 4, and the resulting elimination of the optional chapter on microfoundations, the basic structure of the text is largely unchanged from earlier editions. In Part 1 (Chapters 1–2) we introduce the field of macroeconomics and discuss issues of economic measurement. In Part 2 (Chapters 3–7) we focus on long-run issues, including productivity, saving, investment, the trade balance, growth, and inflation. We devote Part 3 (Chapters 8–11) to the study of short-run economic fluctuations and stabilization policy. Finally, in Part 4 (Chapters 12–15) we take a closer look at issues and institutions of policymaking. Appendix A at the end of the book reviews useful algebraic and graphical tools.

Instructors of intermediate macroeconomics have different preferences as to course content, and their choices are often constrained by their students' backgrounds and the length of the term. The structure of *Macroeconomics* accommodates various needs. In planning how to use the book in your course, you might find it useful to keep the following points in mind:

- *Core chapters.* We recommend that every course include six chapters:
 - Chapter 1 Introduction to Macroeconomics
 - Chapter 2 The Measurement and Structure of the National Economy
 - Chapter 3 Productivity, Output, and Employment
 - Chapter 4 Consumption, Saving, and Investment
 - Chapter 7 The Asset Market, Money, and Prices
 - Chapter 9 The *IS–LM/AD–AS* Model: A General Framework for Macro-economic Analysis

Chapters 1 and 2 provide an introduction to macroeconomics, including national income accounting. The next four chapters in the list make up the analytical core of the book: Chapter 3 examines the labor market, Chapters 3 and 4 together develop the goods market, Chapter 7 discusses the asset market, and Chapter 9 combines the three markets into a general equilibrium model usable for short-run analysis (in either a classical or Keynesian mode).

To a syllabus containing these six chapters, instructors can add various combinations of the other chapters, depending on the course focus. The following are some possible choices:

■ Short-run focus. Instructors who prefer to emphasize short-run issues (business cycle fluctuations and stabilization policy) may omit Chapters 5 and 6 without loss of continuity. They could also go directly from Chapters 1 and 2 to Chapters 8 and 9, which introduce business cycles and the IS–LM/AD–AS

- framework. Although the presentation in Chapters 8 and 9 is self-contained, it will be helpful for instructors who skip Chapters 3–7 to provide some background and motivation for the various behavioral relationships and equilibrium conditions.
- Classical emphasis. For instructors who want to teach the course with a modern classical emphasis, we recommend assigning all the chapters in Part 2. In Part 3, Chapters 8–10 provide a self-contained presentation of classical business cycle theory. Other material of interest includes the Friedman–Phelps interpretation of the Phillips curve (Chapter 12), the role of credibility in monetary policy (Chapter 14), and Ricardian equivalence with multiple generations (Chapter 15).
- *Keynesian emphasis.* Instructors who prefer a Keynesian emphasis may choose to omit Chapter 10 (classical business cycle analysis). As noted, if a short-run focus is preferred, Chapter 5 (full-employment analysis of the open economy) and Chapter 6 (long-run economic growth) may also be omitted without loss of continuity.
- International focus. Chapter 5 discusses saving, investment, and the trade balance in an open economy with full employment. Chapter 13 considers exchange rate determination and macroeconomic policy in an open-economy model in which short-run deviations from full employment are possible. (Chapter 5 is a useful but not essential prerequisite for Chapter 13.) Both chapters may be omitted for a course focusing on the domestic economy.

Applying Macroeconomics to the Real World

Economists sometimes get caught up in the elegance of formal models and forget that the ultimate test of a model or theory is its practical relevance. In the previous editions of *Macroeconomics*, we dedicated a significant portion of each chapter to showing how the theory could be applied to real events and issues. Our efforts were well received by instructors *and* students. In this edition we go even further to help students learn how to "think like an economist" by including the following features:

- Applications. Applications in each chapter show students how they can use theory to understand an important episode or issue. Examples of topics covered in Applications include the link between technical change and wage inequality (Chapter 3), the United States as international debtor (Chapter 5), calibrating the business cycle (Chapter 10), the financial crisis in East Asia (Chapter 13), money-growth targeting versus inflation targeting (Chapter 14), and labor supply and tax reform (Chapter 15).
- Boxes. Boxes feature interesting additional information or sidelights, often drawn from current research. Representative topics covered in boxes include discussions of biases in inflation measurement (Chapter 2), the link between capital investment and the stock market (Chapter 4), flows of U.S. dollars abroad (Chapter 7), temporary and permanent components of recessions (Chapter 8), the Lucas critique (Chapter 12), purchasing power parity and hamburger prices (Chapter 13), and the outlook for Social Security (Chapter 15).
- In Touch with the Macroeconomy. One important component of thinking like an economist is being familiar with macroeconomic data—what's available, its

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strengths and shortcomings. To help students develop the habit of staying in touch with the macroeconomy, this series of boxes shows where to find key macroeconomic data—such as labor market data (Chapter 3), balance of payments data (Chapter 5); and the index of leading indicators (Chapter 8)—and how to interpret them. Online data sources are featured along with more traditional media.

■ The Political Environment. In talking about economic policy, students frequently note the discrepancy between the recommendations of economists (assuming they even agree!) and the decisions of politicians or government. We address this discrepancy in special boxes that highlight the political environment of economic issues and policies. These boxes examine such topics as the relationship between democracy and economic growth (Chapter 6), the role of the Council of Economic Advisers (Chapter 11), and the link between the state of the economy and presidential elections (Chapter 12).

Learning Features

The following features of this book aim to help students understand, apply, and retain important concepts:

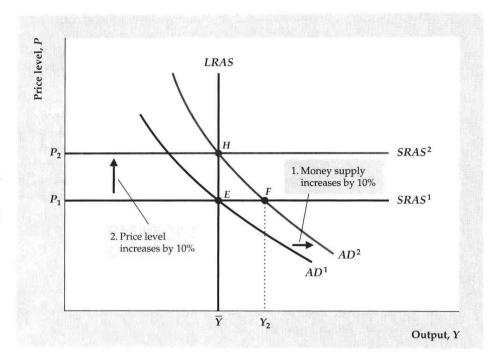
■ Detailed, full-color graphs. The book is liberally illustrated with data graphs, which emphasize the empirical relevance of the theory, and analytical graphs, which guide students through the development of model and theory in a well-paced, step-by-step manner. For both types of graphs, descriptive captions summarize the details of the events shown.

The use of color in an analytical graph is demonstrated by the figure on the next page, which shows the effects of a shifting curve on a set of endogenous variables. Note that the original curve is in black, whereas its new position is marked in red, with the direction of the shift indicated by arrows. A peach-colored "shock box" points out the reason for the shift, and a blue "result box" lists the main effects of the shock on endogenous variables. These and similar conventions make it easy for students to gain a clear understanding of the analysis.

- Key diagrams. Key diagrams, a unique study feature at the end of selected chapters, are self-contained descriptions of the most important analytical graphs in the book (see the end of the Detailed Contents for a list). For each key diagram, we present the graph (for example, the production function, p. 100, or the AD–AS diagram, p. 339) and define and describe its elements in words and equations. We then analyze what the graph reveals and discuss the factors that shift the curves in the graph.
- Summary tables. Summary tables are used throughout the book to bring together the main results of an analysis. Summary tables reduce the amount of time that students must spend writing and memorizing results, allowing a greater concentration on understanding and applying these results.
- End-of-chapter review materials. To facilitate review, at the end of each chapter students will find a chapter summary, covering the chapter's main points; a list of key terms with page references; and an annotated list of key equations.
- End-of-chapter questions and problems. An extensive set of questions and problems includes review questions, for student self-testing and study; numerical

Figure 9.14 Monetary neutrality in the AD-AS framework

If we start from general equilibrium at point E, a 10% increase in the nominal money supply shifts the AD curve up by 10% at each level of output, from AD^1 to AD^2 . The AD curve shifts up by 10% because at any given level of output, a 10% increase in the price level is needed to keep the real money supply, and thus the aggregate quantity of output demanded, unchanged. In the new short-run equilibrium at point *F*, the price level is unchanged, and output is higher than its fullemployment level. In the new long-run equilibrium at point H, output is unchanged at \overline{Y} , and the price level P₂ is 10% higher than the initial price level P_1 . Thus money is neutral in the long run.



problems, which have numerical solutions and are especially useful for checking students' understanding of basic relationships and concepts; and analytical problems, which ask students to use or extend a theory qualitatively. Answers to these problems appear in the *Instructor's Manual*.

- The Conference Board® problems. Most chapters now include The Conference Board® problems, which students can answer using The Conference Board® data (downloadable from the text Web page). These problems allow students to do their own empirical analyses, to see for themselves how well the theory does in explaining real-world data.
- Review of useful analytical tools. Although we use no mathematics beyond high school algebra, some students will find it handy to have a review of the book's main analytical tools. Appendix A (at the end of the text) succinctly discusses functions of one variable and multiple variables, graphs, slopes, exponents, and formulas for finding the growth rates of products and ratios.
- Glossary. The glossary at the end of the book defines all key terms (boldfaced within the chapter and also listed at the end of each chapter) and refers students to the page on which the term is fully defined and discussed.

Supplementary Materials

A full range of supplementary materials to support teaching and learning accompanies this book. All of these items are available to qualified domestic adopters but in some cases may not be available to international adopters.

■ The *Study Guide*, by Dean Croushore, provides a review of each chapter, as well as multiple-choice and short-answer problems (and answers).

- The Instructor's Manual/Test Bank, also by Dean Croushore, offers guidance for instructors on using the text, solutions to all end-of-chapter problems in the book, and suggested topics for class discussion. The Test Bank section contains a generous selection of multiple-choice questions and problems, all with answers.
- The Instructor's Resource CD-ROM contains electronic PowerPoint slides for all text figures, to facilitate classroom presentations. You may also print transparency masters from the program. A PowerPoint viewer is provided for those who do not have the full software program. The CD-ROM also holds the Computerized Test Bank in the TestGen-EQ software program in both IBM and Macintosh platforms, allowing for the easy creation of multiple-choice tests.
- Full-color transparencies for key figures in the text are also available.
- The Companion Web Site offers an up-to-date version of The Conference Board®'s Business Cycle Indicators database, providing students a unique opportunity to analyze the very data that professional economists, policymakers, and government officials use in their work. By having access to these data, students can also answer The Conference Board® problems at the end of most chapters in the textbook. The Web site also offers handy links to Internet sites where students can read further on topics covered in the textbook, sample worked problems, and take chapter-by-chapter self-test quizzes.

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