

GLOBAL
EDITION



Macroeconomics

NINTH EDITION

Andrew B. Abel • Ben S. Bernanke • Dean Croushore



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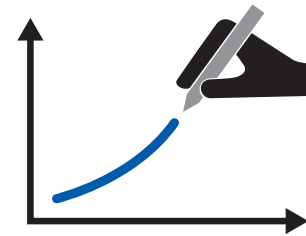
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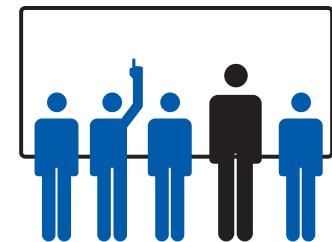
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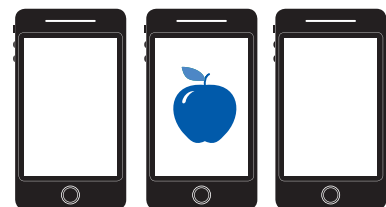
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Symbols Used in This Book

A	productivity	W	nominal wage
B	government debt	Y	total income or output
$BASE$	monetary base	\bar{Y}	full-employment output
C	consumption		
CA	current account balance	a	individual wealth or assets
CU	currency held by nonbank public	c	individual consumption; consumption per worker
DEP	bank deposits	cu	currency–deposit ratio
E	worker effort	d	depreciation rate
FA	financial account balance	e	real exchange rate
G	government purchases	e_{nom}	nominal exchange rate
I	investment	\bar{e}_{nom}	official value of nominal exchange rate
INT	net interest payments	i	nominal interest rate
K	capital stock	i^m	nominal interest rate on money
M	money supply	k	capital–labor ratio
MC	marginal cost	n	growth rate of labor force
MPK	marginal product of capital	p_K	price of capital goods
MPN	marginal product of labor	r	expected real interest rate
$MRPN$	marginal revenue product of labor	r^w	world real interest rate
N	employment, labor	r_{a-t}	expected real after-tax interest rate
\bar{N}	full-employment level of employment	res	reserve–deposit ratio
NFP	net factor payments	s	individual saving; saving rate
NM	nonmonetary assets	t	income tax rate
NX	net exports	u	unemployment rate
P	price level	\bar{u}	natural unemployment rate
P^e	expected price level	uc	user cost of capital
P_{sr}	short-run price level	w	real wage
R	real seignorage revenue	y	individual labor income; output per worker
RES	bank reserves	π	inflation rate
S	national saving	π^e	expected inflation rate
S_{pvt}	private saving	η_Y	income elasticity of money demand
S_{govt}	government saving	τ	tax rate on firm revenues
T	taxes		
TR	transfers		
V	velocity		



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Andrew B. Abel

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University of Pennsylvania*

Ben S. Bernanke

Brookings Institution

Dean Croushore

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University of Richmond*



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Preface

From February 2006 to January 2014, Ben Bernanke was chairman of the Board of Governors of the Federal Reserve System. Federal ethics rules prohibited him from working on the sixth, seventh, and eighth editions, but he has returned to make substantive contributions to this, the ninth edition.

In preparing the ninth edition, we viewed our main objective to keep the book fresh and up-to-date, especially in light of the recent crises in the United States and Europe and the many new tools used by the Federal Reserve in response to the crisis. We have also added new applications, boxes, and problems throughout and made many revisions of the text to reflect recent events and developments in the field. In addition, the empirical problems at the end of most chapters direct students to appropriate data in the FRED database on the Web site of the Federal Reserve Bank of St. Louis. Because this database is frequently updated and is available free of charge, students will develop familiarity and facility with a current data source that they can continue to use after completing the course.

A summary of our revisions follows.

What's New in This Edition

The severe recession that occurred from 2007 to 2009 and the slow recovery that followed have motivated many changes in this edition of *Macroeconomics*. The main changes in this textbook are geared toward explaining those economic events and related issues, including the large increase in the duration of unemployment, the slow recovery of the labor market, the Fed's new tools for conducting monetary policy and how they have been used, and the impact of fiscal policy on the economy in a severe recession.

Listed below is a summary of the changes made in the textbook for the ninth edition. See the following section for further details on these changes.

- We add a new graph that illustrates the uses-of-saving identity (Chapter 2).
- We discuss alternative measures of the unemployment rate (Chapter 3).
- We simplify the measurement of the current account balance to reflect recent changes in government accounting methods, changing the term *capital and financial account balance* to the new measure *financial account balance* (Chapter 5).
- We extend our discussion of the global savings glut (Chapter 5).
- We introduce the concept of the break-even inflation rate in discussing expected inflation (Chapter 7).
- We discuss the idea that the Great Moderation may not have ended with the Great Recession (Chapter 8).
- We add a discussion of the 2008 oil price shock (Chapter 9).
- We discuss the problems that arise if inflation is too low (Chapter 12).
- We introduce the concept of an optimum currency area and discuss whether either the United States or Europe fit the criteria (Chapter 13).

- We expand our discussion of central banks performing a function as the lender of last resort (Chapter 14).
- We ask whether there really is a zero lower bound on nominal interest rates (Chapter 14).
- We expand our discussion of quantitative easing and forward guidance (Chapter 14).
- We introduce the Laffer curve in discussing supply-side economics (Chapter 15).
- We ask whether quantitative easing is likely to cause inflation to rise (Chapter 15).
- We update our extensive series of graphs illustrating the historical movements of key economic variables.

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 ninth edition provides lively coverage of a broad spectrum of macroeconomic issues and ideas, including a variety of new and updated topics:

- *Monetary policy.* In response to the slow economic recovery following the 2007–2009 recession, the Federal Reserve introduced new tools to influence economic activity, so we have added a substantial amount of material to discuss many different aspects of these policy changes. Thus, we have rewritten Chapter 14 on monetary policy substantially. *New or substantially revised coverage:* In Chapter 14 we describe the new tools the Fed has used for monetary policy, especially quantitative easing and forward guidance. We also discuss the role of central banks in acting as lenders of last resort. Finally, we also discuss whether zero really is a lower bound on nominal interest rates.
- *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, the factors that determine long-run living standards, and the productivity rebound of the 1990s. *Revised coverage:* Updated data and a discussion of how the uses-of-savings identity can be used to illustrate the shocks to the world economy in the 2007–2009 recession.
- *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 6 we compare the long-term economic growth rates of several countries; in Chapter 7 we compare inflation experiences among European countries in transition; in

Chapter 8 we compare the growth in industrial production in several countries; 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 U.S. trade deficit and the relationship between government budget deficits and trade deficits. 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. *Revised coverage:* The text introduces the concept of an optimum currency area and whether Europe is, in fact, an optimum currency area (Chapter 13), as well as a discussion of the global savings glut (Chapter 5).

- *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. *New to this edition:* The text now includes a discussion of whether the Great Moderation ended with the Great Recession (Chapter 8).
- *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 discusses the Laffer curve and whether quantitative easing is likely to cause higher future inflation (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, as well as 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) and the effects of marginal and average tax rate changes on labor supply (Chapter 15). *New or substantially revised coverage:* The text now discusses alternative measures of the unemployment rate (Chapter 3).

A Solid Foundation

The ninth edition builds on the strengths that underlie the book's lasting appeal to instructors and students, 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 housing crisis of 2007–2011 and the financial crisis of 2008, the slowdown and revival in productivity growth, the challenges facing the Social Security system and the Federal budget, the impact of globalization on the U.S. economy, and new approaches to making monetary policy that were used in response to the financial crisis in 2008 and the slow recovery since 2009. The ninth 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 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.
- *Innovative pedagogy.* The ninth 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, including problems that encourage students to do their own empirical work, using data readily available on the internet. Several appendices illustrate how to solve numerical exercises that are based on the algebraic descriptions of the $IS-LM/AS-AD$ model.

A Flexible Organization

The ninth edition maintains the flexible structure of 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, instructors might find it useful to consider the following points:

- *Core chapters.* We recommend that every course include these 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 Macroeconomic 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).

- *Suggested additions.* 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. The ninth edition continues 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 increase in the duration of unemployment in the Great Recession (Chapter 3), the macroeconomic consequences of the boom and bust in stock prices (Chapter 4), how people respond to tax rebates (Chapter 4), the United States as international debtor (Chapter 5), the recent surge in U.S. productivity growth (Chapter 6), the 2008 oil price shock (Chapter 9), calibrating the business cycle (Chapter 10), inflation targeting, the lender of last resort, and whether there is a zero lower bound on nominal interest rates (Chapter 14), and supply-side economics (Chapter 15).
- *In Touch with Data and Research.* These boxes give the reader further insight into new developments in economic research as well as a guide to keeping abreast of new developments in the economy. Research topics in these boxes include discussions of biases in inflation measurement (Chapter 2), alternative measures of unemployment (Chapter 3), the link between capital investment and the stock market (Chapter 4), flows of U.S. dollars abroad (Chapter 7), DSGE models and the classical–Keynesian debate (Chapter 10), the Lucas critique (Chapter 12), and the impact on the economy of fiscal stimulus packages (Chapter 15). Keeping abreast of the economy requires an understanding of what data are available, as well as their strengths and shortcomings. We

provide a series of boxes to show where to find key macroeconomic data—such as labor market data (Chapter 3), balance of payments data (Chapter 5), and exchange rates (Chapter 13)—and how to interpret them.

Learning Features

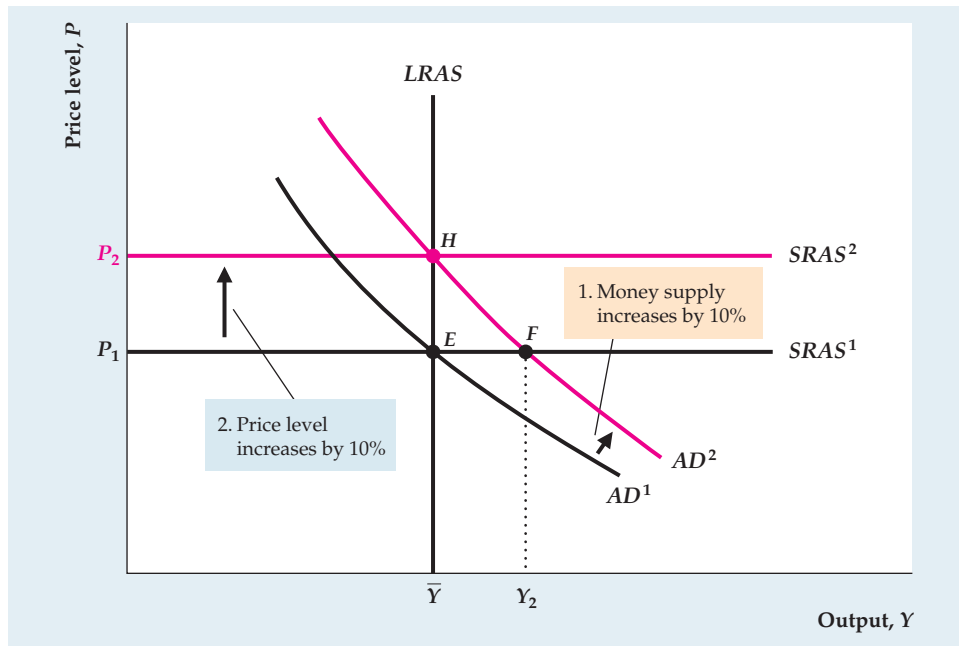
The following features of this book aim to help students understand, apply, and retain important concepts:

- *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 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. 128, or the *AD–AS* diagram, p. 378) and define and describe its elements in words and, where appropriate, equations. We then analyze what the graph reveals and discuss the factors that shift the curves in the graph.
- *Summary tables.* Throughout the book, summary tables bring together the main results of an analysis and reduce the 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 problems, which have numerical solutions and are especially useful for checking students’ understanding of basic relationships and concepts; analytical problems, which ask students to use or extend a theory qualitatively; and empirical problems that direct students to use data from the FRED database of the Federal Reserve Bank of St. Louis and allow them to see for themselves how well theory explains real-world data. Answers to these problems (except the empirical problems, the answers to which change over time) appear in the *Instructor’s Manual*. All end-of-chapter Review Questions, Numerical Problems, and most Analytical Problems can be assigned in and automatically graded by MyEconLab.

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 and to the right from AD^1 to AD^2 . The points on the new AD curve are those for which the price level is 10% higher at each level of output demanded, because 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 full-employment level. In the new long-run equilibrium at point H , output is unchanged at \bar{Y} , and the price level P_2 is 10% higher than the initial price level P_1 . Thus money is neutral in the long run.



- *Worked numerical problems at the end of selected chapters.* The IS-LM/AD-AS model is the analytic centerpiece of Parts 3 and 4 of the book. In addition to providing algebraic descriptions of this model in appendixes at the end of selected chapters in Parts 3 and 4, separate appendixes illustrate worked-out numerical problems using this model.
- *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 (boldface 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.

MyEconLab

MyEconLab is a powerful assessment and tutorial system that works hand in hand with *Macroeconomics*. MyEconLab includes comprehensive homework, quiz, test, and tutorial options, allowing students to test their knowledge and instructors to manage all assessment needs in one program. Students and instructors can register, create, and access all of their MyLab courses, regardless of discipline, from one convenient online location: www.pearsonmylab.com.

Key innovations in the MyEconLab course for *Macroeconomics*, ninth edition, include the following resources for students and instructors:

- *Pearson eText*—The Pearson eText gives students access to their textbook anytime, anywhere. MyEconLab with Pearson eText combines digital resources that illuminate content with accessible self-assessment tools to provide students with a comprehensive learning experience—all in one place.



- **MyEconLab Videos**—Key figures and diagrams from the textbook are presented in step-by-step animations with audio explanations of the action.
- **Web Links**—A Web Links section at the end of each chapter in the enhanced eText includes links to videos of Ben Bernanke, blog entries covering trending economic topics, and additional resources from other Economists.
- **Math Review Exercises in MyEconLab**—MyEconLab now offers a rich array of assignable exercises covering fundamental math concepts geared specifically to principles and intermediate economics students. Aimed at increasing student confidence and success, our new math skills review Chapter R is accessible from the assignment manager and contains more than 150 graphing, algebra, and calculus exercises for homework, quiz, and test use. Offering economics students warm-up math assignments, math remediation, or math exercises as part of any content assignment has never been easier!
- **Real-time Data Analysis Exercises**—Using current macro data to help students understand the impact of changes in economic variables, Real-Time Data Analysis Exercises communicate directly with the Federal Reserve Bank of St. Louis’s FRED® site and update as new data are available.
- **Practice**—Algorithmically generated homework and study plan exercises with instant feedback ensure varied and productive practice, helping students improve their understanding and prepare for quizzes and tests. Draw-graph exercises encourage students to practice the language of economics.
- **Current News Exercises** provide a turn-key way to assign gradable news-based exercises in MyEconLab. Every week, Pearson scours the news, finds a current article appropriate for the macroeconomics course, creates an exercise around this news article, and then automatically adds it to MyEconLab. Assigning and grading current news-based exercises that deal with the latest macro events and policy issues has never been more convenient.
- **Learning Resources**—Personalized learning aids such as Help Me Solve This problem walkthroughs, Teach Me explanations of the underlying concept, and figure Animations provide on-demand help when students need it most.
- **Study Plan**—Shows students sections to study next, gives easy access to practice problems, and provides an automatically generated quiz to prove mastery of the course material.
- **Digital Interactives**—Focused on a single core topic and organized in progressive levels, each interactive immerses students in an assignable activity. Instructors have the flexibility to utilize this feature in either assignment or presentation mode. Digital Interactives are also engaging lecture tools for traditional, online, and hybrid courses, many incorporating real-time data, data displays, and analysis tools for rich classroom discussions.
- **Learning Catalytics**—Learning Catalytics™ is a “bring your own device” student engagement, assessment, and classroom intelligence system that lets learners use their smartphone, tablet, or laptop to participate in and stay engaged in lecture. It allows instructors to generate classroom discussion, guides lectures, and promotes peer-to-peer learning with real-time analytics. Now students can use any device to interact in the classroom, engage with content, and even draw and share graphs. Instructors can divide classes into pairs or groups based on learners’ response patterns, and learners with greater proficiency help motivate other learners while allowing instructors time to provide individualized and focused attention to learners who will benefit from it.

- *Experiments in MyEconLab*—Flexible, easy to assign, and available in Single and Multiplayer versions, the Experiments in MyEconLab make learning fun and engaging.
- *Reporting Dashboard*—View, analyze, and report learning outcomes clearly and easily. Available via the Gradebook and fully mobile-ready, the Reporting Dashboard presents student performance data at the class, section, and program levels in an accessible, visual manner.
- *LMS Integration*—Link from any LMS platform to access assignments, rosters, and resources, and synchronize MyLab grades with your LMS gradebook. For students, new direct, single sign-on provides access to all the personalized learning MyLab resources that make studying more efficient and effective.
- *Mobile Ready*—Students and instructors can access multimedia resources and complete assessments right at their fingertips, on any mobile device.

For more information, visit www.myeconlab.com.

Additional Supplementary Resources

A full range of additional 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 *Instructor's Manual* offers guidance for instructors on using the text, solutions to all end-of-chapter problems in the book (except the empirical questions), and suggested topics for class discussion.
- The *Test Item File* contains a generous selection of multiple-choice questions and problems, all with answers. All questions and problems are also available in TestGen.
- *PowerPoint Lectures* provide slides for all the basic text material, including all tables and figures from the textbook.

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Introduction to Macroeconomics

1.1 What Macroeconomics Is About

Summarize the primary issues addressed in macroeconomics.

Learning Objectives

- 1.1 Summarize the primary issues addressed in macroeconomics.
- 1.2 Describe the activities and objectives of macroeconomists.
- 1.3 Differentiate between the classical and Keynesian approaches to macroeconomics.

Macroeconomics is the study of the structure and performance of national economies and of the policies that governments use to try to affect economic performance. The issues that macroeconomists address include the following:

- *What determines a nation's long-run economic growth?* In 1870, income per capita was smaller in Norway than in Argentina. But today, income per capita is almost three times as high in Norway as in Argentina. Why do some nations' economies grow quickly, providing their citizens with rapidly improving living standards, whereas other nations' economies are relatively stagnant?
- *What causes a nation's economic activity to fluctuate?* The 1990s exhibited the longest period of uninterrupted economic growth in U.S. economic history, but economic performance in the 2000s was much weaker. A mild recession in 2001 was followed by a weak recovery that lasted only until December 2007. The recession that began at the end of 2007 was worsened by the financial crisis in 2008, which contributed to a sharp decline in output at the end of 2008 and in early 2009. Why do economies sometimes experience sharp short-run fluctuations, lurching between periods of prosperity and periods of hard times?
- *What causes unemployment?* During the 1930s, one-quarter of the work force in the United States was unemployed. A decade later, during World War II, less than 2% of the work force was unemployed. Why does unemployment sometimes reach very high levels? Why, even during times of relative prosperity, is a significant fraction of the work force unemployed?
- *What causes prices to rise?* The rate of inflation in the United States crept steadily upward during the 1970s, and exceeded 10% per year in the early 1980s, before dropping to less than 4% per year in the mid 1980s and dropping even further to less than 2% per year in the late 1990s. Germany's inflation experience has been much more extreme: Although Germany has earned a reputation for low inflation in recent decades, following its defeat in World War I, Germany experienced an 18-month period (July 1922–December 1923) during which prices rose by a factor of several billion! What causes inflation, and what can be done about it?

- *How does being part of a global economic system affect nations' economies?* In the late 1990s, the U.S. economy was the engine of worldwide economic growth. From 2007 to 2009, when the U.S. economy fell into a deep decline, most of the rest of the world followed. How do economic links among nations, such as international trade and borrowing, affect the performance of individual economies and the world economy as a whole?
- *Can government policies be used to improve a nation's economic performance?* In the 1980s and 1990s, the U.S. economy's output, unemployment rate, and inflation rate fluctuated much less than in the 1960s and 1970s. Some economists credit good government policy for the improvement in economic performance. In the financial crisis of 2008, the Federal Reserve and the federal government used extraordinary measures to keep banks and other financial institutions from failing. But some economists criticized these measures for going too far in trying to stabilize the economy, at the expense of creating incentives for increased risk taking by financial firms. Other economists criticized the Federal Reserve for not going far enough because the unemployment rate remained persistently high for years after the end of the recession in 2009. How should economic policy be conducted to keep the economy as prosperous and stable as possible?

Macroeconomics seeks to offer answers to such questions, which are of great practical importance and are constantly debated by politicians, the press, and the public. In the rest of this section, we consider these key macroeconomic issues in more detail.

Long-Run Economic Growth

If you have ever traveled in a developing country, you could not help but observe the difference in living standards relative to those of countries such as the United States. The problems of inadequate food, shelter, and health care experienced by the poorest citizens of rich nations often represent the average situation for the people of a developing country. From a macroeconomic perspective, the difference between rich nations and developing nations may be summarized by saying that rich nations have at some point in their history experienced extended periods of rapid economic growth but that the poorer nations either have never experienced sustained growth or have had periods of growth offset by periods of economic decline.

Figure 1.1 summarizes the growth in output of the U.S. economy since 1869.¹ The record is an impressive one: Over the past 145 years, the annual output of U.S. goods and services has increased by more than 140 times. The performance of the U.S. economy is not unique, however; other industrial nations have had similar, and in some cases higher, rates of growth over the same period of time. This massive increase in the output of industrial economies is one of the central facts of modern history and has had enormous political, military, social, and even cultural implications.

In part, the long-term growth of the U.S. economy is the result of a rising population, which has meant a steady increase in the number of available workers. But another significant factor is the increase in the amount of output that can be produced

¹Output is measured in Fig. 1.1 by two very similar concepts, real gross national product (real GNP) prior to 1929 and real gross domestic product (real GDP) since 1929, both of which measure the inflation-adjusted amount of production in each year. We discuss the measurement of output in detail in Chapter 2.