GLENN

HUBBARD

ANTHONY PATRICK

O'BRIEN

Economics

EIGHTH EDITION

Economics

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Economics

Eighth Edition

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For Constance, Raph, and Will
—Glenn Hubbard

For Cindy, Matthew, Andrew, and Daniel
—Anthony Patrick O'Brien

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ABOUT THE **AUTHORS**

Glenn Hubbard, policymaker, professor, and researcher. Glenn Hubbard is dean emeritus and Russell L. Carson Professor of Finance and Economics in the Graduate School of Business at Columbia University and professor of economics in Columbia's Faculty of Arts and Sciences. He is also a research associate of the National Bureau of Economic Research and a director of Automatic Data Processing, Black Rock Fixed-Income Funds, and MetLife. He received a PhD in economics from Harvard University in 1983. From 2001 to 2003, he served as chair of the White House Council of Economic Advisers and chair of the OECD Economic Policy Committee, and from 1991 to 1993, he was deputy assistant secretary of the U.S. Treasury Department. He currently serves as co-chair of the nonpartisan Committee on Capital Markets Regulation. Hubbard's fields of specialization are public economics, financial markets and institutions, corporate finance, macroeconomics, industrial organization, and public policy. He is the author of more than 100 articles in leading journals, including *American Economic Review, Brookings Papers on Economic Activity, Journal of Finance, Journal of Financial Economics, Journal of Money, Credit, and Banking, Journal of Political Economy, Journal of Public Economics, Quarterly Journal of Economics, RAND Journal of Economics,* and *Review of Economics and Statistics*. His research has been supported by grants from the National Science Foundation, the National Bureau of Economic Research, and numerous private foundations.

Tony O'Brien, award-winning professor and researcher. Anthony Patrick O'Brien is a professor of economics at Lehigh University. He received a PhD from the University of California, Berkeley, in 1987. He has taught principles of economics for more than 20 years, in both large sections and small honors classes. He received the Lehigh University Award for Distinguished Teaching. He was formerly the director of the Diamond Center for Economic Education and was named a Dana Foundation Faculty Fellow and Lehigh Class of 1961 Professor of Economics. He has been a visiting professor at the University of California, Santa Barbara, and the Graduate School of Industrial Administration at Carnegie Mellon University. O'Brien's research has dealt with issues such as the evolution of the U.S. automobile industry, the sources of U.S. economic competitiveness, the development of U.S. trade policy, the causes of the Great Depression, and the causes of black–white income differences. His research has been published in leading journals, including *American Economic Review, Quarterly Journal of Economics, Journal of Money, Credit, and Banking, Industrial Relations, Journal of Economic History*, and *Explorations in Economic History*. His research has been supported by grants from government agencies and private foundations.

BRIEF **CONTENTS**

* Online appendices can be found within **MyLab Economics** or within an associated eText.

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CONTENTS

* These end-of-chapter resource materials repeat in all chapters. Select chapters also include Real-Time Data Exercises. Students can complete all questions, problems, and exercises in MyLab Economics.

PART 4 Microeconomic Foundations: Consumers and Firms

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PREFACE

Our approach in this new edition remains what it was in the first edition: to provide students and instructors with a text that delivers complete coverage of economic topics using many real-world examples. Our goal from the beginning has been to teach economics in a "widget-free" way by using real-world business and policy examples.

Much has happened in the U.S. and world economies since we prepared the previous edition, including the longest economic expansion in the history of the U.S. economy, the first significant international trade war since the 1930s, and record peacetime federal budget deficits. We have incorporated many of these developments in the new real-world examples and policy discussions in this edition and also in the extensive digital resources, which include:

- More than 130 author-created application videos of the chapter openers and *Apply the Concept* features
- More than 250 figure animation videos
- More than 20 *Solved Problem* whiteboard videos

New to This Edition

Here is an overview of the revisions, followed by a more detailed description of the changes in each chapter.

Overview of Changes

- All the chapter openers feature either new companies or have updated information.
- Chapters 1–4 include new *An Inside Look* features to help students apply economic thinking to current events and policy debates as they are presented in news articles.
- There are 27 new *Apply the Concept* features and videos to help students tie economic concepts to current events and policy issues. The *Apply the Concept* features and videos that were retained from the previous edition have been updated.
- There are 8 new *Solved Problems*, and many of those retained from the previous edition have been updated. The *Solved Problem* feature uses real-world products, events, and policies to help students break down and answer economic problems step by step. New to this edition are whiteboard videos of select *Solved Problems* that bring these real-world problems to life with audio, background photos, and step-by-step construction of graphs and tables.
- All the figures and tables and their animations have been updated with the latest data available.
- Many of the end-of-chapter *Problems and Applications* have been updated or replaced. In most chapters, one or two problems include graphs or tables for students to analyze. Select chapters have a category titled *Real-Time Data Exercises*, and we have updated some of those exercises.
- Based on marketing feedback and our analysis of instructor assignments, we have made the following organizational changes to the print version of the book:
    - We cut the income statement and balance sheet material from the appendix to Chapter 8 (the discussion of present value was retained); the isoquant and isocost line material from the appendix to Chapter 11; and the gold standard and Bretton Woods material from the appendix to Chapter 30 (now Chapter 28). All of this material is still available within MyLab Economics for instructors and students who wish to use it.

- We removed Chapter 16, "Pricing Strategy," but retained the coverage of price discrimination and integrated it into Chapter 15, "Monopoly and Antitrust."
- We streamlined and merged Chapter 29, "Macroeconomics in an Open Economy," and Chapter 30, "The International Financial System" into one chapter, Chapter 28, "Macroeconomics in an Open Economy"

New Content and Features by Chapter

Here is a description of key changes by chapter.

Chapter 1, "Economics: Foundations and Models," opens with a new discussion of how the Trump administration's tariff policy may affect Apple and other firms. *An Inside Look* at the end of the chapter presents a news article and analysis of whether those tariffs are bringing manufacturing jobs back home or primarily raising prices for U.S. consumers. New *Solved Problem 1.1* analyzes the marginal benefit and marginal cost of the U.S. Postal Service delivering packages for Amazon. A new *Apply the Concept* discusses whether a congressional bill aimed at increasing the pay of low-wage workers could backfire.

Chapter 2, "Trade-offs, Comparative Advantage, and the Market System," opens with an updated discussion of the resource allocation decisions Elon Musk and managers at Tesla Motors face. *An Inside Look* at the end of the chapter discusses the plans of Porsche's parent company, Volkswagen, to create a full line of electric automobiles. A new *Apply the Concept* discusses the recent debates about socialism.

Chapter 3, "Where Prices Come From: The Interaction of Demand and Supply," opens with a new discussion of Nike and the highly competitive market for athletic shoes. We use that market to develop the demand and supply model. *An Inside Look* at the end of the chapter examines plans by BASF and Reebok to release 3D printed shoes. There are three new *Apply the Concepts*: "Forecasting the Demand for Athletic Shoes," "Fracking, the U.S. Oil Boom, and Expected Oil Prices," and "Higher Demand for Cobalt—But Lower Prices?" New *Solved Problem 3.4* examines how we can predict changes in the price and quantity of merino wool.

Chapter 4, "Economic Efficiency, Government Price Setting, and Taxes," opens with an updated discussion about the economic link between food riots in Venezuela and the rise in popularity of Uber in the United States. At the end of the chapter, *An Inside Look* examines why Uber is suing New York City over its limit on the number of cars ride-hailing companies are allowed. New *Solved Problem 4.4* examines who bears the burden of the Seattle beverage tax.

Chapter 5, "Externalities, Environmental Policy, and Public Goods," opens with a new discussion of NextEra Energy, which produces more electricity using solar and wind power than any other company in the world. A new *Apply the Concept* discusses whether the United States needs a Green New Deal. New *Solved Problem 5.3* examines the role of congestion fees in addressing traffic problems in Manhattan.

Chapter 6, "Elasticity: The Responsiveness of Demand and Supply," opens with an updated discussion of how to evaluate the success of the soda taxes enacted by several cities, including San Francisco and Philadelphia, in improving people's health and increasing tax revenue. New *Solved Problem 6.3* covers the possible effect of a city policy to raise the fine for drivers parked at expired meters. A new *Apply the Concept* discusses the price elasticity of demand for the Amazon and Netflix movie streaming services.

Chapter 7, "The Economics of Health Care," opens with a new discussion of whether private insurance companies such as Blue Cross and Blue Shield should be eliminated in favor of a single-payer government health system. New Table 7.2 summarizes and compares the essential aspects of the health care systems in Canada, Japan, and the United Kingdom. A new *Apply the Concept* discusses the debate over "Medicare for All."

Chapter 8, "Firms, the Stock Market, and Corporate Governance," opens with a new discussion of Lyft's initial public offering. A new *Apply the Concept* explores why someone would want to buy Lyft stock, given the company's financial losses. New Table 8.1 summarizes the historical long-run returns from investing in different assets. Coverage of recent issues in corporate governance policy, formerly in Section 8.4, has been streamlined and merged into Section 8.3. The appendix still covers present value, but the coverage of income statements and balance sheets now appears as an online appendix.

Chapter 9, "Comparative Advantage and the Gains from International Trade," opens with a discussion of how the 2019 Trump Administration tariffs on imports from China affected Whirlpool, a home appliance maker based in Benton Harbor, Michigan. A new *Apply the Concept* analyzes who gains and who loses from tariffs on imports from China.

Chapter 10, "Consumer Choice and Behavioral Economics," opens with a discussion of the problems that led Sears to file for bankruptcy and close all of its stores. A new *Apply the Concept* discusses how Taylor Swift avoided ticket scalping problems during her 2018 *Reputation* concert tour. Another new *Apply the Concept* illustrates sunk costs for the San Francisco Giants baseball team. A new *Don't Let This Happen to You* covers the potential confusion between the income effect of a price change and the effect of an increase in money income.

Chapter 11, "Technology, Production, and Costs," opens with a new discussion of fracking and its effect on the world market for oil. A new *Apply the Concept* examines the use of robots and drones in the oil industry. New *Solved Problem 11.7* examines the long-run average cost curves for fracking companies. The appendix, "Using Isoquants and Isocost Lines to Understand Production and Cost," now appears as an online appendix.

Chapter 12, "Firms in Perfectly Competitive Markets," opens with an updated discussion of the difficulty farmers have making an economic profit selling cage-free eggs. There are two new *Apply the Concepts*: "What Does 'Break Even' Mean in the Oil Fields?" and "The Winding Path to Long-Run Equilibrium in the Egg Market."

Chapter 13, "Monopolistic Competition: The Competitive Model in a More Realistic Setting," opens with a new discussion of the rise of third wave coffeehouses; a new *Apply the Concept* explores whether third wave coffeehouses can remain profitable; and new *Solved Problem 13.3* analyzes the long-run effects of Amazon Go's "Just Walk Out" technology.

Chapter 14, "Oligopoly: Firms in Less Competitive Markets," includes two new *Apply the Concepts:* "Are Unlicensed Yoga Instructors a Menace to Public Health?" and "Do Large Firms Live Forever?"

Chapter 15, "Monopoly and Antitrust Policy," opens with a new discussion of the U.S. Postal Service (USPS) and why Congress gave it a monopoly on delivery of first-class mail. A new *Apply the Concept* discusses how package delivery competitors such as FedEx and UPS compete with the USPS. Another new *Apply the Concept* considers whether the Justice Department should break up Google, Amazon, and Facebook. New Table 15.2 summarizes how airlines maximize profit by charging different ticket prices to business travelers and leisure travelers. We have cut the seventh edition's Chapter 16, "Pricing Strategy," but retained its coverage of price discrimination and moved it here into Chapter 15 as Section 15.5, "Price Discrimination."

Chapter 16, "The Markets for Labor and Other Factors of Production," opens with a new discussion of how robotic technology is being used in three areas: in restaurants to make hamburgers, in Amazon Go convenience stores, and at a mining company in Australia.

Chapter 17, "Public Choice, Taxes, and the Distribution of Income," opens with an updated discussion of the Tax Cut and Jobs Act of 2017. A new *Apply the Concept* explores whether the federal government should tax wealth and whether such a tax is economically efficient.

Chapter 18, "GDP: Measuring Total Production and Income," opens with a new discussion of how General Motors and other car companies deal with the business cycle. A new *Apply the Concept* discusses whether gross domestic income is a more reliable measure of total production than gross domestic product.

Chapter 19, "Unemployment and Inflation," opens with a new discussion of how Wisconsin-based Stoughton Trailers dealt with the challenge of finding workers during a period of very low unemployment. A new *Apply the Concept* discusses whether advances in information technology permanently increase structural unemployment. A new section covers trends in labor force participation rates.

Chapter 20, "Economic Growth, the Financial System, and Business Cycles," begins with a new opener that discusses how millennials (people born between 1981 and 1996) have experienced both technological change and the effects of the business cycle. New Figure 20.9 and surrounding text also cover this topic.

Chapter 21, "Long-Run Economic Growth: Sources and Policies," opens with a new discussion of the role of technological change and creative destruction in lifting living standards. A new *Apply the Concept* explores the economic growth of sub-Saharan Africa and projections of future growth for that region.

Chapter 22, "Aggregate Expenditure and Output in the Short Run," opens with a new opener about how the business cycle affects manufacturers of recreational vehicles (RVs), such as Airstream, many of which are based in Elkhart, Indiana. A new section covers the volatility of consumer spending on durables, and new Table 22.1 summarizes the relationship between actual investment and planned investment.

Chapter 23, "Aggregate Demand and Aggregate Supply Analysis," opens with a new discussion of the effect of the business cycle on General Motors and other auto manufacturers. A new *Apply the Concept* discusses whether there really is a business cycle.

Chapter 24, "Money, Banks, and the Federal Reserve System," opens with a new discussion of the Venmo app, which allows people to send money to friends using their smartphones.

Chapter 25, "Monetary Policy," opens with a new discussion of the organization of the Federal Reserve and Fed Chair Jerome Powell's relationship with President Trump in 2019. Coverage of the financial crisis of 2007–2009 has been streamlined.

Chapter 26, "Fiscal Policy," opens with a new discussion of the effects of fiscal policy on the growth rate of real GDP. A new *Apply the Concept* discusses modern monetary theory (MMT) and whether policymakers should worry about the national debt. New *Solved Problem 26.6* explores how the Italian government confronts its budget deficit.

Chapter 27, "Inflation, Unemployment, and Federal Reserve Policy," opens with a new discussion of the Fed's challenge of meeting its dual mandate of low inflation and unemployment while dealing with political pressure from President Trump. A new *Apply the Concept* considers whether the Phillips curve has disappeared. There are two new sections in the chapter: One covers the recent debates about the future of the Federal Reserve, and another discusses whether the Fed should be independent of Congress and the president.

Chapter 28, "Macroeconomics in an Open Economy," includes streamlined and updated content from two seventh edition chapters: Chapter 29 of the same title and Chapter 30, "The International Financial System." The appendix on the gold standard and Bretton Woods that appeared in the seventh edition Chapter 30 is now an online appendix.

To make room for new content, we cut 21 *Apply the Concept*s and 9 *Solved Problem*s from the previous edition and transferred some of them to the book's *Instructor's Manual*, where they are available for instructors who wish to continue using them. As noted earlier, as a result of market feedback and analysis of instructor assignments we moved three appendices to appear within MyLab Economics, cut one chapter, and streamlined and merged two chapters.

Solving Teaching and Learning Challenges

Many students who take a principles of economics course have difficulty seeing the relevance of key concepts such as opportunity cost, trade-offs, scarcity, and demand and supply to their lives and their careers. This reduces the willingness of some students to prepare for class and to be engaged during class. We address this challenge with contextual learning, a modern organization of content, engaging pedagogy, and an extensive selection of digital assets.

The Foundation: Contextual Learning and Modern Organization

We believe a course is successful if students can apply what they have learned to both their personal lives and their careers and if they have developed the analytical skills to understand what they see in the media. That's why we explain economic concepts by using many real-world business examples and applications in the chapter openers, graphs, *Apply the Concept* features, *An Inside Look* features, and end-of-chapter problems. This approach helps majors from all disciplines become educated consumers, voters, and citizens. In addition to our widget-free approach, we have a modern organization and place interesting policy topics early in the book to pique student interest.

Microeconomics

We are convinced that students learn to apply economic principles best if they are taught in a familiar context. Whether they become artists, social workers, business managers, engineers, bankers, or government employees, students benefit from understanding economics. We therefore use many diverse real-world business and policy examples to illustrate economic concepts. Here are a few highlights of our approach to microeconomics:

- **A strong set of introductory chapters.** The introductory chapters provide students with a solid foundation in the basics. We emphasize the key ideas of marginal analysis and economic efficiency. In Chapter 4, "Economic Efficiency, Government Price Setting, and Taxes," we use the concepts of consumer surplus and producer surplus to measure the economic effects of price ceilings and price floors as they relate to the familiar examples of rental properties and the minimum wage. (We revisit consumer surplus and producer surplus in Chapter 9, "Comparative Advantage and the Gains from International Trade," where we analyze government policies that affect trade, including the trade war that began in 2018; and in Chapter 15, "Monopoly and Antitrust Policy," where we analyze price discrimination and the effect of market power on economic efficiency.) In Chapter 8, "Firms, the Stock Market, and Corporate Governance," we provide students with a basic understanding of how firms are organized, raise funds, and provide information to investors. We also illustrate how in a market system entrepreneurs meet consumer wants and efficiently organize production.
- **Early coverage of policy issues.** To expose students to policy issues early in the course, we discuss trade policy and tariffs in Chapter 1, "Economics: Foundations and Models"; rent control and the minimum wage in Chapter 4, "Economic Efficiency, Government Price Setting, and Taxes"; air pollution, global warming, and public goods in Chapter 5,

"Externalities, Environmental Policy, and Public Goods"; government policy toward soda and other sweetened beverages in Chapter 6, "Elasticity: The Responsiveness of Demand and Supply"; and health care policy in Chapter 7, "The Economics of Health Care."

- **Complete coverage of monopolistic competition.** We devote a full chapter, Chapter 13, "Monopolistic Competition: The Competitive Model in a More Realistic Setting," to monopolistic competition prior to covering oligopoly and monopoly in Chapter 14, "Oligopoly: Firms in Less Competitive Markets," and Chapter 15, "Monopoly and Antitrust Policy." Although many instructors cover monopolistic competition very briefly or dispense with it entirely, we think it is an overlooked tool for reinforcing the basic message of how markets work in a context that is much more familiar to students than are the agricultural examples that dominate discussions of perfect competition. We use the monopolistic competition model to introduce the downward-sloping demand curve material usually introduced in a monopoly chapter. This approach helps students grasp the important point that nearly all firms—not just monopolies—face downward-sloping demand curves. Covering monopolistic competition directly after perfect competition also allows for early discussion of topics such as brand management and sources of competitive success. Nevertheless, we wrote the chapter so that instructors who prefer to cover monopoly (Chapter 15, "Monopoly and Antitrust Policy") directly after perfect competition (Chapter 12, "Firms in Perfectly Competitive Markets") can do so without loss of continuity.
- **Extensive, realistic game theory coverage.** In Chapter 14, "Oligopoly: Firms in Less Competitive Markets," we use game theory to analyze competition among oligopolists. Game theory helps students understand how companies with market power make strategic decisions in many competitive situations. We use familiar companies such as Apple, Amazon, Dell, Spotify, and Walmart in our game theory applications.

Macroeconomics

Students come to study macroeconomics with a strong interest in understanding events and developments in the economy. We capture that interest and develop students' economic intuition and understanding by presenting macroeconomics in a way that is modern and based in the real world of business and economic policy. And we believe we achieve this presentation without making the analysis more difficult. We avoid the recent trend of using simplified versions of intermediate models, which are often more detailed and complex than what students need to understand the basic macroeconomic issues. Instead, we use a more realistic version of the familiar aggregate demand and aggregate supply model to analyze short-run fluctuations and monetary and fiscal policy. We also avoid the "dueling schools of thought" approach often used to teach macroeconomics at the principles level. We emphasize the many areas of macroeconomics where most economists agree. And we present throughout real business and policy situations to develop students' intuition. Here are a few highlights of our approach to macroeconomics:

- **A careful discussion of macro statistics.** Many students pay some attention to the financial news and know that the release of statistics by federal agencies can cause movements in stock and bond prices. A background in macroeconomic statistics helps clarify some of the policy issues encountered in later chapters. In Chapter 18, "GDP: Measuring Total Production and Income," and Chapter 19, "Unemployment and Inflation," we provide students with an understanding of the uses and potential shortcomings of the key macroeconomic statistics, without getting bogged down in the minutiae of how the statistics are constructed. For instance, we discuss the important differences between the payroll survey and the household survey for understanding conditions in the labor market. We explain why financial markets react more strongly to news from the payroll survey. We provide a discussion of the employment–population ratio, which is not covered in some other texts but which many economists regard as a key measure of labor market performance.

- **Early coverage of long-run topics.** We place key macroeconomic issues in their long-run context in Chapter 20, "Economic Growth, the Financial System, and Business Cycles," and Chapter 21, "Long-Run Economic Growth: Sources and Policies." Chapter 20 puts the business cycle in the context of underlying long-run growth and discusses what actually happens during the phases of the business cycle. We believe this material is important if students are to have the understanding of business cycles they will need to interpret economic events; this material is often discussed only briefly or omitted entirely in other books. We know that many instructors prefer to have a short-run orientation to their macro courses, with a strong emphasis on policy. Accordingly, we have structured Chapter 20 so that its discussion of long-run growth is sufficient for instructors who want to move quickly to short-run analysis. Chapter 21 uses a simple neoclassical growth model to explain important growth issues. We apply the model to topics such as the decline of the Soviet economy, the long-run prospects for growth in China, the implications of the slowdown in productivity growth for the U.S. economy, and the failure of many developing countries to sustain high growth rates. We also challenge students with the discussion "Why Isn't the Whole World Rich?"
- **A dynamic model of aggregate demand and aggregate supply.** We take a fresh approach to the standard aggregate demand and aggregate supply (*AD–AS*) model in Chapter 23, "Aggregate Demand and Aggregate Supply Analysis." We realize there is no good, simple alternative to using the *AD–AS* model when explaining movements in the price level and in real GDP. But we know that more instructors are dissatisfied with the *AD–AS* model than with any other aspect of the macro principles course. The key problem, of course, is that *AD–AS* is a static model that attempts to account for dynamic changes in real GDP and the price level. Our approach retains the basics of the *AD–AS* model but makes it more accurate and useful by making it more dynamic. We emphasize two points:
  1. Changes in the position of the short-run (upward-sloping) aggregate supply curve depend mainly on the state of expectations of the inflation rate.
  2. The existence of growth in the economy means that the long-run (vertical) aggregate supply curve shifts to the right every year.

  This "dynamic" *AD–AS* model provides students with a more accurate understanding of the causes and consequences of fluctuations in real GDP and the price level. We introduce this model in Chapter 23 and use it to discuss monetary policy in Chapter 25, "Monetary Policy," and fiscal policy in Chapter 26, "Fiscal Policy." The material on dynamic *AD–AS* is presented in self-contained sections in Chapters 23, 25, and 26, so instructors may safely omit the sections on the dynamic *AD–AS* model without any loss in continuity to the discussion of macroeconomic theory and policy.
- **Extensive coverage of monetary policy.** Because of the central role monetary policy plays in the economy and in students' curiosity about business and financial news, we devote two chapters to the topic: Chapter 25, "Monetary Policy," and Chapter 27, "Inflation, Unemployment, and Federal Reserve Policy." We emphasize the issues involved in the Fed's choice of monetary policy targets, and we include coverage of the Taylor rule. We also cover the Fed's new policy tools and the debate over whether the Fed's policies during and after the 2007–2009 financial crisis were consistent with its mandate under the Federal Reserve Act, and recent challenges to the Fed's independence.
- **Coverage of both the demand-side and supply-side effects of fiscal policy.** Our discussion of fiscal policy in Chapter 26, "Fiscal Policy," carefully distinguishes between automatic stabilizers and discretionary fiscal policy. We also provide significant coverage of the supply-side effects of fiscal policy. A new section discusses the requirements for the Trump administration to hit its goal of restoring the long-run annual growth rate of real GDP to 3 percent.

- **A self-contained but thorough discussion of the Keynesian income–expenditure approach.** The Keynesian income–expenditure approach (the "45°-line diagram," or "Keynesian cross") is useful for introducing students to the short-run relationship between spending and production. Many instructors, however, prefer to omit this material. Therefore, we use the 45°-line diagram only in Chapter 22, "Aggregate Expenditure and Output in the Short Run." The discussions of monetary and fiscal policy in Chapter 25, "Monetary Policy," and Chapter 26, "Fiscal Policy," respectively, use only the *AD–AS* model, making it possible to omit Chapter 22.
- **Extensive international coverage.** We include two chapters devoted to international topics: Chapter 9, "Comparative Advantage and the Gains from International Trade," and Chapter 28, "Macroeconomics in an Open Economy." Having a good understanding of the international trading and financial systems is essential to understanding the macroeconomy and to satisfying students' curiosity about the economic world around them. In addition to the material in our two international chapters, we weave international comparisons into the narratives of several other chapters, including our discussion of labor market policies in Chapter 27, "Inflation, Unemployment, and Federal Reserve Policy," and central banking in Chapter 24, "Money, Banks, and the Federal Reserve System."
- **Flexible chapter organization.** Because we realize that there are a variety of approaches to teaching principles of macroeconomics, we have structured our chapters for maximum flexibility. For example, our discussion of long-run economic growth in Chapter 20, "Economic Growth, the Financial System, and Business Cycles," makes it possible for instructors to omit the more thorough discussion of these issues in Chapter 21, "Long-Run Economic Growth: Sources and Policies." Our discussion of the Keynesian 45°-line diagram is confined to Chapter 22, "Aggregate Expenditure and Output in the Short Run," so that instructors who do not use this approach can proceed directly to aggregate demand and aggregate supply analysis in Chapter 23, "Aggregate Demand and Aggregate Supply Analysis." While we devote two chapters to monetary policy, the first of these—Chapter 25, "Monetary Policy"—is a self-contained discussion, so instructors may safely omit the material in Chapter 27, "Inflation, Unemployment, and Federal Reserve Policy," if they choose to. Finally, instructors may choose to omit both of the international chapters (Chapter 9, "Comparative Advantage and the Gains from International Trade," and Chapter 28, "Macroeconomics in an Open Economy"), cover just Chapter 9 on international trade, or cover just Chapter 28. Please refer to the flexibility chart on pages P16–P17 of this preface to help select the chapters and order best suited to your classroom needs.

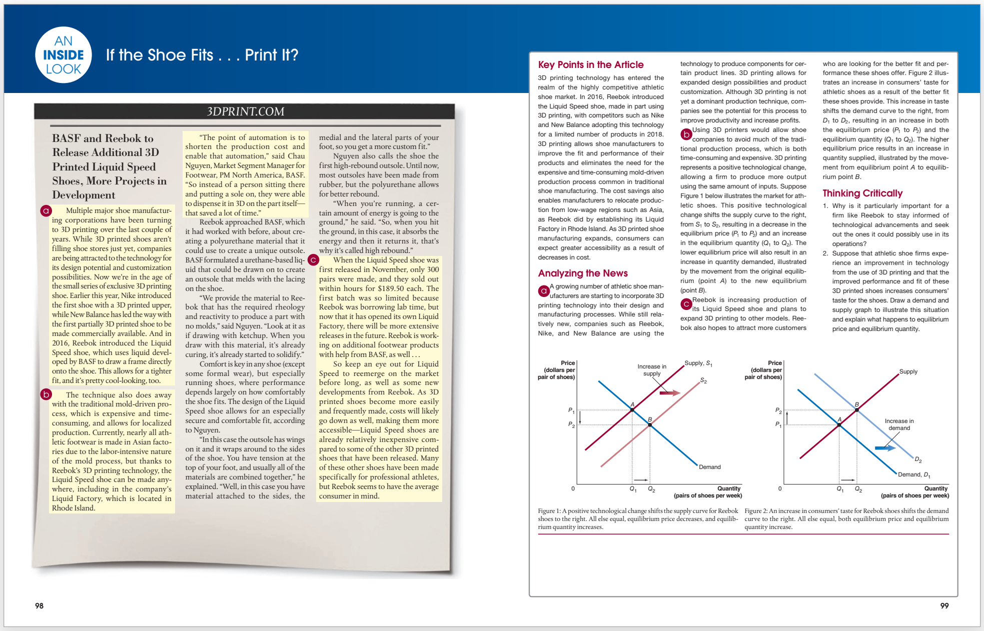
Pedagogy That Emphasizes Real-World Examples, Applications, and Practice

A number of pedagogical features illustrate the relevance of economics to students' everyday lives, help students focus on key concepts, and help them prepare for exams.

Business Cases and *An Inside Look* News Articles

Each chapter-opening case provides a real-world context for learning, sparks students' interest in economics, and helps unify the chapter. The case describes an actual company facing a real situation. The company is integrated in the narrative, graphs, and pedagogical features of the chapter. Some of the chapter openers focus on the role of entrepreneurs in developing new products and bringing them to market. For example, Chapter 2 features Elon Musk of Tesla Motors; Chapter 13 features Emily Mange and Doug Zell, who helped launch "third wave coffee" when they opened Intelligentsia; Chapter 24 features Venmo app founders Andrew Kortina and Iqram Magdon-Ismail; and Chapter 28 features Jeff Bezos of Amazon.

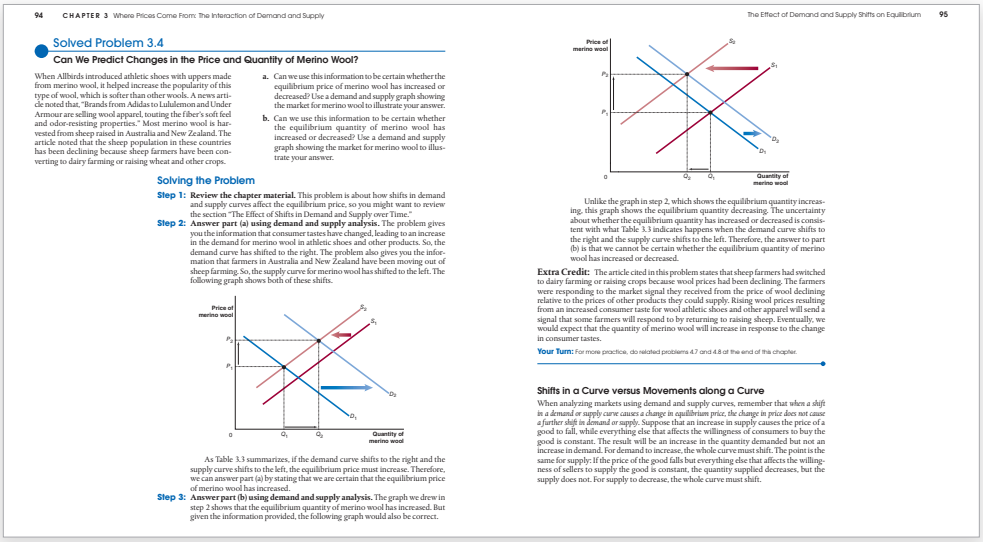
An Inside Look is a two-page feature that shows students how to apply the concepts from the chapter to the analysis of a news article. The feature appears at the end of Chapters 1–4. *An Inside Look* presents an excerpt from an article, analysis of the article, a graph(s), and critical thinking questions.



Solved Problems

Many students have great difficulty handling applied economics problems. We help students overcome this hurdle by including in each chapter two or three worked-out problems that analyze real-world economic issues they hear and read about in the news. Our goals are to keep students focused on the main ideas of each chapter and give them a model for how to solve an economic problem by breaking it down step by step. We tie additional exercises in the end-of-chapter *Problems and Applications* section to every *Solved Problem*. Additional *Solved Problems* appear in the *Instructor's Manuals*. In addition, the Test Banks include problems tied to the *Solved Problems* in the main book.

New to this edition are whiteboard videos of select *Solved Problems* that bring these real-world problems to life with audio, background photos, and step-by-step construction of graphs and tables.



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The Effect of Demand and Supply Shifts on Equilibrium 95

Solved Problem 3.4

Can We Predict Changes in the Price and Quantity of Merino Wool?

When Allbirds introduced athletic shoes with uppers made from merino wool, it helped increase the popularity of this type of wool, which is softer than other wools. A news article noted that, "Brands from Adidas to Lululemon and Under Armour are selling wool apparel, touting the fiber's soft feel and odor-resisting properties." Most merino wool is harvested from sheep raised in Australia and New Zealand. The article noted that the sheep population in these countries has been declining because sheep farmers have been converting to dairy farming or raising wheat and other crops.

a. Can we use this information to be certain whether the equilibrium price of merino wool has increased or decreased? Use a demand and supply graph showing the market for merino wool to illustrate your answer.

b. Can we use this information to be certain whether the equilibrium quantity of merino wool has increased or decreased? Use a demand and supply graph showing the market for merino wool to illustrate your answer.

Solving the Problem

Step 1: **Review the chapter material.** This problem is about how shifts in demand and supply curves affect the equilibrium price, so you might want to review the section "The Effect of Shifts in Demand and Supply over Time."

Step 2: **Answer part (a) using demand and supply analysis.** The problem gives you the information that consumer tastes have changed, leading to an increase in the demand for merino wool in athletic shoes and other products. So, the demand curve has shifted to the right. The problem also gives you the information that farmers in Australia and New Zealand have been moving out of sheep farming. So, the supply curve for merino wool has shifted to the left. The following graph shows both of these shifts.

As Table 3.3 summarizes, if the demand curve shifts to the right and the supply curve shifts to the left, the equilibrium price must increase. Therefore, we can answer part (a) by stating that we are certain that the equilibrium price of merino wool has increased.

Step 3: **Answer part (b) using demand and supply analysis.** The graph we drew in step 2 shows that the equilibrium quantity of merino wool has increased. But given the information provided, the following graph would also be correct.

Unlike the graph in step 2, which shows the equilibrium quantity increasing, this graph shows the equilibrium quantity decreasing. The uncertainty about whether the equilibrium quantity has increased or decreased is consistent with what Table 3.3 indicates happens when the demand curve shifts to the right and the supply curve shifts to the left. Therefore, the answer to part (b) is that we cannot be certain whether the equilibrium quantity of merino wool has increased or decreased.

Extra Credit: The article cited in this problem states that sheep farmers had switched to dairy farming or raising crops because wool prices had been declining. The farmers were responding to the market signal they received from the price of wool declining relative to the prices of other products they could supply. Rising wool prices resulting from an increased consumer taste for wool athletic shoes and other apparel will send a signal that some farmers will respond to by returning to raising sheep. Eventually, we would expect that the quantity of merino wool will increase in response to the change in consumer tastes.

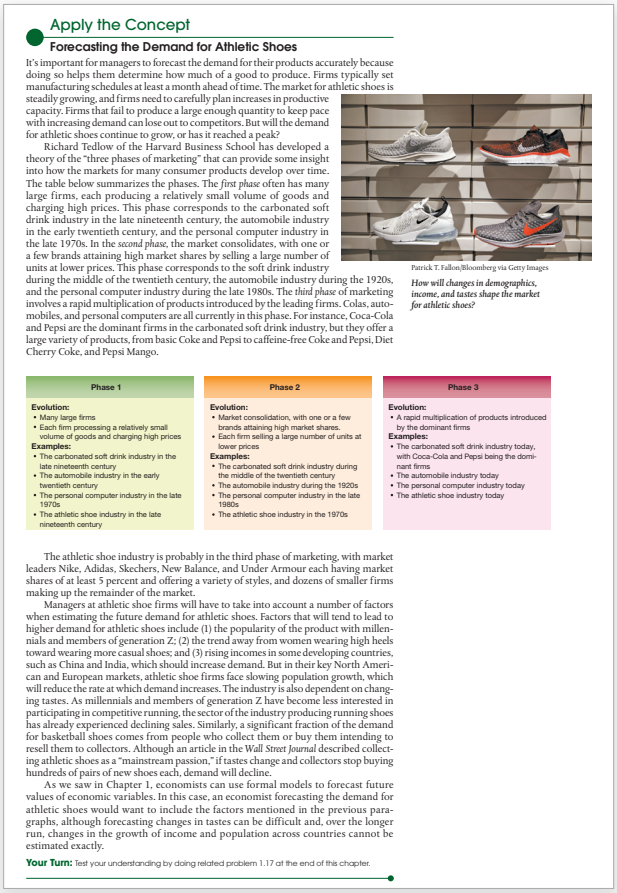
Your Turn: For more practice, do related problems 4.7 and 4.8 at the end of this chapter.

Shifts in a Curve versus Movements along a Curve

When analyzing markets using demand and supply curves, remember that *when a shift in a demand or supply curve causes a change in equilibrium price, the change in price does not cause a further shift in demand or supply.* Suppose that an increase in supply causes the price of a good to fall, while everything else that affects the willingness of consumers to buy the good is constant. The result will be an increase in the quantity demanded but not an increase in demand. For demand to increase, the whole curve must shift. The point is the same for supply: If the price of the good falls but everything else that affects the willingness of sellers to supply the good is constant, the quantity supplied decreases, but the supply does not. For supply to decrease, the whole curve must shift.

Apply the Concept

Each chapter includes two to four *Apply the Concept* features that provide real-world reinforcement of key concepts and help students learn how to interpret what they read on the Web and in newspapers. Most of the 100 *Apply the Concept* features use relevant, stimulating, and provocative news stories focused on businesses and policy issues. One-third of them are new to this edition, and most others have been updated. Several discuss health care and trade, which have been at the forefront of recent policy discussions. Each *Apply the Concept* has at least one supporting end-of-chapter problem to allow students to test their understanding of the topic discussed.



Apply the Concept

Forecasting the Demand for Athletic Shoes

It's important for managers to forecast the demand for their products accurately because doing so helps them determine how much of a good to produce. Firms typically set manufacturing schedules at least a month ahead of time. The market for athletic shoes is steadily growing, and firms need to carefully plan increases in productive capacity. Firms that fail to produce a large enough quantity to keep pace with increasing demand can lose out to competitors. But will the demand for athletic shoes continue to grow, or has it reached a peak?

Richard Tedlow of the Harvard Business School has developed a theory of the "three phases of marketing" that can provide some insight into how the markets for many consumer products develop over time. The table below summarizes the phases. The *first phase* often has many large firms, each producing a relatively small volume of goods and charging high prices. This phase corresponds to the carbonated soft drink industry in the late nineteenth century, the automobile industry in the early twentieth century, and the personal computer industry in the late 1970s. In the *second phase*, the market consolidates, with one or a few brands attaining high market shares by selling a large number of units at lower prices. This phase corresponds to the soft drink industry during the middle of the twentieth century, the automobile industry during the 1920s, and the personal computer industry during the late 1980s. The *third phase* of marketing involves a rapid multiplication of products introduced by the leading firms. Colas, automobiles, and personal computers are all currently in this phase. For instance, Coca-Cola and Pepsi are the dominant firms in the carbonated soft drink industry, but they offer a large variety of products, from basic Coke and Pepsi to caffeine-free Coke and Pepsi, Diet Cherry Coke, and Pepsi Mango.

Patrick T. Fallon/Bloomberg via Getty Images

How will changes in demographics, income, and tastes shape the market for athletic shoes?

Phase 1	Phase 2	Phase 3
Evolution: • Many large firms • Each firm processing a relatively small volume of goods and charging high prices **Examples:** • The carbonated soft drink industry in the late nineteenth century • The automobile industry in the early twentieth century • The personal computer industry in the late 1970s • The athletic shoe industry in the late nineteenth century	**Evolution:** • Market consolidation, with one or a few brands attaining high market shares. • Each firm selling a large number of units at lower prices **Examples:** • The carbonated soft drink industry during the middle of the twentieth century • The automobile industry during the 1920s • The personal computer industry in the late 1980s • The athletic shoe industry in the 1970s	**Evolution:** • A rapid multiplication of products introduced by the dominant firms **Examples:** • The carbonated soft drink industry today, with Coca-Cola and Pepsi being the dominant firms • The automobile industry today • The personal computer industry today • The athletic shoe industry today

The athletic shoe industry is probably in the third phase of marketing, with market leaders Nike, Adidas, Skechers, New Balance, and Under Armour each having market shares of at least 5 percent and offering a variety of styles, and dozens of smaller firms making up the remainder of the market.

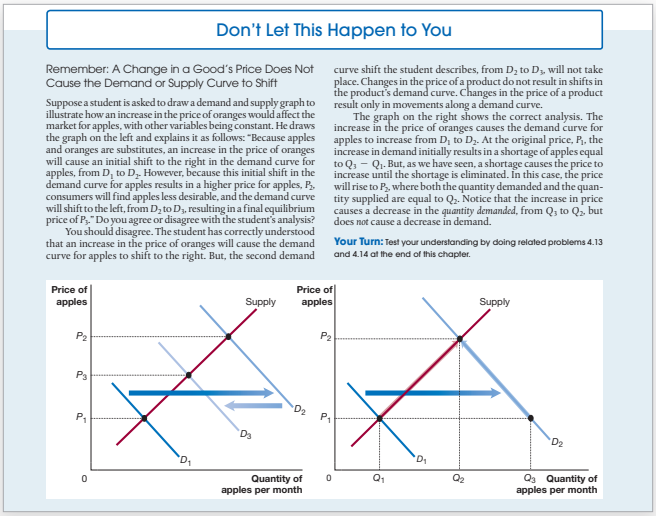
Managers at athletic shoe firms will have to take into account a number of factors when estimating the future demand for athletic shoes. Factors that will tend to lead to higher demand for athletic shoes include (1) the popularity of the product with millennials and members of generation Z; (2) the trend away from women wearing high heels toward wearing more casual shoes; and (3) rising incomes in some developing countries, such as China and India, which should increase demand. But in their key North American and European markets, athletic shoe firms face slowing population growth, which will reduce the rate at which demand increases. The industry is also dependent on changing tastes. As millennials and members of generation Z have become less interested in participating in competitive running, the sector of the industry producing running shoes has already experienced declining sales. Similarly, a significant fraction of the demand for basketball shoes comes from people who collect them or buy them intending to resell them to collectors. Although an article in the *Wall Street Journal* described collecting athletic shoes as a "mainstream passion," if tastes change and collectors stop buying hundreds of pairs of new shoes each, demand will decline.

As we saw in Chapter 1, economists can use formal models to forecast future values of economic variables. In this case, an economist forecasting the demand for athletic shoes would want to include the factors mentioned in the previous paragraphs, although forecasting changes in tastes can be difficult and, over the longer run, changes in the growth of income and population across countries cannot be estimated exactly.

Your Turn: Test your understanding by doing related problem 1.17 at the end of this chapter.

Don't Let This Happen to You

We know from many years of teaching which concepts students find most difficult. We include in each chapter a box feature called *Don't Let This Happen to You* that alerts students to the most common pitfalls in that chapter's material. We follow up with a related question in the end-of-chapter *Problems and Applications* section.



Don't Let This Happen to You

Remember: A Change in a Good's Price Does Not Cause the Demand or Supply Curve to Shift

Suppose a student is asked to draw a demand and supply graph to illustrate how an increase in the price of oranges would affect the market for apples, with other variables being constant. He draws the graph on the left and explains it as follows: "Because apples and oranges are substitutes, an increase in the price of oranges will cause an initial shift to the right in the demand curve for apples, from D_1 to D_2. However, because this initial shift in the demand curve for apples results in a higher price for apples, P_2, consumers will find apples less desirable, and the demand curve will shift to the left, from D_2 to D_3, resulting in a final equilibrium price of P_3." Do you agree or disagree with the student's analysis?

You should disagree. The student has correctly understood that an increase in the price of oranges will cause the demand curve for apples to shift to the right. But, the second demand curve shift the student describes, from D_2 to D_3, will not take place. Changes in the price of a product do not result in shifts in the product's demand curve. Changes in the price of a product result only in movements along a demand curve.

The graph on the right shows the correct analysis. The increase in the price of oranges causes the demand curve for apples to increase from D_1 to D_2. At the original price, P_1, the increase in demand initially results in a shortage of apples equal to $Q_3 - Q_1$. But, as we have seen, a shortage causes the price to increase until the shortage is eliminated. In this case, the price will rise to P_2, where both the quantity demanded and the quantity supplied are equal to Q_2. Notice that the increase in price causes a decrease in the *quantity demanded*, from Q_3 to Q_2, but does *not* cause a decrease in demand.

Your Turn: Test your understanding by doing related problems 4.13 and 4.14 at the end of this chapter.

Concept Checks

For each learning objective section, we provide a Concept Check that is accessible in the corresponding section within the MyLab Economics page. Each Concept Check contains one or two multiple-choice, true/false, or fill-in questions. These checks act as "speed bumps" that encourage students to stop and check their understanding of fundamental terms and concepts before moving on to the next section. The goal of this digital resource is to help students assess their progress on a section-by-section basis so they can be better prepared for homework, quizzes, and exams.

Graphs and Summary Tables

Graphs are an indispensable part of a principles of economics course but are a major stumbling block for many students. Every chapter except Chapter 1 includes end-of-chapter problems that require students to draw, read, and interpret graphs. Video animations of the figures appear within the book's MyLab Economics page. We use four devices to help students read and interpret graphs:

1. Detailed captions
2. Boxed notes
3. Color-coded curves
4. Summary tables with graphs

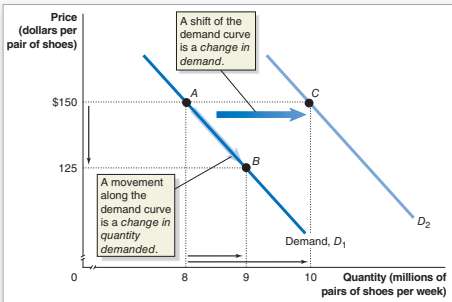


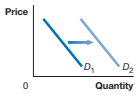
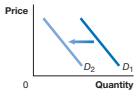
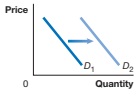
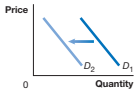
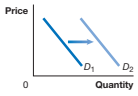
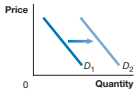
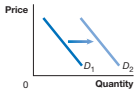
Figure 3.3

A Change in Demand versus a Change in Quantity Demanded

If the price of athletic shoes falls from $150 to $125, the result will be a movement along the demand curve from point *A* to point *B*—an increase in quantity demanded from 8 million pairs of shoes per week to 9 million pairs. If consumers' incomes increase, or if another factor changes that makes consumers want more of the product at every price, the demand curve will shift to the right—an increase in demand. In this case, the increase in demand from D_1 to D_2 causes the quantity of athletic shoes demanded at a price of $150 to increase from 8 million pairs at point *A* to 10 million pairs at point *C*.

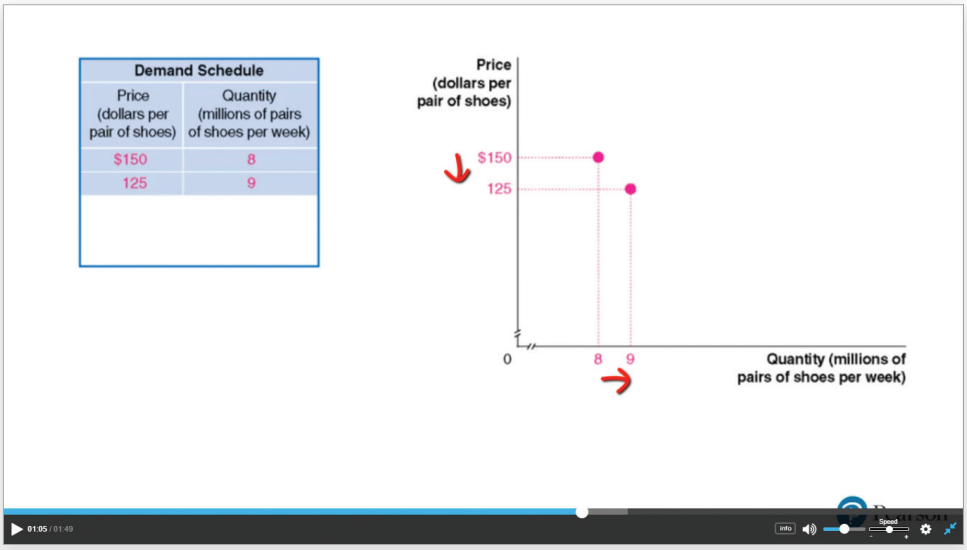
Table 3.1

Variables That Shift Market Demand Curves

An increase in ...	shifts the demand curve ...	because ...
income (and the good is normal)		consumers spend more of their higher incomes on the good.
income (and the good is inferior)		consumers spend less of their higher incomes on the good.
the price of a substitute good		consumers buy less of the substitute good and more of this good.
the price of a complementary good		consumers buy less of the complementary good and less of this good.
taste for the good		consumers are willing to buy a larger quantity of the good at every price.
population		additional consumers result in a greater quantity demanded at every price.
the expected price of the good in the future		consumers buy more of the good today to avoid the higher price in the future.

Here is a screen capture to show one of the many figure animation videos that appear within MyLab Economics and the eText.

Figure Animation 3.1 A Demand Schedule and Demand Curve



Review Questions and *Problems and Applications*—Grouped by Learning Objective to Improve Assessment

We group the main end-of-chapter material—*Summary, Review Questions,* and *Problems and Applications*—under learning objectives. The goals of this organization are to make it easier for instructors to assign problems based on learning objectives and to help students efficiently review material that they find difficult. If students have difficulty with a particular learning objective, an instructor can easily identify which end-of-chapter questions and problems support that objective and assign them as homework or discuss them in class. Also, student learning will be enhanced by having the summary material and problems grouped together by learning objective, which allows them to focus on the parts of the chapter they find most challenging. Each major section of the chapter, paired with a learning objective, has at least two review questions and three problems.

As in the previous editions, we include one or more end-of-chapter problems that test students' understanding of the content presented in the chapter-opening business vignette, *Solved Problem, Apply the Concept, Economics in Your Life & Career,* and *Don't Let This Happen to You* special features in the chapter. Instructors can cover a feature in class and assign the corresponding problem(s) for homework. The Test Bank files also include questions that pertain to these special features.

Critical Thinking Exercises

Each chapter includes two or more *Critical Thinking Exercises* that help students build skills in the following areas: (1) analyzing and interpreting information; (2) applying reasoning and logic to new or unfamiliar ideas and situations; (3) examining ideas and concepts from multiple perspectives; and (4) clearly communicating their findings in a brief paper or class presentation.

Real-Time Data Exercises

We end select chapters with at least two *Real-Time Data Exercises* that help students become familiar with a key data source, learn how to locate data, and develop skills in interpreting data. Select *Real-Time Data Analysis Exercises* allow students and instructors to use the very latest data from the Federal Reserve Economic Data (FRED) website.

Developing Career Skills

It is important for students to learn key economic terms, concepts, and models. But for a course to be successful, students need to develop the skills and confidence to apply what they've learned outside the classroom.

After the chapter-opening real-world business case, we have a feature titled *Economics in Your Life & Career* that adds a personal dimension to the chapter opener by asking students to consider how economics affects their lives and careers. The feature piques the interest of students and emphasizes the connection between the material they are learning and their personal and career decisions.

Economics in Your Life & Career

Can You Forecast the Future Demand for Athletic Shoes?

Firms face many challenges in responding to changes in consumer demand. For example, firms selling athletic shoes need to forecast future demand in order to determine how much production capacity they will need. If you were a manager for a firm that sells athletic shoes, such as Nike, Adidas, or Allbirds, what factors would you take into account in forecasting future demand? As you read this chapter, try to answer this question. You can check your answer against the one we provide at the end of this chapter.

At the end of the chapter, we use the chapter concepts to answer the questions asked at the beginning of the chapter.

Economics in Your Life & Career

Can You Forecast the Future Demand for Athletic Shoes?

At the beginning of this chapter, we asked what variables you would take into account in forecasting future demand if you were a manager for a firm selling athletic shoes. In Section 3.1, we discussed the factors that affect the demand for a product and provided a list of the most important variables. In the *Apply the Concept* in the same section, we discussed the future demand for athletic shoes.

In forecasting demand for athletic shoes, you should take into account factors such as changing demographics, as millennials and members of generation Z become larger fractions of prime-age consumers, and the extent to which changing consumer tastes may help or hurt demand. You may also need to consider whether increased advertising of athletic shoes by large firms such as Adidas and Nike in developing countries with rising incomes will raise consumer awareness of the product in those countries and increase demand for athletic shoes being sold by other firms as well.

The factors discussed in this chapter provide you with the basic information needed to forecast demand for athletic shoes, although arriving at numerical forecasts requires using statistical analysis that you can learn in more advanced courses.

Chapter 1, "Economics: Foundations and Models," includes a section that describes economics as a career and the key skills students of any major can gain from studying economics. As described earlier, features such as chapter-opening business cases, *Apply the Concept*s, *Solved Problem*s, and end-of-chapter problems provide real-world context for learning that exposes students to economics as applied in a variety of large and small businesses, government agencies, and nonprofit organizations. End-of-chapter *Critical Thinking Exercises* help build student skills to analyze and interpret information and apply reasoning and logic to new or unfamiliar ideas and situations.

Instructor Teaching Resources

The authors and Pearson Education have worked together to integrate the text, print, and media resources to make teaching and learning easier.

Supplements Available to Instructors for Download at www.pearsonhighered.com	Features of the Supplement
Instructor's Manuals for *Microeconomics* and for *Macroeconomics* Authored by Edward Scahill of the University of Scranton	• Chapter-by-chapter summaries organized by learning objectives • Extended examples and class exercises • Teaching outlines incorporating key terms and definitions, teaching tips, and topics for class discussion • New *Solved Problem*s • New *Apply the Concept* features • Solutions to all review questions, problems, and *Real-Time Data Exercises* in the book
Two Test Banks for *Microeconomics* and for *Macroeconomics* Authored by Randy Methenitis of Richland College	• Each volume includes 4,000 multiple-choice, true/false, short-answer, and graphing questions. • Test questions are annotated with the following categories: **Difficulty**—1 for straight recall, 2 for some analysis, and 3 for complex analysis **Type**—multiple-choice, true/false, short-answer, essay **Topic**—the term or concept the question supports **Learning outcome** **Page number** in the main book **Special feature** in the main book **The Association to Advance Collegiate Schools of Business** (AACSB) **Guidelines,** which propose learning experiences in the following categories of Assurance of Learning Standards: Written and Oral Communication; Ethical Understanding and Reasoning; Analytical Thinking; Information Technology; Interpersonal Relations and Teamwork, Diverse and Multicultural Work; Reflective Thinking; and Application of Knowledge
Computerized TestGen	• Allows instructors to customize, save, and generate classroom tests. • Instructors can edit, add, or delete questions from the Test Banks; analyze test results; and organize a database of tests and student results. • Many options are available for organizing and displaying tests, along with search and sort features. • The software and the Test Banks can be downloaded from www.pearsonhighered.com.
Three Sets of PowerPoint Lecture Presentations Authored by Paul Holmes of Ashland University	• A comprehensive set of PowerPoint slides can be used by instructors for class presentations or by students for lecture preview or review. These slides include all the graphs, tables, and equations in the textbook. Two versions are available: step-by-step mode, in which you can build graphs as you would on a blackboard, and automated mode, in which you use a single click per slide. • A comprehensive set of PowerPoint slides have Classroom Response Systems (CRS) questions built in so that instructors can incorporate CRS "clickers" into their classroom lectures. • Student versions of the PowerPoint slides are available as .pdf files. This version allows students to print the slides and bring them to class for note taking.

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FLEXIBILITY **CHART**

The following chart helps you organize your syllabus based on your teaching preferences and objectives:

Core	Optional	Policy
Chapter 1: Economics: Foundations and Models	**Chapter 1 Appendix:** Using Graphs and Formulas	
Chapter 2: Trade-offs, Comparative Advantage, and the Market System		
Chapter 3: Where Prices Come From: The Interaction of Demand and Supply		
	Chapter 4 Appendix: Quantitative Demand and Supply Analysis	**Chapter 4:** Economic Efficiency, Government Price Setting, and Taxes
		Chapter 5: Externalities, Environmental Policy, and Public Goods
Chapter 6: Elasticity: The Responsiveness of Demand and Supply		
		Chapter 7: The Economics of Health Care
	Chapter 8: Firms, the Stock Market, and Corporate Governance	
	Chapter 8 Appendix: Using Present Value	
	Chapter 8 *Online Appendix:* Income Statements and Balance Sheets	
Chapter 9: Comparative Advantage and the Gains from International Trade		
	Chapter 10: Consumer Choice and Behavioral Economics	
	Chapter 10 Appendix: Using Indifference Curves and Budget Lines to Understand Consumer Behavior	
Chapter 11: Technology, Production, and Costs	**Chapter 11 *Online Appendix:*** Using Isoquants and Isocost Lines to Understand Production and Cost	
Chapter 12: Firms in Perfectly Competitive Markets		
Chapter 13: Monopolistic Competition: The Competitive Model in a More Realistic Setting		
Chapter 14: Oligopoly: Firms in Less Competitive Markets		

Core	Optional	Policy
Chapter 15: Monopoly and Antitrust Policy		
Chapter 16: The Markets for Labor and Other Factors of Production		
		Chapter 17: Public Choice, Taxes, and the Distribution of Income
Chapter 18: GDP: Measuring Total Production and Income		
Chapter 19: Unemployment and Inflation		
Chapter 20: Economic Growth, the Financial System, and Business Cycles		
Chapter 21: Long-Run Economic Growth: Sources and Policies		
	Chapter 22: Aggregate Expenditure and Output in the Short Run	
	Chapter 22 Appendix: The Algebra of Macroeconomic Equilibrium	
Chapter 23: Aggregate Demand and Aggregate Supply Analysis		
	Chapter 23 Appendix: Macroeconomic Schools of Thought	
Chapter 24: Money, Banks, and the Federal Reserve System		
		Chapter 25: Monetary Policy
	Chapter 26 Appendix: A Closer Look at the Multiplier	**Chapter 26:** Fiscal Policy
		Chapter 27: Inflation, Unemployment, and Federal Reserve Policy
	Chapter 28: Macroeconomics in an Open Economy	
	Chapter 28 *Online Appendix:* The Gold Standard and the Bretton Woods System	

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1 Economics: Foundations and Models

Does Apple Manufacture the iPhone in the United States?

If you were asked to list prominent U.S. firms, you would likely include Apple near the top. When Apple began selling computers in the late 1970s and early 1980s, it manufactured them in the United States. Apple released the iPhone in 2007, and it has become one of the best-selling and most influential products of the twenty-first century. Apple designs the iPhone at its headquarters in Cupertino, California, but most iPhones are assembled in China, in factories owned by Foxconn, a Taiwanese company.

Many categories of products that were once manufactured in the United States are now manufactured overseas. Donald Trump won the 2016 presidential election in part by pledging to increase manufacturing employment in the United States. One aspect of his strategy was to impose tariffs—in effect, taxes—on imports of some goods from other countries. The Trump administration imposed tariffs of 10 percent on $200 billion worth of Chinese imports and further increased the tariffs in 2019. Such tariffs lead to higher prices of imported goods, making it more likely that both U. S. and foreign companies will manufacture goods in the United States rather than in other countries. The Trump administration also hoped to use tariffs to convince other countries to reduce their restrictions on U.S. imports.

It was unclear whether the Trump administration's policies would be successful. Apple and other U.S. firms were manufacturing some products in other countries because in a *market system*, firms respond to economic incentives. In the case of Apple, the lower wages earned by Chinese workers and their experience in electronics manufacturing significantly reduce the costs of assembling iPhones. Technological progress often creates economic incentives for firms to change how they produce goods and services. For example, U.S. automobile manufacturers have replaced some workers with robots, reducing employment in the industry. Firms also respond to changes in consumer tastes. When more people began using smartphones rather than computers to connect to the Internet, they reduced their demand for computers. Firms also react to incentives resulting from government policy. For example, in response to the Trump administration's trade policies and tax reductions offered by the state government, Foxconn planned to build a factory in Wisconsin to manufacture LCD television screens. And in 2019, many U.S. firms were awaiting the outcome of trade negotiations between China and United States before deciding in which country to expand their operations.

Pieter Greyling/Alamy Stock Photo

In this chapter and the remainder of this book, we will look at how economics provides us with the tools to analyze how firms, consumers, and workers respond to economic incentives and how government policymakers can attempt to reach their objectives by changing those incentives.

AN INSIDE LOOK at the end of this chapter discusses whether tariffs are bringing manufacturing jobs back home or just raising prices for U.S. consumers.

Chapter Outline & Learning Objectives

Economics in Your Life & Career

Should You Consider a Career in Manufacturing?

In the late 1940s and early 1950s, one-third of workers in the United States were employed in manufacturing. Traditionally, many high school graduates viewed working on a manufacturing assembly line as a way to earn a middle-class income. Many college graduates in fields such as engineering, accounting, and management have also found employment in manufacturing. But, will manufacturing be a good source of careers when you graduate? In January 2019, total employment in U.S. manufacturing was 12.8 million. But the U.S. Bureau of Labor Statistics (BLS) forecasts that by 2026, this number will *decline* to 11.6 million, even though it forecasts that total employment in all jobs will *increase* by 7 percent. What is the basis of the BLS's forecast of manufacturing employment, and how reliable is it? As you read this chapter, try to answer this question. You can check your answer against the one we provide at the end of this chapter.

In this book, we use economics to answer questions such as the following:

- What determines the prices of goods and services, from athletic shoes to pizza to automobiles?
- Why do firms engage in international trade, and how do government policies, such as tariffs, affect international trade?
- Why does the government control the prices of some goods and services, and what are the effects of those controls?

Economists do not always agree on the answers to questions like these, and there are lively debates on some issues. Because new economic questions are constantly arising, economists are always developing new methods to analyze them.

Scarcity A situation in which unlimited wants exceed the limited resources available to fulfill those wants.

The topics we discuss in this book illustrate a basic fact of life: To attain our goals, we must make choices. We must make choices because we live in a world of **scarcity**, which means that although our wants are *unlimited*, the resources available to fulfill those wants are *limited*. You might want to own a BMW and a condo near a beach, but unless Bill Gates is a close and generous relative, you probably lack the funds to fulfill these wants. Every day, you make choices as you spend your limited income on the many goods and services available. The finite amount of time you have also limits your ability to attain your goals. If you spend an hour studying for your economics midterm, you have one hour less to study for your history midterm. Firms and the government are in the same situation as you: They must also attain their goals with limited resources.

Economics The study of the choices people make to attain their goals, given their scarce resources.

Economics is the study of the choices consumers, business managers, and government officials make to attain their goals, given their scarce resources.

We begin this chapter by discussing three important economic ideas that we will return to many times in the following chapters: *People are rational, people respond to economic incentives,* and *optimal decisions are made at the margin*. Then, we consider the three fundamental questions that any economy must answer: *What* goods and services will be produced? *How* will the goods and services be produced? and *Who* will receive the goods and services produced? Next, we consider the role of *economic models in* analyzing real-world economic issues. We then discuss the difference between microeconomics and macroeconomics, and we consider how economic skills can benefit your career. Finally, we preview some important economic terms.

1.1 Three Key Economic Ideas

LEARNING OBJECTIVE: Explain these three key economic ideas: People are rational, people respond to economic incentives, and optimal decisions are made at the margin.

Market A group of buyers and sellers of a good or service and the institution or arrangement by which they come together to trade.

Whether your goal is to buy a smartphone or find a part-time job, you will interact with other people in *markets*. A **market** is a group of buyers and sellers of a good or service and the institution or arrangement by which they come together to trade. Examples of markets are the markets for smartphones, houses, haircuts, stocks and bonds, and labor. Most of economics involves analyzing how people make choices and interact in markets. Here are the three important ideas about markets that we'll return to frequently:

1. People are rational.
2. People respond to economic incentives.
3. Optimal decisions are made at the margin.

People Are Rational

Economists generally assume that people are rational. This assumption does *not* mean that economists believe everyone knows everything or always makes the "best" decision. It means that economists assume that consumers and firms use all available information as they act to achieve their goals. Rational individuals weigh the benefits and costs of each action, and they choose an action only if the benefits outweigh the costs. For example, if Apple charges a price of $999 for its new iPhone, economists assume that the managers at Apple have estimated that this price will earn the company the most profit. Even though the managers may be wrong—maybe a price of $949 or $1,049 would be more profitable—economists assume that the managers at Apple have acted rationally, on the basis of the information available to them, in choosing the price of $999. Although not everyone behaves rationally all the time, the assumption of rational behavior is very useful in explaining most of the choices that people make.

People Respond to Economic Incentives

People act from a variety of motives, including envy, compassion, anger, and religious belief. While not ignoring other motives, economists emphasize that individuals and firms consistently respond to *economic incentives*. This point may seem obvious, but it is often overlooked. For example, you probably hear news stories about bank or store robberies. You could argue that those robbers didn't weigh the economic benefit—the money from the robbery—against the economic cost—the time spent in jail if arrested. Most states require anyone convicted of a felony to submit a DNA sample. The samples are entered into databases that police then check when investigating future crimes. DNA databases increase the likelihood that someone who commits a crime will be arrested, thereby reducing the economic incentive to commit crimes by raising the cost. But the DNA will reduce the number of crimes committed only if criminals respond to economic incentives. Jennifer Doleac, an economist at Texas A&M University, has analyzed the effects of adopting DNA testing and found that "the requirement to submit a DNA sample reduces the likelihood of a new conviction within five years by . . . 17 percent for serious violent offenders." To an economist, it's not surprising that even criminals respond to economic incentives.

Each chapter has at least two *Apply the Concept* features that discuss a news story or another application related to the chapter material. This *Apply the Concept* discusses the importance of analyzing the incentives provided by a government policy.

Apply the Concept

Would a Congressional Bill Aimed at Increasing the Pay of Low-Wage Workers Backfire?

Sometimes a government economic policy can have unintended consequences if it changes economic incentives in an unexpected way. In recent years, some policymakers and economists have become concerned that certain groups in the population haven't shared in the benefits of U.S. economic growth. For instance, as we saw in the chapter opener, President Trump believed that tariffs might help states where manufacturing employment had been declining.

In 2018, two members of Congress introduced the Stop Bad Employers by Zeroing Out Subsidies Act with the goal of giving firms an incentive to raise the pay of their employees. Low-income workers are eligible for a number of government benefits, including Medicaid, which provides medical insurance to low-income and disabled people, and the Supplemental Nutrition Assistance Program (SNAP), which used to be called the Food Stamp Program. Under the act, firms whose employees received assistance from these programs would be required to pay a tax equal to cost of the assistance.

But would the act actually have the intended effect of causing firms to increase the pay of low-wage workers? Jared Bernstein, who served as an economic adviser

Patti McConville/Alamy Stock Photo

Can the government incentivize businesses to increase the wages of low-income workers?

to former Vice President Joe Biden, was skeptical. Bernstein argued that rather than increasing the pay of low-wage workers, the act might give firms an incentive to avoid hiring workers who were likely to be eligible for government assistance: "It's not hard to imagine that employers would be wary of hiring someone who they think—rightly or wrongly—would invoke the tax." Economists at the Center on Budget and Policy Studies, a research and policy institute that typically supports policies designed to help low-income workers, agreed:

> First, it's unlikely that employers would generally respond [to this act] by raising wages substantially, as raising wages would entail raising them for all workers in various job categories, not just for those who receive government benefits. . . . In response to the tax penalty, many employers would likely seek to reduce the number of low-wage workers they employ, such as by contracting out . . . various functions where a large share of the employees are paid low wages.

In 2019, it seemed unlikely that Congress would approve the act. The debate over the act shows that it's important for government policymakers to analyze how the policies will affect economic incentives.

Your Turn: Test your understanding by doing related problem 1.8 at the end of this chapter.

Optimal Decisions Are Made at the Margin

Some decisions are "all or nothing." For instance, when an entrepreneur decides whether to open a new restaurant, she starts the new restaurant or she doesn't. When you decide whether to attend graduate school, you either enroll in graduate school or you don't. But rather than being all or nothing, most decisions in life involve doing a little more or a little less. If you are trying to decrease your spending and increase your saving, the decision is not really between saving all the money you earn or spending it all. Rather, many small choices are involved, such as whether to buy a caffé mocha at Starbucks every day or just once a week.

Economists use the word *marginal* to mean "extra" or "additional." Comparing the *marginal benefit* (*MB*) of an activity to its *marginal cost* (*MC*) can help us make decisions. For example:

- Should you watch another hour of television or spend that hour studying? The *marginal benefit* of watching more television is the additional enjoyment you receive. The *marginal cost* is the reduction in your test score from having studied a little less.
- Should Apple produce an additional 300,000 iPhones? Firms receive *revenue* from selling goods. Apple's marginal benefit is the additional revenue it receives from selling 300,000 more iPhones. Apple's marginal cost is the additional cost—for wages, parts, and so forth—of producing 300,000 more iPhones.

Economists reason that *the optimal decision is to continue any activity up to the point where the marginal benefit equals the marginal cost—that is, to the point where* MB = MC.

Often we apply this rule without consciously thinking about it. Usually you will know whether the additional enjoyment from watching a television program is worth the additional cost you pay by not spending that hour studying without giving the decision a lot of thought. In business situations, however, firms often have to make careful calculations to determine, for example, whether the additional revenue received from increasing production of a good is greater or less than the additional cost of the production. **Marginal analysis** involves comparing marginal benefits and marginal costs.

Marginal analysis Analysis that involves comparing marginal benefits and marginal costs.

In each chapter, you will see at least one *Solved Problem* feature. This feature will increase your understanding of the material by leading you through the steps of solving an applied economic problem. After reading the problem, test your understanding by doing the related problems that appear at the end of the chapter.

Solved Problem 1.1

The Marginal Benefit and Marginal Cost of Delivering Packages for Amazon

The U.S. Postal Service (USPS) is an independent establishment within the federal government. When the USPS suffers a financial loss, the federal government is responsible for providing the funds to cover that loss. The USPS has many costs, including the salaries of its workers, the cost of operating post offices, and the cost of maintaining its trucks. The USPS doesn't deliver mail to homes on Sundays except for packages sent by Amazon. President Donald Trump has argued that the additional revenue the USPS receives from Amazon doesn't cover all of the USPS's costs. Managers at USPS have stated that while President Trump is correct, delivering Amazon packages on Sunday still reduces the USPS's losses. Use marginal analysis to demonstrate how President Trump and the USPS managers may both be correct.

Solving the Problem

Step 1: **Review the chapter material.** This problem is about making decisions, so you may want to review the section "Optimal Decisions Are Made at the Margin."

Step 2: **Discuss how we can determine whether delivering packages for Amazon on Sunday will increase or decrease the USPS's losses.** The USPS receives payments from Amazon for delivering packages on Sunday. These payments are the additional, or marginal, revenue from providing Amazon with the service. Because the USPS wouldn't otherwise be sending out mail trucks and making deliveries on Sunday, it incurs additional costs such as the pay of mail carriers and the costs of gasoline and maintenance on its mail trucks. These costs are the marginal cost of providing Sunday delivery of packages for Amazon.

To determine whether delivering packages for Amazon on Sunday will increase or decrease the USPS's losses, we need to compare the marginal revenue received for the service with the marginal cost of providing it. If the marginal revenue is *greater than* the marginal cost, the USPS's losses will be reduced as a result of providing the service. If the marginal revenue is *less than* the marginal cost, the USPS's losses will be increased.

Step 3: **Use your analysis in step 2 to demonstrate that President Trump and the USPS managers may both be correct.** If the marginal revenue from Sunday package delivery is greater than the marginal cost, then providing the service reduces the USPS's losses. This position is the one held by USPS's managers. President Trump may be correct, though, that the revenue received from Amazon for this service doesn't cover all of the USPS's costs. For example, the USPS's managers were taking into account only the marginal cost of using mail trucks to deliver packages on Sunday—the pay for the Sunday workers and the additional gasoline used and increased wear and tear on the trucks—and disregarding the original purchase price of the trucks and other costs that don't change as a result of Sunday deliveries.

Extra Credit: As we have seen, optimal decisions are made at the margin. In this case, the managers at the USPS had the goal of reducing the USPS's losses. In deciding whether to agree to deliver packages for Amazon on Sunday, the managers were correct to compare the marginal revenue received from Amazon to the marginal cost of providing Amazon with the service.

Your Turn: For more practice, do related problems 1.9 and 1.10 at the end of this chapter.

1.2 The Economic Problem That Every Society Must Solve

LEARNING OBJECTIVE: Discuss how an economy answers these questions: What goods and services will be produced? How will the goods and services be produced? Who will receive the goods and services produced?

Trade-off The idea that, because of scarcity, producing more of one good or service means producing less of another good or service.

Opportunity cost The highest-valued alternative that must be given up to engage in an activity.

Because we live in a world of scarcity, any society faces the *economic problem* that it has only a limited quantity of economic resources—such as workers, machines, and raw materials—and so can produce only a limited amount of goods and services. Therefore, every society faces **trade-offs**: Producing more of one good or service means producing less of another good or service. The best measure of the cost of producing a good or service is the value of what has to be given up to produce it. The **opportunity cost** of any activity is the highest-valued alternative that must be given up to engage in that activity. The concept of opportunity cost is very important in economics and applies to individuals, firms, and society as a whole. For instance, suppose that you earn a salary of $100,000 per year working as a manager for Apple. You decide to leave your job and open your own information technology consulting firm. In this case, the opportunity cost of the labor you supply to your own firm is the $100,000 you give up by not working for Apple, *even if you do not explicitly pay yourself a salary*. As in this example, opportunity costs often do not involve actual payments of money.

Trade-offs force society to make choices when answering three fundamental questions:

1. *What* goods and services will be produced?
2. *How* will the goods and services be produced?
3. *Who* will receive the goods and services produced?

Throughout this book, we will return to these questions many times. For now, we briefly introduce each question.

What Goods and Services Will Be Produced?

How will society decide whether to produce more economics textbooks or more smartphones? More daycare facilities or more football stadiums? Of course, "society" doesn't make decisions; only individuals make decisions. The answer to the question of what will be produced is determined by the choices of three groups:

1. *Consumers:* You help decide which goods and services firms will produce when you choose to buy an iPhone instead of a Samsung Galaxy or a caffè mocha rather than a chai tea.
2. *Firms:* In response to consumers' choices, Apple must choose whether to devote the company's scarce resources to making more iPhones or more smartwatches.
3. *Government:* Members of Congress and the president must choose whether to spend more of the federal government's limited budget on breast cancer research or on repairing highways.

In each case, consumers, managers of firms, and government policymakers face the problem of scarcity by trading off one good or service for another. And each choice made comes with an opportunity cost, measured by the value of the best alternative given up.

How Will the Goods and Services Be Produced?

Firms choose how to produce the goods and services they sell. In many cases, firms face a trade-off between using more workers and using more machines. For example:

- A local service station has to choose whether to provide car repair services using more diagnostic computers and fewer auto mechanics or fewer diagnostic computers and more auto mechanics.

- A movie studio has to choose whether to produce animated films using highly skilled animators to draw them by hand or using fewer animators and more computers.
- A firm may have to choose between a production method in the United States that uses fewer workers and more machines and a production method in China that uses more workers and fewer machines.

Who Will Receive the Goods and Services Produced?

In the United States, who receives the goods and services produced depends largely on how income is distributed. The higher a person's income, the more goods and services he or she can buy. Often, people are willing to give up some of their income—and, therefore, some of their ability to purchase goods and services—by donating to charities to increase the incomes of poorer people. Americans donate more than $400 billion per year to charity, or an average donation of about $3,200 for each household in the country. An important policy question, however, is whether the government should intervene to make the distribution of income more equal. Such intervention already occurs in the United States because people with higher incomes pay a larger fraction of their incomes in taxes and because the government makes payments to people with low incomes and provides services to them, such as Medicaid medical insurance and assistance in buying food through the Supplemental Nutritional Assistance Program (SNAP). There is disagreement over whether the current attempts to redistribute income are sufficient or whether there should be more or less redistribution.

Centrally Planned Economies versus Market Economies

To answer the three questions—what, how, and who—societies organize their economies in two main ways. A society can have a **centrally planned economy**, in which the government decides how economic resources will be allocated. Or a society can have a **market economy**, in which the decisions of households and firms as they interact in markets determine the allocation of economic resources.

Centrally planned economy An economy in which the government decides how economic resources will be allocated.

Market economy An economy in which the decisions of households and firms as they interact in markets determine the allocation of economic resources.

Centrally Planned Economies From 1917 to 1991, the most important centrally planned economy in the world was that of the Soviet Union, which was established when Vladimir Lenin and the Communist Party staged a revolution and took control of the Russian Empire. In the Soviet Union, the government decided what goods to produce, how the goods would be produced, and who would receive the goods. Government employees managed factories and stores. The objective of these managers was to follow the government's orders rather than to satisfy the wants of consumers. Centrally planned economies like that of the Soviet Union have failed to produce low-cost, high-quality goods and services, so the standard of living of the average person in a centrally planned economy tends to be low. All centrally planned economies have also been political dictatorships. Dissatisfaction with low living standards and political repression finally led to the collapse of the Soviet Union in 1991. Today, only North Korea still has a completely centrally planned economy, although in some other countries, such as Cuba and Venezuela, the government has a large role in planning economic activity.

Market Economies All high-income democracies, including the United States, Canada, Japan, and the countries of Western Europe, have market economies. Market economies rely primarily on privately owned firms to produce goods and services and to decide how to produce them. Markets, rather than the government, determine who receives the goods and services produced. In a market economy, firms must produce goods and services that meet the wants of consumers, or the firms will go out of business. In that sense, it is ultimately consumers who decide what will be produced. Because firms in a market economy compete to offer the highest-quality products at the lowest price, they are under pressure to use the lowest-cost methods of production. For example, as we saw in the chapter opener, Apple assembles its iPhones mainly in China rather than in the United States.

In a market economy, the income of an individual is determined by the payments he or she receives for what he or she has to sell. If you become a civil engineer, and firms are willing to pay a salary of $85,000 per year for someone with your training and skills, you