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**Economics**

SIXTH EDITION

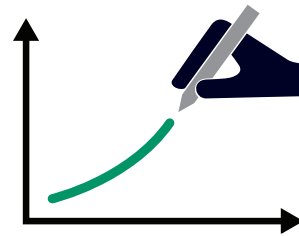
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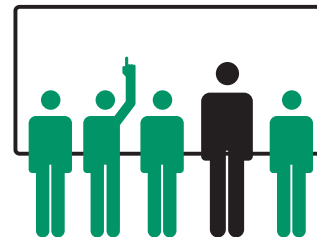
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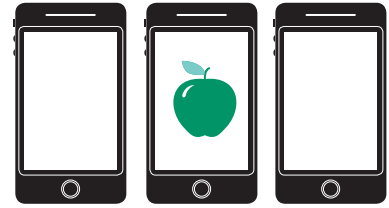
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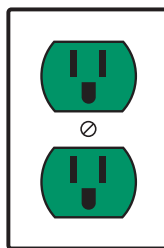
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# Economics

Sixth Edition

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Columbia University

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**PEARSON**

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**For Constance, Raph, and Will**  
—*R. Glenn Hubbard*

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

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## ABOUT THE AUTHORS



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# FLEXIBILITY CHART

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

Core	Optional	Policy
<b>Chapter 1:</b> Economics: Foundations and Models	<b>Chapter 1 Appendix:</b> Using Graphs and Formulas	
<b>Chapter 2:</b> Trade-offs, Comparative Advantage, and the Market System		
<b>Chapter 3:</b> Where Prices Come From: The Interaction of Demand and Supply		
	<b>Chapter 4 Appendix:</b> Quantitative Demand and Supply Analysis	<b>Chapter 4:</b> Economic Efficiency, Government Price Setting, and Taxes
		<b>Chapter 5:</b> Externalities, Environmental Policy, and Public Goods
<b>Chapter 6:</b> Elasticity: The Responsiveness of Demand and Supply		
		<b>Chapter 7:</b> The Economics of Health Care
	<b>Chapter 8:</b> Firms, the Stock Market, and Corporate Governance	
	<b>Chapter 8 Appendix:</b> Tools to Analyze Firms' Financial Information	
<b>Chapter 9:</b> Comparative Advantage and the Gains from International Trade		
	<b>Chapter 10:</b> Consumer Choice and Behavioral Economics	
	<b>Chapter 10 Appendix:</b> Using Indifference Curves and Budget Lines to Understand Consumer Behavior	
<b>Chapter 11:</b> Technology, Production, and Costs	<b>Chapter 11 Appendix:</b> Using Isoquants and Isocost Lines to Understand Production and Cost	
<b>Chapter 12:</b> Firms in Perfectly Competitive Markets		
<b>Chapter 13:</b> Monopolistic Competition: The Competitive Model in a More Realistic Setting		
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<b>Chapter 15:</b> Monopoly and Antitrust Policy		
	<b>Chapter 16:</b> Pricing Strategy	

Core	Optional	Policy
<b>Chapter 17:</b> The Markets for Labor and Other Factors of Production		
		<b>Chapter 18:</b> Public Choice, Taxes, and the Distribution of Income
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<b>Chapter 20:</b> Unemployment and Inflation		
<b>Chapter 21:</b> Economic Growth, the Financial System, and Business Cycles		
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# PREFACE

Our approach in this new edition remains what it was in the first edition, published more than 10 years ago: To provide students and instructors with an economics text that delivers complete economics coverage with many real-world business examples. Our goal has been to teach economics in a “widget-free” way by using real-world business and policy examples. We are gratified by the enthusiastic response from students and instructors who have used the first five editions of this book and who have made it one of the best-selling economics textbooks on the market.

Much has happened in the U.S. and world economies since we prepared the previous edition. We have incorporated many of these developments in the new real-world examples in this edition and also in the digital resources.

## Digital Resources

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While our basic approach of placing applications in the forefront of the discussion remains the same, this new edition has been thoroughly revised. We have a wide array of digital resources for students and instructors to use with either the eText version of the book or the MyEconLab supplement to the printed text. Below is an overview. Please see Preface pages 15–19 for more details.

### Digital Features Located in MyEconLab

MyEconLab is a unique online course management, testing, and tutorial resource. It is included with the eText version of the book or as a supplement to the print book. Students and instructors will find the following online resources to accompany the sixth edition:

- **Videos.** There are more than 100 *Making the Connection* features in the book that provide real-world reinforcement of key concepts. Each feature is accompanied by a two- or three-minute video of the author explaining the key point of that *Making the Connection*. Related assessment is included with each video, so students can test their understanding. The goal of these videos is to summarize key content and bring the applications to life. In our experience, many students benefit from this type of online learning and assessment.
- **Concept Checks.** Each section of each learning objective concludes with an online Concept Check that 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.
- **Animations.** Graphs are the backbone of introductory economics, but many students struggle to understand and work with them. Each of the 267 numbered figures in the text has a supporting animated version online. The goal of this digital resource is to help students understand shifts in curves, movements along curves, and changes in equilibrium values. Having an animated version of a graph helps students who have difficulty interpreting the static version in the printed text. Graded practice exercises are included with the animations. In our experience, many students benefit from this type of online learning.
- **Interactive Solved Problems.** Many students have difficulty applying economic concepts to solving problems. The goal of this digital resource is to help students overcome this hurdle by giving them a model of how to solve an economic problem by breaking it down step by step. Each of the 60 *Solved Problems* in the printed text is accompanied by a similar problem online, so students can have more practice and build their

problem-solving skills. These interactive tutorials help students learn to think like economists and apply basic problem-solving skills to homework, quizzes, and exams. The goal is for students to build skills they can use to analyze real-world economic issues they hear and read about in the news. Each *Solved Problem* in MyEconLab and the digital eText also includes at least one additional graded practice exercise for students.

- **Graphs Updated with Real-Time Data from FRED.** Approximately 25 graphs are continuously updated online with the latest available data from FRED (Federal Reserve Economic Data), which is a comprehensive, up-to-date data set maintained by the Federal Reserve Bank of St. Louis. Students can display a pop-up graph that shows new data plotted in the graph. The goal of this digital feature is to help students understand how to work with data and understand how including new data affects graphs.
- **Interactive Problems and Exercises Updated with Real-Time Data from FRED.** The end-of-chapter problems in select chapters include *Real-Time Data Exercises* that use the latest data from FRED. The book contains more than 50 of these exercises. The goals of this digital feature are to help students become familiar with this key data source, learn how to locate data, and develop skills in interpreting data.

## New to the Sixth Edition Chapters

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- All companies in the chapter openers have been either replaced with new companies or updated with current information.
- Chapters 1–4 include new *An Inside Look* news articles and analyses to help students apply economic thinking to current events and policy debates. Additional news articles and analyses are updated weekly on MyEconLab.
- There are 38 new *Making the Connection* features to help students tie economic concepts to current events and policy issues.
- There are 16 new *Solved Problems*. This feature helps students break down and answer economic problems step by step.

### New Chapter Openers, *Making the Connections*, *Solved Problems*, and *Inside Looks*

Here are the new or heavily revised chapter-opening business cases and accompanying *Inside Look* news articles. The business or issue introduced in the chapter opener is revisited within the chapter in either a *Making the Connection* or a *Solved Problem*. The following are new to this edition. Please see the detailed table of contents for the list of features for all chapters.

Chapter 1, “Economics: Foundations and Models,” opens with a new discussion of whether smart devices will revolutionize health care and closes with *An Inside Look* newspaper article and analysis of how Google is adding to its growing list of technological innovations by partnering with Swiss pharmaceutical company Novartis to develop smart contact lenses to help patients manage diabetes. New *Solved Problem 1.1* examines how managers at medical technology firm OraSure use marginal analysis to make an advertising decision. A new *Making the Connection* examines how opportunity costs can help us understand why many students have stopped attending college football games.

Chapter 2, “Trade-offs, Comparative Advantage, and the Market System,” opens with a new discussion of the manufacturing decisions managers at Tesla Motors face and closes with *An Inside Look* that discusses the resources Apple has assembled to meet an aggressive plan to develop and produce an electric vehicle as early as 2020. A new *Making the Connection* uses Sir Arthur Conan Doyle’s legendary character Sherlock Holmes to illustrate copyright laws for books and movies.

Chapter 3, “Where Prices Come From: The Interaction of Demand and Supply,” opens with a new discussion of the market for smartwatches and closes with *An Inside Look* that examines how the Apple smartwatch is inspiring the development of other wearable devices. There are three new *Making the Connections*: “Are Smartwatches Substitutes for Smartphones?”; “Tough Times for Big Macs and Golf”; and “Demand and Supply Trashes Plastic Recycling.”

Chapter 4, “Economic Efficiency, Government Price Setting, and Taxes,” opens with an updated discussion of how Airbnb and the sharing economy affects rent control policy in San Francisco and closes with *An Inside Look* that examines why government officials in Malibu, California, imposed a tax on short-term rentals of apartments booked through Airbnb. A new *Making the Connection* examines why investors expect Uber to be very profitable.

Chapter 5, “Externalities, Environmental Policy, and Public Goods,” opens with a new discussion of President Obama’s Clean Power Plan. A new *Making the Connection* uses the frequent conflicts between passengers over reclining airline seats to illustrate property rights.

Chapter 6, “Elasticity: The Responsiveness of Demand and Supply,” opens with a revised and updated discussion of the price elasticity of gasoline. A new *Making the Connection* discusses why Amazon cares about price elasticity.

Chapter 7, “The Economics of Health Care,” opens with a new discussion of how the Patient Protection and Affordable Care Act of 2010 could affect the health care plan at T. Cain Grocery, which operates five Piggly Wiggly supermarkets in Alabama and Florida. New *Solved Problem 7.4* shows students how to use the demand and supply model to explain changes in health care spending. A new *Making the Connection* discusses the increasing importance of health care in the U.S. economy.

Chapter 8, “Firms, the Stock Market, and Corporate Governance,” opens with a new discussion of Twitter and the benefits and costs of becoming a publicly owned firm. New *Solved Problem 8.2* analyzes why Warren Buffett likes mutual funds, and new *Solved Problem 8.4* discusses whether Dodd-Frank will improve corporate governance. There are two new *Making the Connections*: “Why Are Fewer Young People Starting Businesses?” and “Why Are Many People Poor Stock Market Investors?”

Chapter 9, “Comparative Advantage and the Gains from International Trade,” opens with a new discussion of President Obama, Nike, and the Trans-Pacific Partnership (TPP). There are three new *Making the Connections*: “Would New Balance Be Helped or Hurt by the Trans-Pacific Partnership?”; “Smoot-Hawley, the Politics of Tariffs, and Protecting a Vanishing Industry”; and “Protecting Consumer Health or Protecting U.S. Firms from Competition?”

Chapter 10, “Consumer Choice and Behavioral Economics,” opens with an updated discussion of a failed pricing strategy at J. C. Penney. A new *Making the Connection* discusses whether Uber is price gouging by charging more when demand for rides is high.

Chapter 11, “Technology, Production, and Costs,” opens with a new discussion of MOOCs (massive open online courses). A new *Making the Connection* explains how UPS adopted new technology to deliver more packages with the same number of workers and planes. A new *Solved Problem* in the appendix discusses how firms respond to differences in input price ratios.

Chapter 12, “Firms in Perfectly Competitive Markets,” opens with a new discussion of cage-free eggs. New *Solved Problem 12.4* examines when managers should shut down an oil well.

Chapter 13, “Monopolistic Competition: The Competitive Model in a More Realistic Setting,” opens with a new discussion of the sources of Chipotle Mexican Grill’s success. There are two new *Making the Connections*: “Is the Trend toward Healthy Eating

a Threat to Chipotle’s Market Niche?” and “Are All Cupcakes the Same?” New *Solved Problem 13.3* examines Buffalo Wild Wings’ strategy to differentiate its restaurants.

Chapter 14, “Oligopoly: Firms in Less Competitive Markets,” opens with a new discussion of Apple, Spotify, and the music streaming revolution. The chapter includes two new *Making the Connections*: “Hard Times in Atlantic City” and “Do Airlines Collude on Capacity to Keep Prices High?”

Chapter 15, “Monopoly and Antitrust Policy,” includes a new *Making the Connection* that examines whether the National Collegiate Athletic Association (NCAA) should be considered a monopoly. New *Solved Problem 15.5* shows students how to determine a pricing strategy for a MOOC (massive open online course).

Chapter 16, “Pricing Strategy,” opens with new coverage of Walt Disney’s MagicBands and how the company uses “big data” to help determine pricing. A new *Making the Connection* illustrates how clothing manufacturers can segment their sales by using outlet stores.

Chapter 17, “The Markets for Labor and Other Factors of Production,” opens with a new discussion of how Rio Tinto Mines has used robots to replace some workers. There are three new *Making the Connections*: “Is Investing in a College Education a Good Idea?”; “Should You Fear the Effect of Robots on the Labor Market?”; and “Technology and the Earnings of ‘Superstars.’”

Chapter 18, “Public Choice, Taxes, and the Distribution of Income,” opens with updated coverage of the debate about tax policy among the 2016 presidential candidates and includes new *Solved Problem 18.4* about income mobility.

Chapter 19, “GDP: Measuring Total Production and Income,” opens with updated coverage of how the business cycle affects Ford Motor Company and includes a new *Making the Connection* about how calculating GDP changes the way the standard of living in Nigeria is measured.

Chapter 20, “Unemployment and Inflation,” opens with a new discussion of JPMorgan’s 2015 decision to lay off workers. There are two new *Making the Connections*: “Eight Million Workers Are Missing!” and “How Should We Categorize Unemployment at JPMorgan Chase?” New *Solved Problem 20.5* shows students how to use data to calculate real hourly wages.

Chapter 21, “Economic Growth, the Financial System, and Business Cycles,” opens with a new discussion of how Corning has experienced long-run growth while experiencing the ups and downs of the business cycle. New *Solved Problem 21.1* focuses on the connection between productivity and prosperity, and new *Solved Problem 21.2* shows students how to apply the loanable funds model to analyze the effect of budget deficits.

Chapter 22, “Long-Run Economic Growth: Sources and Policies,” opens with a new discussion of whether economic reforms will help to increase Mexico’s growth rate and includes a new *Making the Connection* that compares economic growth in Mexico and China.

Chapter 23, “Aggregate Expenditure and Output in the Short Run,” opens with an updated opener on the effects of fluctuations in aggregate expenditure on Intel and includes a new *Making the Connection* about the link between student loans and the number of young people purchasing homes.

Chapter 24, “Aggregate Demand and Aggregate Supply Analysis,” opens with a new discussion of the effect of the business cycle on Delta Airlines and includes a new *Making the Connection* that discusses how unusually long it took following the 2007–2009 recession for real GDP and employment to return to the levels achieved at the business cycle peak.

Chapter 25, “Money, Banks, and the Federal Reserve System,” opens with a new discussion of the 2015 banking crisis in Greece and includes a new *Making the Connection* on peer-to-peer lending.

Chapter 26, “Monetary Policy,” opens with a new discussion of the connection between monetary policy and borrowers in Europe paying negative nominal interest rates on bank loans. Two new *Making the Connections* examine the connection between central bank policies of quantitative easing and negative interest rates, and why the Federal Reserve usually ignores fluctuations in food and energy prices.

Chapter 27, “Fiscal Policy,” opens with a new discussion of the effects of federal government spending to rebuild a highway leading to the Golden Gate Bridge. A new *Making the Connection* discusses whether macroeconomic policy is too dependent on the Federal Reserve. New *Solved Problem 27.6* analyzes the effects of the Greek government attempting to balance its budget during a recession.

Chapter 28, “Inflation, Unemployment, and Federal Reserve Policy,” opens with a new discussion of why a company like Goodyear is concerned about monetary policy. A new *Making the Connection* examines whether it is important for the Fed to provide the public with accurate guidance on the future of monetary policy.

Chapter 29, “Macroeconomics in an Open Economy,” opens with a new discussion on how fluctuations in the exchange rate affect IBM’s profits. A new *Making the Connection* examines whether a strong dollar is a good for the U.S. economy. New *Solved Problem 29.2* analyzes how Subaru is affected by fluctuations in the value of the yen.

Chapter 30, “The International Financial System,” opens with a new discussion about how Bayer deals with fluctuating exchange rates. There are two new *Making the Connections*: “Greece and Germany: Diverse Economies, Common Currency” and “The Chinese Yuan: The World’s Most Controversial Currency.”

## Other Changes to Chapters

- In Chapter 18, Section 18.4, “Income Distribution and Policy,” has been reorganized and includes the new subsection “Policies to Reduce Income Inequality.”
- Chapter 21 includes a new section that discusses why firms like Corning are particularly vulnerable to fluctuations in demand during the business cycle.
- Chapter 28 includes a new final section that covers the debate over the future of the Fed.
- We have added the following five new tables to present information in an easy-to-read format: Table 1.1, “Issues in Microeconomics and Macroeconomics”; Table 15.2, “Federal Government Standards for Horizontal Mergers”; Table 17.3, “Differences in Education among Ethnic Groups,” which presents data on the education levels for three ethnic groups; Table 18.8, “The Effect of Taxes and Transfers on the Distribution of Household Income in the United States”; and Table 26.3, “Treasury and Fed Actions at the Beginning of the Financial Crisis.”
- To make room for the new content described earlier, we have cut approximately 35 *Making the Connections* and 10 *Solved Problems* 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.
- Figures and tables have been updated with the latest data available.
- Many of the end-of-chapter problems have been either replaced or updated. To most chapters, we have added one or two new problems that include graphs for students to analyze. Select chapters have a category called *Real-Time Data Exercises*. Some of these exercises have been updated for this new edition.
- Finally, we have gone over the text literally line by line, tightening the discussion, re-writing unclear points, and making many small changes. We are grateful to the many instructors and students who made suggestions for improvements in the previous edition. We have done our best to incorporate as many of those suggestions as possible.

# The Foundation:

## Contextual Learning and Modern Organization

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We believe a course is a success 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 read in the media. That's why we explain economic concepts by using many real-world business examples and applications in the chapter openers, graphs, *Making the Connection* features, *An Inside Look* features, and end-of-chapter problems. This approach helps both business majors and liberal arts majors 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, bankers, or government employees, students benefit from understanding economics. Though business students will have many opportunities to see economic principles in action in various courses, liberal arts students may not. We therefore use many diverse real-world business and policy examples to illustrate economic concepts and develop educated consumers, voters, and citizens. 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 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 and producer surplus in Chapter 9, “Comparative Advantage and the Gains from International Trade,” where we discuss outsourcing and analyze government policies that affect trade; in Chapter 15, “Monopoly and Antitrust Policy,” where we examine the effect of market power on economic efficiency; and in Chapter 16, “Pricing Strategy,” where we examine the effect of firm pricing policy 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 health care policy 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 illegal drugs 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 other 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.

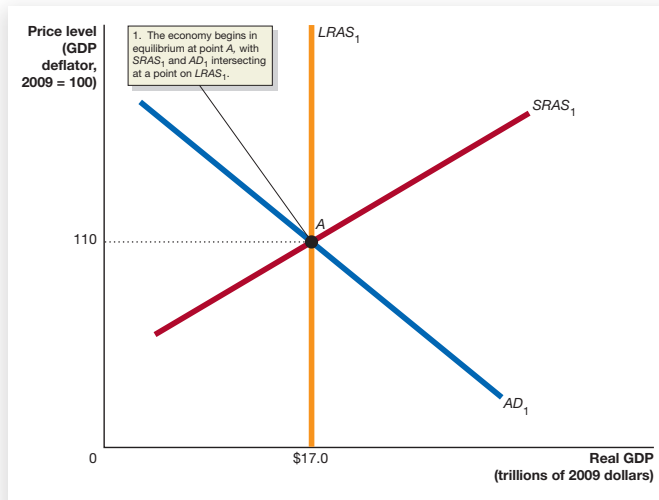
- **Extensive, realistic game theory coverage.** In Chapter 14, “Oligopoly: Firms in Less Competitive Markets,” we use game theory to analyze competition among oligopolists. Game theory helps students understand how companies with market power make strategic decisions in many competitive situations. We use familiar companies such as Apple, Amazon, Dell, Spotify, and Walmart in our game theory applications.
- **Unique coverage of pricing strategy.** In Chapter 16, “Pricing Strategy,” we explore how firms use pricing strategies to increase profits. Students encounter pricing strategies everywhere—when they buy a movie ticket, book a flight for spring break, or research book prices online. We use these relevant, familiar examples to illustrate how companies use strategies such as price discrimination, cost-plus pricing, and two-part tariffs.

## Macroeconomics

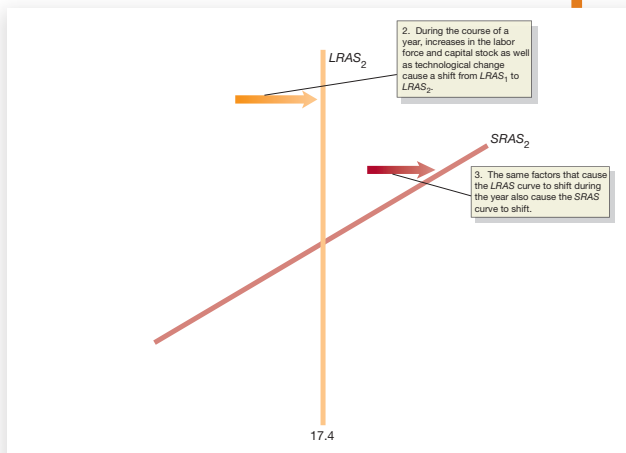
Students come to study macroeconomics with a strong interest in understanding events and developments in the economy. We try to capture that interest and develop students’ economic intuition and understanding. We present macroeconomics in a way that is modern and based in the real world of business and 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 broad discussion of macro statistics.** Many students pay at least 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 19, “GDP: Measuring Total Production and Income,” and Chapter 20, “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. So, 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 books but which many economists regard as a key measure of labor market performance. Chapter 26, “Monetary Policy,” discusses why the Federal Reserve prefers to measure inflation using the core personal consumption expenditures price index rather than the consumer price index.
- **Early coverage of long-run topics.** We place key macroeconomic issues in their long-run context in Chapter 21, “Economic Growth, the Financial System, and Business Cycles,” and Chapter 22, “Long-Run Economic Growth: Sources and Policies.”

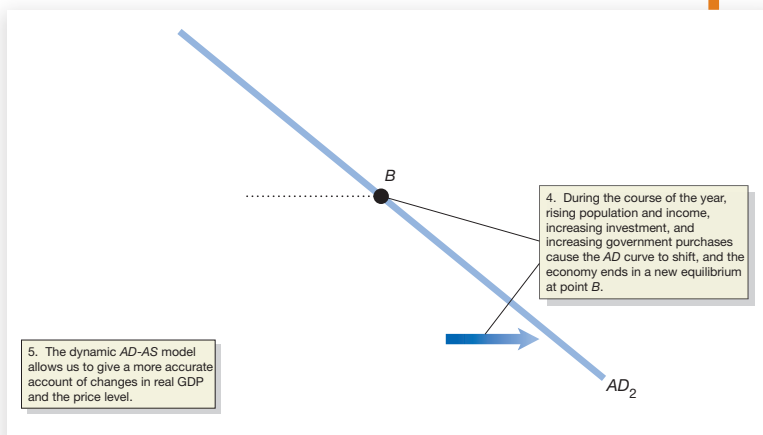




The first acetate overlay adds the shifts in the long- and short-run aggregate supply curves.



The second acetate overlay adds the shifts in the aggregate demand curve to complete the dynamic model.



Chapter 21 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 21 so that its discussion of long-run growth is sufficient for instructors who want to move quickly to short-run analysis. Chapter 22 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. And we 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. 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 and (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. Chapter 24, “Aggregate Demand and Aggregate Supply Analysis,” includes a three-layer, full-color acetate for the key introductory dynamic AD–AS graph (Figure 24.8, “A Dynamic Aggregate Demand and Aggregate Supply Model,”

on page 838 and reproduced on the left). We created this acetate to help students see how the graph builds step by step and to help make the graph easier for instructors to present. The acetate will help instructors who want to use dynamic AD–AS in class but believe the model needs to be developed carefully. We introduce this model in Chapter 24 and use it to discuss monetary policy in Chapter 26, “Monetary Policy,” and

fiscal policy in Chapter 27, “Fiscal Policy.” The material on dynamic  $AD-AS$  is presented in self-contained sections in Chapters 24, 26, and 27, 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—Chapter 26, “Monetary Policy,” and Chapter 28, “Inflation, Unemployment, and Federal Reserve Policy”—to the topic. 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 debate over the Fed’s policies, including recent proposals in Congress to reduce the Fed’s independence.
- **Coverage of both the demand-side and supply-side effects of fiscal policy.** Our discussion of fiscal policy in Chapter 27, “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 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 23, “Aggregate Expenditure and Output in the Short Run.” The discussions of monetary and fiscal policy in Chapter 26, “Monetary Policy,” and Chapter 27, “Fiscal Policy,” respectively, uses only the  $AD-AS$  model, making it possible to omit Chapter 23.
- **Extensive international coverage.** We include three chapters devoted to international topics: Chapter 9, “Comparative Advantage and the Gains from International Trade,” Chapter 29, “Macroeconomics in an Open Economy,” and Chapter 30, “The International Financial System.” 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 three international chapters, we weave international comparisons into the narratives of several other chapters, including our discussion of labor market policies in Chapter 28, “Inflation, Unemployment, and Federal Reserve Policy,” and central banking in Chapter 25, “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 21, “Economic Growth, the Financial System, and Business Cycles,” makes it possible for instructors to omit the more thorough discussion of these issues in Chapter 22, “Long-Run Economic Growth: Sources and Policies.” Our discussion of the Keynesian 45°-line diagram is confined to Chapter 23, “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 24, “Aggregate Demand and Aggregate Supply Analysis.” While we devote two chapters to monetary policy, the first of these—Chapter 26, “Monetary Policy”—is a self-contained discussion, so instructors may safely omit the material in Chapter 28, “Inflation, Unemployment, and Federal Reserve Policy,” if they choose to. Finally, instructors may choose to omit all three of the international chapters (Chapter 9, “Comparative Advantage and the Gains from International Trade,” Chapter 29, “Macroeconomics in an Open Economy,” and Chapter 30, “The International Financial System”), cover just Chapter 9 on international trade, cover just Chapter 29, or cover Chapters 29 and 30 while omitting Chapter 9. Please refer to the flexibility chart on pages xxvi–xxvii to help select the chapters and order best suited to your classroom needs.

# Special Features:

## A Real-World, Hands-on Approach to Learning Economics

### 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 1 discusses Walter De Brouwer, the founder of Scanadu, which develops smart devices for health care; Chapter 2 discusses Elon Musk of Tesla Motors; and Chapter 13 discusses Steve Ells of Chipotle Mexican Grill. Here are a few examples of companies we discuss in the chapter openers:

- Tesla Motors (Chapter 2, “Trade-offs, Comparative Advantage, and the Market System”)
- Apple (Chapter 3, “Where Prices Come From: The Interaction of Demand and Supply”)
- Twitter (Chapter 8, “Firms, the Stock Market, and Corporate Governance”)
- Delta Airlines (Chapter 24, “Aggregate Demand and Aggregate Supply Analysis”)

CHAPTER  
**3**

Chapter Outline and Learning Objectives

**3.1 The Demand Side of the Market**, page 74  
List and describe the variables that influence demand.

**3.2 The Supply Side of the Market**, page 82  
List and describe the variables that influence supply.

**3.3 Market Equilibrium: Putting Demand and Supply Together**, page 85  
Use a graph to illustrate market equilibrium.

**3.4 The Effect of Demand and Supply Shifts on Equilibrium**, page 90  
Use demand and supply graphs to predict changes in price and quantity.

## Where Prices Come From: The Interaction of Demand and Supply



**How Smart Is Your Watch?**

Fashions can change quickly. For many years, most people wore wristwatches. With the popularity of cellphones in the 2000s, many people stopped wearing wristwatches—which was bad news for the watch industry. Once a product falls out of fashion, its sales are unlikely to return to past levels. Will watches prove an exception?

Until recently attempts to have watches do more than tell the time have not been successful. For instance, during the 1980s Texas Instruments and several other firms added small calculators to watches, but sales were limited. In 2004, Microsoft introduced the SPOT watch, which enabled users to receive instant messages, weather reports, and news headlines. But few consumers purchased it so the company stopped production of the watch in 2008. By 2013, several firms had introduced “smartwatches” that enabled users to make phone calls, text, take photos or videos, monitor their heart rates, and calculate calories burned while exercising.

In 2015, Apple introduced the Apple Watch, which combined most of the capabilities of the smartwatches from competing firms with popular features from Apple’s iPhone and iPad, such as access to the iTunes music store and Siri, the voice-activated personal assistant. The Apple Watch was immediately popular, with more than 2.5 million being sold during the first five weeks. These sales were higher than initial sales of Apple’s previous products—the iPad, iPhone, or iPad. More than 25 other firms entered the smartwatch market, hoping to participate in the rapid growth of a hot product.

But there are no guarantees in a market system. Would the Apple Watch and its competitors succeed in bringing the wristwatch back into style, or would they fall like the Texas Instruments calculator watch and the Microsoft SPOT watch? Smartwatches have relatively high prices, are somewhat complicated to use, and have small screens that make it difficult to display photos or maps. Ultimately, the success of the smartwatch is likely to depend on whether consumers like the applications, or “apps,” on these watches and are willing to wear wristwatches again.

The intense competition among firms selling smartwatches is a striking example of how the market responds to changes in technology and consumer tastes. Although competition is not always good news for firms trying to sell products, it is great news for consumers because it increases the available choice of products and lowers the prices consumers pay for those products.

**AN INSIDE LOOK**, on page 98, discusses how the Apple smartwatch is inspiring firms to develop other wearable devices.

Sources: David Hahn and James McCallum, “Will Smartwatches Be a Hit?” *Wall Street Journal*, May 10, 2015; and Jeffrey Brantner, “Apple Watch: Orders Estimated to Average 20,000 per Day in U.S. after Initial Surge,” *marketresearch.com*, May 22, 2015.

Economics in Your Life

**Will You Buy a Smartphone or a Smartwatch?**

You use your smartphone mainly to text, read e-mail, and keep track of your appointments. Your smartphone is old, though, and you are thinking of buying a new one ... or should you buy a smartwatch? What factors are most important in your decision: the features of a smartwatch versus a smartphone, or the relative prices of these products? If you know that you are soon going to get a raise at your job, would you be more likely to buy a smartwatch? As you read this chapter, try to answer these questions. You can check your answers against those we provide on page 97 at the end of this chapter.

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*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* feature presents an excerpt from an article, analysis of the article, a graph(s), and critical thinking questions. Additional articles are located on MyEconLab, where they are continuously updated.

AN INSIDE LOOK

Apple Watch Inspires Development of Complementary Products

WALL STREET JOURNAL

Don't Underestimate Smartwatches: Wearable Devices Are Poised to Become Central to the Tech Ecosystem

It's important to understand that like the iPhone before it, the Apple Watch isn't at all what its name would imply. Let's call it what it is: a wrist-top computer.

Just as smartphones have become supercomputers in our pockets, the Apple Watch and its many competitors, including Android-powered devices from Motorola and Samsung Electronics, are poised to become something more. And it is their entry into a larger ecosystem of apps and hardware, rather than any one thing that has been shown off recently, that will make them indispensable.

When a company like Google or Apple deliberately creates a place for other companies to sell their own complementary wares, it is called a platform. Apple, more than Google, has mastered this art, having worked hard to give developers the tools to make apps for its mobile devices, plus a controlled environment in which to profit from them.

Fortunately, we don't have to wait for the Apple Watch and its app store to become available to get a glimpse of where things could be going. We have only to look at what pioneering companies in "wearables" are already working on, and then think about how their products will become a part of—or be absorbed

by—the Apple Watch and Android Wear ecosystems.

"The vision of Sensors is that the garment is the next ultra personal computer," says Sensors CEO David Vignos. To illustrate this point, he rolls up his pant leg to show me a working prototype of the world's first smart sock.

I know, it sounds ridiculous. But, as he explains, with the help of an iPhone app that visualizes wireless signals sent by minuscule sensors, smart socks in the sock, it is good for runners who want to reduce their chance of injury. It is also potentially useful for monitoring the health of the elderly, since changes in gait are surprisingly predictive of other health issues.

And yes, the smart socks are washable. Sensors also makes a smart bra and smart shirt, both of which can measure heart rate. And here's where things get really interesting: For all makers of wearables, which until recently have been dominated by the glorified pedometers known as fitness bands, the common applications are just the beginning.

Using a few more of the same sensors already carries. Sensors's shirt could measure not just the frequency but the pattern of a wearer's heartbeat, Mr. Vignos tells me. Like the fingerprint sensor on new smartphones, the unique shape of the electrical signals generated by our hearts are a biometric. Add in a payment terminal not dissimilar from the ones that will roll out with Apple Pay, and the wearers of a Sensors's undergarment could soon find herself verifying payment for her next coffee via technology in her bra. . . .

During Apple's presentation, Apple Vice President Kevin Lynch announced that BMW has developed an app for the Apple Watch that will allow users to lock and unlock their BMW i-series electric vehicles. And Mr. Martin told me that new Bluetooth-enabled locks from companies like Locktron and Kwikset mean that the moment you walk up to a door while sporting a recognized wearable, it can unlock without a touch. . . .

Wearables won't just appeal to fitness nuts and quantified-self geeks. They will appeal to everyone, because they will be the primary, perhaps even the sole way we identify ourselves to a world full of smart objects.

Established makers of wearables have seen this trend and are already getting in front of it. On the same day that Apple announced its watch, Jee-ho, maker of the UP wristband, said that it was opening up its quantified-self software so that others could connect it with devices other than the UP—including the Apple Watch.

Or in other words, amid the hype about the Apple Watch being a fitness device, or a stopwatch, or a status symbol, it is the applications that Apple and others aren't even talking about, the ones that are thought up by countless developers jumping on board the platform, that will make us wonder how we ever got by without them. . . .

Source: Christopher Mims, "Don't Underestimate Smartwatches: Wearable Devices Are Poised to Become Central to the Tech Ecosystem," *Wall Street Journal*, September 24, 2014.

Key Points in the Article

The introduction of the Apple Watch has inspired a number of companies to develop products that can utilize the smartwatch's technology. From the wearable technology of Sensors's sensor-enhanced clothing to convenience items like Bluetooth-enabled door locks, these complementary products will allow consumers to use their smartwatches in new ways, including monitoring their health, making online purchases, and unlocking their front doors. In our technology-driven society, as more products and apps are developed for use with smartwatches, consumers could come to view these watches as a necessity rather than a luxury, which is what happened with smartphones.

Analyzing the News

Smartwatches like the Apple Watch are a part of the relatively new product category of wearable technology. As with smartphones, a large part of the success of smartwatches will depend on the availability of desirable complementary products. One variable that shifts market demand for a product is the price of related goods. If the price of a complement decreases, market demand for the original product will increase, and if the price of a complement increases, market demand for the original product will decrease.

Smart shirts are wearable technology garments that will sync with smartwatches.

so the two products are used together and are therefore complements. Suppose the figure below illustrates supply and demand for smart shirts. In 2016, the most basic smartwatch model had a price of about \$350, and at this price, the demand for smart shirts is represented by demand curve  $D_1$ , with an equilibrium price of  $P_1$  and an equilibrium quantity of  $Q_1$ . If the price of smartwatches increases, this increase would, holding everything else constant, result in a decrease in demand for smart shirts. The demand curve would shift to the left, from  $D_1$  to  $D_2$ , resulting in a decrease in the equilibrium price from  $P_1$  to  $P_2$  and a decrease in the equilibrium quantity from  $Q_1$  to  $Q_2$ .

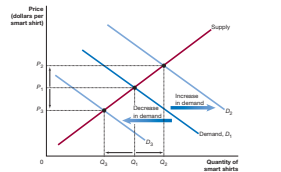
If, as wearable technology grows in popularity, more firms will enter the market to compete with existing firms. Some of these firms will offer new products, while other firms will produce goods that compete with existing products. Suppose another apparel manufacturer designs a product to compete with smart shirts. This new product would be a substitute for smart shirts and, all else being equal, changes in the price of this new substitute would change the demand for smart shirts.

In the figure below, an increase in the price of a substitute would, holding everything else constant, increase the demand for smart shirts. The demand curve would shift to the right, from  $D_1$  to  $D_3$ , resulting in an increase in the equilibrium price from  $P_1$  to  $P_3$  and an increase in the equilibrium quantity from  $Q_1$  to  $Q_3$ . A decrease in the price of smartwatches would have the opposite effect, resulting in a decrease in demand for smart shirts. The demand curve would shift to the left, from  $D_1$  to  $D_2$ , resulting in a decrease in the equilibrium price from  $P_1$  to  $P_2$  and a decrease in the equilibrium quantity from  $Q_1$  to  $Q_2$ .

Thinking Critically

1. Suppose a technological change allows firms to lower the cost of producing smart shirts. Explain if this change will affect the demand curve for smart shirts. How would this change affect the market for smartwatches?

2. In 2016, smartwatch producers had difficulty filling the orders they received. Draw a demand and supply graph to illustrate this situation. All else equal, what would you expect to happen in this market if this situation persisted into the future, and how would this affect the market for complementary products like the smart shirt?



An increase in demand for smart shirts shifts the demand curve to the right. All else equal, equilibrium price and equilibrium quantity both increase. A decrease in demand has the opposite effect.

Economics in Your Life

After the chapter-opening real-world business case, we have added a personal dimension to the chapter opener with a feature titled *Economics in Your Life*, which asks students to consider how economics affects their lives. The feature piques the interest of students and emphasizes the connection between the material they are learning and their experiences.

Economics in Your Life

Will You Buy a Smartphone or a Smartwatch?

You use your smartphone mainly to text, read e-mail, and keep track of your appointments. Your smartphone is old, though, and you are thinking of buying a new one ... or should you buy a smartwatch? What factors are most important in your decision: the features of a smartphone versus a smartwatch, or the relative prices of these products? If you know that you are soon going to get a raise at your job, would you be more likely to buy a smartwatch? As you read this chapter, try to answer these questions. You can check your answers against those we provide on page 97 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.

Continued from page 73

Economics in Your Life

Will You Buy a Smartphone or a Smartwatch?

At the beginning of this chapter, we asked you to consider how you might choose between buying a smartwatch and buying a smartphone. There are certain activities, such as watching YouTube or Netflix, that you can do on a smartphone but not on a smartwatch. There are other activities, such as tracking calories burned during a workout, that are probably easier to do on a smartwatch. If you can engage in the activities you like most on either device, then you probably consider the two devices to be close substitutes, and you are likely to buy the one with the lower price. Suppose that you are currently leaning toward buying a smartphone because its price is lower than the price of a comparable smartwatch. If an increase in your income would cause you to change your decision and buy the smartwatch, then the smartphone is an inferior good for you.

The following are examples of the topics we cover in the *Economics in Your Life* feature:

- Will you buy a smartphone or a smartwatch? (Chapter 3, “Where Prices Come From: The Interaction of Demand and Supply”)
- Is your take-home pay affected by what your employer spends on your health insurance? (Chapter 7, “The Economics of Health Care”)
- Is an employer likely to cut your pay during a recession? (Chapter 24, “Aggregate Demand and Aggregate Supply Analysis”)

## 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 tied to select chapter-opening learning objectives. Our goals are to keep students focused on the main ideas of each chapter and give them a model of how to solve an economic problem by breaking it down step by step. Additional exercises in the end-of-chapter *Problems and Applications* section are tied to every *Solved Problem*.

94 CHAPTER 3 Where Prices Come From: The Interaction of Demand and Supply
The Effect of Demand and Supply Shifts on Equilibrium 95

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**Solved Problem 3.4** MyEconLab Interactive Annotation

**Can We Predict Changes in the Price and Quantity of Beef?**

Whether you like to eat hamburger or roast beef, the source of the meat is a rancher who raises cattle. A news story discussed how years of drought had raised the cost to ranchers of raising cattle. At the same time, consumer tastes have been changing, leading to a decline in the demand for beef. Use demand and supply graphs to illustrate your answers to the following questions:

- Can we use this information to be certain whether the equilibrium quantity of beef will increase or decrease?
- Can we use this information to be certain whether the equilibrium price of beef will increase or decrease?

**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 may want to review the section “The Effect of Shifts in Demand and Supply over Time,” which begins on page 90.

**Step 2: Answer part (a) using demand and supply analysis.** You are given the information that consumer tastes have changed, leading to a decline in demand for beef. So, the demand curve for beef has shifted to the left. You are also given the information that the cost of raising beef has increased. So, the supply curve for beef has also shifted to the left. The following graph shows both these shifts:

As Table 3.3 on page 92 summarizes, if the demand curve and the supply curve both shift to the left, the equilibrium quantity must decrease. Therefore, we can answer part (a) by stating that we are certain that the equilibrium quantity of beef will decrease.

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

Unlike the graph in step 2, which shows the equilibrium price increasing, this graph shows the equilibrium price decreasing. The uncertainty about whether the equilibrium price will increase or decrease is consistent with what Table 3.3 shows happens when the demand curve and the supply curve both shift to the left. Therefore, the answer to part (b) is that we cannot be certain whether the equilibrium price of beef will increase or decrease.

**Extra Credit:** During 2013 and 2014, the equilibrium quantity of beef decreased while the equilibrium price of beef increased. We can conclude that both the decrease in demand for beef and the decrease in the supply of beef contributed to the decline in beef consumption. That the price of beef rose indicates that the decrease in supply had a larger effect on equilibrium in the beef market than did the decrease in demand.

Source: Andrew Schmitz, “No Minors: High Beef Prices a Bless for Drought-Worried Ranchers,” *agri.com*, November 19, 2014 and U.S. Department of Agriculture, Inc.

**Your Turn:** For more practice, do related problems 4.7 and 4.8 on page 104 at the end of this chapter. MyEconLab Study Plan

Additional *Solved Problems* appear in the *Instructor’s Manuals*. In addition, the Test Item Files include problems tied to the *Solved Problems* in the main book.

## 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

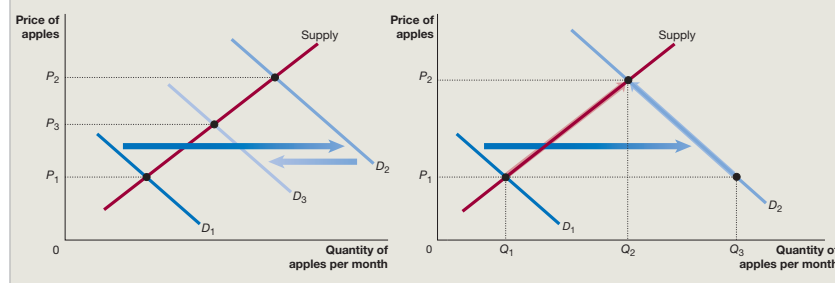
Suppose a student is asked to draw a demand and supply graph to illustrate how an increase in the price of oranges would affect the market for apples, with other variables being constant. He draws the graph on the left and explains it as follows: “Because apples and oranges are substitutes, an increase 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? MyEconLab Study Plan

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 on page 105 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. Each chapter contains 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.

## Making the Connection

Each chapter includes two to four *Making the Connection* 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 *Making the Connection* 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, which remains a pressing policy issue. Each *Making the Connection* has at least one supporting end-of-chapter problem to allow students to test their understanding of the topic discussed.

**Making the Connection**  
MyEconLab Video

**Are Smartwatches Substitutes for Smartphones?**

Two products are rarely perfect substitutes because consumers may find them more or less useful for some purposes. As Apple and other firms began selling smartwatches, a key question they needed to answer was whether consumers considered smartwatches close substitutes for smartphones. You can use either a smartwatch or a smartphone to check the time, send a text, keep a list of appointments, or use a GPS map. But you need a smartphone if you want to surf the Web or watch a movie, while you are better off buying a smartwatch if you want to monitor your heartbeat or keep track of how many calories you are burning while exercising.



*Is the smartwatch a hot new must-have gadget, even for people who already own a smartphone?*

So smartwatches and smartphones are substitutes—but they aren't perfect substitutes. To correctly forecast sales and produce the correct quantity of smartwatches, firms that sell them need to evaluate how close substitutes consumers consider smartwatches and smartphones to be. Many people who might consider buying a smartwatch already own a smartphone. So the closer consumers consider the two products to be as substitutes, the less likely they are to buy a smartwatch in addition to a smartphone.

When Apple introduced the Apple Watch in 2015, sales were initially very strong, which would seem to indicate that many consumers believed that the unique features of the smartwatch made it worth buying, even if they owned a smartphone. Some analysts, though, wondered how large future sales would be after people who buy each new electronic device soon after it hits the market—early adopters—had made their purchases. One early reviewer of the Apple Watch noted that he was unsure “that I need this thing on my wrist every day.” Similarly, the *Economist* magazine offered the opinion, “Apple seems unlikely to turn its watch into the next big must-have gadget. ... People are unlikely to want to shell out ... \$350 ... for something with so few extra functions.”

Other industry observers were more optimistic about the size of the market for smartwatches. Writing in the *Wall Street Journal*, one analyst argued that smartwatches performed several functions faster or more conveniently than smartphones. He concluded, “Billions of consumers who own a smartphone are likely to consider purchasing a smartwatch.” Given these different evaluations, it wasn't surprising that forecasts of sales of the Apple Watch during its first year varied widely from 8 million to 41 million.

In the end, as with most new products, the success of smartwatches depends on whether consumers see them as filling a need that other products don't meet. In other words, the less close a substitute consumers believe smartwatches to be for smartphones, the more likely they are to buy a smartwatch.

**Sources:** Joshua Topolsky, “Apple Watch Review: You'll Want One, but You Don't Need One,” *bloomberg.com*, April 8, 2015; “The Time Machine,” *Economist*, March 9, 2015; and Daniel Matte and Kevin McCullagh, “Will Smartwatches Be a Hit?” *Wall Street Journal*, May 10, 2015.

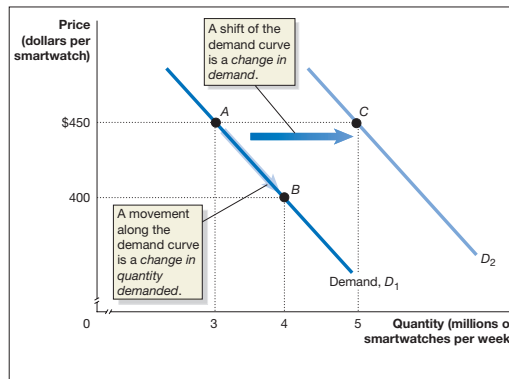
**Your Turn:** Test your understanding by doing related problem 1.12 on page 101 at the end of this chapter.

MyEconLab Study Plan

**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. Interactive graphing exercises appear on the book's supporting Web site. 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 (see pages 80, 85, and 830 for examples)

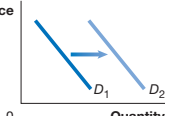
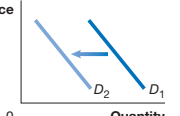
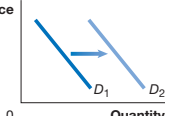
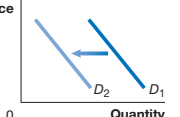
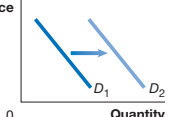
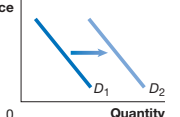
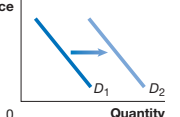


MyEconLab Animation

**Figure 3.3**

**A Change in Demand versus a Change in Quantity Demanded**

If the price of smartwatches falls from \$450 to \$400, the result will be a movement along the demand curve from point A to point B—an increase in quantity demanded from 3 million to 4 million. 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 smartwatches demanded at a price of \$450 to increase from 3 million at point A to 5 million at point C.

Table 3.1	An increase in ...	shifts the demand curve ...	because ...
Variables That Shift Market Demand Curves	income (and the good is normal)	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a rightward shift.</p>	consumers spend more of their higher incomes on the good.
	income (and the good is inferior)	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a leftward shift.</p>	consumers spend less of their higher incomes on the good.
	the price of a substitute good	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a rightward shift.</p>	consumers buy less of the substitute good and more of this good.
	the price of a complementary good	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a leftward shift.</p>	consumers buy less of the complementary good and less of this good.
	taste for the good	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a rightward shift.</p>	consumers are willing to buy a larger quantity of the good at every price.
	population	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a rightward shift.</p>	additional consumers result in a greater quantity demanded at every price.
	the expected price of the good in the future	 <p>A graph with Price on the vertical axis and Quantity on the horizontal axis. The origin is marked with 0. Two downward-sloping demand curves are shown: a darker blue curve labeled D<sub>1</sub> and a lighter blue curve labeled D<sub>2</sub>. A blue arrow points from D<sub>1</sub> to D<sub>2</sub>, indicating a rightward shift.</p>	consumers buy more of the good today to avoid the higher price in the future.


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

All end-of-chapter material—*Summary*, *Review Questions*, and *Problems and Applications*—is grouped under learning objectives. The goals of this organization are to make it easier for instructors to assign problems based on learning objectives, both in the book and in MyEconLab, 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. Every exercise in a chapter’s *Problems and Applications* section is available in MyEconLab. Using MyEconLab, students can complete these and many other exercises online, get tutorial help, and receive instant feedback and assistance on exercises they answer incorrectly. Also, student learning will be enhanced by having the summary material and problems grouped together by learning objective, which will allow 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 *Solved Problem*, *Making the Connection*, 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 for homework. The Test Item Files also include test questions that pertain to these special features.

## Real-Time Data Exercises

Select chapters end 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. *Real-Time Data Analysis (RTDA) Exercises*, marked with , allow students and instructors to use the very latest data from FRED.

# Integrated Supplements

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

## MyEconLab

MyEconLab is a unique online course management, testing, and tutorial resource.

### For the Instructor

Instructors can choose how much or how little time to spend setting up and using MyEconLab. Here is a snapshot of what instructors are saying about MyEconLab:


MyEconLab offers [students] a way to practice every week. They receive immediate feedback and a feeling of personal attention. As a result, my teaching has become more targeted and efficient.—Kelly Blanchard, Purdue University

Students tell me that offering them MyEconLab is almost like offering them individual tutors.—Jefferson Edwards, Cypress Fairbanks College

MyEconLab's eText is great—particularly in that it helps offset the skyrocketing cost of textbooks. Naturally, students love that.—Doug Gehrke, Moraine Valley Community College

Each chapter contains two preloaded exercise sets that can be used to build an individualized study plan for each student. These study plan exercises contain tutorial resources, including instant feedback, links to the appropriate learning objective in the eText, pop-up definitions from the text, and step-by-step guided solutions, where appropriate. After the initial setup of the course by the instructor, student use of these materials requires no further instructor setup. The online grade book records each student's performance and time spent on the tests and study plan and generates reports by student or chapter.

Alternatively, instructors can fully customize MyEconLab to match their course exactly, including reading assignments, homework assignments, video assignments, current news assignments, and quizzes and tests. Assignable resources include:

- Preloaded exercise assignments sets for each chapter include the student tutorial resources mentioned earlier.
- Preloaded quizzes for each chapter are unique to the text and not repeated in the study plan or homework exercise sets.
- Study plan problems are similar to the end-of-chapter problems and numbered exactly as in the book to make assigning homework easier.
- *Real-Time Data Analysis Exercises*, marked with , allow students and instructors to use the very latest data from FRED. By completing the exercises, students become familiar



with a key data source, learn how to locate data, and develop skills in interpreting data. In the eText available in MyEconLab, select figures labeled MyEconLab Real-Time Data allow students to display a pop-up graph updated with real-time data from FRED.

- *Current News Exercises* provide a turnkey way to assign gradable news-based exercises in MyEconLab. Each week, Pearson scours the news, finds a current microeconomics article and a current macroeconomics article, creates exercises around these news articles, and adds them to MyEconLab. Assigning and grading current news-based exercises that deal with the latest micro and macro events and policy issues has never been more convenient.
- *Experiments in MyEconLab* provide a fun and engaging way to promote active learning and mastery of important economic concepts. Pearson's Experiments program is flexible, easy-to-assign, auto-graded, and available in Single and Multiplayer versions. Single-player experiments allow your students to play against virtual players from anywhere at any time, as long as they have an Internet connection. Multiplayer experiments allow you to assign and manage a real-time experiment with your class. Pre- and post-questions for each experiment are available for assignment in MyEconLab. For a complete list of available experiments, visit [www.myeconlab.com](http://www.myeconlab.com).
- Test Item File questions allow you to assign quizzes or homework that look just like your exams.
- *Econ Exercise Builder* allows you to build customized exercises. Exercises include multiple-choice, graph drawing, and free-response items, many of which are generated algorithmically so that each time a student works them, a different variation is presented. MyEconLab grades every problem type except essays—even problems with graphs. When working homework exercises, students receive immediate feedback, with links to additional learning tools.

## Customization and Communication

MyEconLab in MyLab/Mastering provides additional optional customization and communication tools. Instructors who teach distance-learning courses or very large lecture sections find the MyLab/Mastering format useful because they can upload course documents and assignments, customize the order of chapters, and use communication features such as Document Sharing, Chat, ClassLive, and Discussion Board.

## For the Student

MyEconLab puts students in control of their learning through a collection of testing, practice, and study tools tied to the online, interactive version of the textbook and other media resources. Here is a snapshot of what students are saying about MyEconLab:

It was very useful because it had EVERYTHING, from practice exams to exercises to reading. Very helpful.—student, Northern Illinois University

I would recommend taking the quizzes on MyEconLab because it gives you a true account of whether or not you understand the material.—student, Montana Tech

It made me look through the book to find answers, so I did more reading.—student, Northern Illinois University

Students can study on their own or can complete assignments created by their instructor. In MyEconLab's structured environment, students practice what they learn, test their understanding, and pursue a personalized study plan generated from their performance on sample tests and from quizzes created by their instructors. In Homework or Study Plan mode, students have access to a wealth of tutorial features, including:

- Instant feedback on exercises that helps students understand and apply the concepts
- Links to the eText to promote reading of the text just when the student needs to revisit a concept or an explanation

- Step-by-step guided solutions that force students to break down a problem in much the same way an instructor would do during office hours
- Pop-up key term definitions from the eText to help students master the vocabulary of economics
- A graphing tool that is integrated into the various exercises to enable students to build and manipulate graphs to better understand how concepts, numbers, and graphs connect

## Additional MyEconLab Tools

MyEconLab includes the following additional features:

- **Enhanced eText.** Students actively read and learn, and with more engagement than ever before, through embedded and auto-graded practice, real-time data-graph updates, animations, author videos, and more.
- **Print upgrade.** For students who wish to complete assignments in MyEconLab but read in print, Pearson offers registered MyEconLab users a loose-leaf version of the print text at a significant discount.
- **Glossary flashcards.** Every key term is available as a flashcard, allowing students to quiz themselves on vocabulary from one or more chapters at a time.

MyEconLab content has been created through the efforts of Chris Annala, State University of New York–Geneseo; Charles Baum, Middle Tennessee State University; Peggy Dalton, Frostburg State University; Carol Dole, Jacksonville University; David Foti, Lone Star College; Sarah Ghosh, University of Scranton; Satyajit Ghosh, University of Scranton; Melissa Honig, Pearson Education; Woo Jung, University of Colorado; Courtney Kamauf, Pearson Education; Chris Kauffman, University of Tennessee–Knoxville; Russell Kellogg, University of Colorado–Denver; Noel Lotz, Pearson Education; Katherine McCann, University of Delaware; Daniel Mizak, Frostburg State University; Christine Polek, University of Massachusetts–Boston; Mark Scanlan, Stephen F. Austin State University; Leonie L. Stone, State University of New York–Geneseo; and Bert G. Wheeler, Cedarville University.

## Other Resources for the Instructor

### Instructor's Manuals

Edward Scahill of the University of Scranton prepared the *Instructor's Manual* for *Microeconomics* and for *Macroeconomics*. The *Instructor's Manuals* include chapter-by-chapter summaries, learning objectives, extended examples and class exercises, teaching outlines incorporating key terms and definitions, teaching tips, topics for class discussion, new *Solved Problems*, new *Making the Connection* features, and solutions to all review questions, problems, and real-time data exercises in the book. The *Instructor's Manuals* are available in print and for download from the Instructor's Resource Center ([www.pearsonhighered.com/hubbard](http://www.pearsonhighered.com/hubbard)). The solutions to the end-of-chapter review questions and problems were prepared by the authors and Edward Scahill of the University of Scranton.

### Two Test Item Files

Randy Methenitis of Richland College prepared Test Item Files for *Microeconomics* and for *Macroeconomics*. Each Test Item File includes 4,000 multiple-choice, true/false, short-answer, and graphing questions. There are questions to support each key feature in the book. The Test Item Files are available in print and for download from the Instructor's Resource Center ([www.pearsonhighered.com/hubbard](http://www.pearsonhighered.com/hubbard)). Test questions are annotated with the following information:

- **Difficulty**—1 for straight recall, 2 for some analysis, 3 for complex analysis
- **Type**—multiple-choice, true/false, short-answer, essay

- **Topic**—the term or concept the question supports
- **Learning outcome**
- **AACSB** (see the description that follows)
- **Page number** in the text
- **Special feature in the main book**—chapter-opening business example, *Economics in Your Life*, *Solved Problem*, *Making the Connection*, and *Don't Let This Happen to You*



## The Association to Advance Collegiate Schools of Business (AACSB)

The Test Item File author has connected select questions to the general knowledge and skill guidelines found in the AACSB Assurance of Learning Standards.

### What Is the AACSB?

The AACSB is a not-for-profit corporation of educational institutions, corporations, and other organizations devoted to the promotion and improvement of higher education in business administration and accounting. A collegiate institution offering degrees in business administration or accounting may volunteer for AACSB accreditation review. The AACSB makes initial accreditation decisions and conducts periodic reviews to promote continuous quality improvement in management education. Pearson Education is a proud member of the AACSB and is pleased to provide advice to help you apply AACSB Assurance of Learning Standards.

### What Are AACSB Assurance of Learning Standards?

One of the criteria for AACSB accreditation is the quality of curricula. Although no specific courses are required, the AACSB expects a curriculum to include learning experiences in the following categories of Assurance of Learning Standards:

- Written and Oral Communication
- Ethical Understanding and Reasoning
- Analytical Thinking Skills
- Information Technology
- Diverse and Multicultural Work
- Reflective Thinking
- Application of Knowledge

Questions that test skills relevant to these standards are tagged with the appropriate standard. For example, a question testing the moral questions associated with externalities would receive the Ethical Understanding and Reasoning tag.

### How Can Instructors Use the AACSB Tags?

Tagged questions help you measure whether students are grasping the course content that aligns with the AACSB guidelines noted earlier. This in turn may suggest enrichment activities or other educational experiences to help students achieve these skills.

## TestGen

The computerized TestGen package allows instructors to customize, save, and generate classroom tests. The test program permits instructors to edit, add, or delete questions from the Test Item Files; analyze test results; and organize a database of tests and student results. This software allows for extensive flexibility and ease of use. It provides many options for organizing and displaying tests, along with search and sort features. The software and the Test Item Files can be downloaded from the Instructor's Resource Center ([www.pearsonhighered.com/hubbard](http://www.pearsonhighered.com/hubbard)).

## PowerPoint Lecture Presentation

Three sets of PowerPoint slides, prepared by Paul Holmes of Ashland University, are available:

1. 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.
2. 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. Instructors can download these PowerPoint presentations from the Instructor’s Resource Center ([www.pearsonhighered.com/hubbard](http://www.pearsonhighered.com/hubbard)).
3. A student version of the PowerPoint slides is available as .pdf files. This version allows students to print the slides and bring them to class for note taking. Instructors can download these PowerPoint presentations from the Instructor’s Resource Center ([www.pearsonhighered.com/hubbard](http://www.pearsonhighered.com/hubbard)).

## Learning Catalytics

Learning Catalytics is a “bring your own device” Web-based student engagement, assessment, and classroom intelligence system. This system generates classroom discussion, guides lectures, and promotes peer-to-peer learning with real-time analytics. Students can use any device to interact in the classroom, engage with content, and even draw and share graphs.

To learn more, ask your local Pearson representative or visit [www.learningcatalytics.com](http://www.learningcatalytics.com).

## Digital Interactives

Focused on a single core topic and organized in progressive levels, each interactive immerses students in an assignable and auto-graded activity. Digital Interactives are also engaging lecture tools for traditional, online, and hybrid courses, many incorporating real-time data, data displays, and analysis tools for rich classroom discussions.

## Other Resources for the Student

In addition to MyEconLab, Pearson provides the following resources.

### Dynamic Study Modules

With a focus on key topics, these modules work by continuously assessing student performance and activity in real time and, using data and analytics, provide personalized content to reinforce concepts that target each student’s particular strengths and weaknesses.

### PowerPoint Slides

For student use as a study aid or note-taking guide, PowerPoint slides, prepared by Paul Holmes of Ashland University, can be downloaded from MyEconLab or the Instructor’s Resource Center and made available to students. The slides include:

- All graphs, tables, and equations in the text
- Figures in step-by-step mode and automated modes, using a single click per graph curve
- End-of-chapter key terms with hyperlinks to relevant slides

## Accuracy Review Board and Reviewers

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