

KARLAN / MORDUCH

# MICROECONOMICS

SECOND EDITION



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Education

# MICROECONOMICS



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# MICROECONOMICS

SECOND EDITION

Dean Karlan

Yale University and Innovations for Poverty Action

Jonathan Morduch

New York University



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MICROECONOMICS, SECOND EDITION

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# dedication

We dedicate this book to our families.

*—Dean and Jonathan*





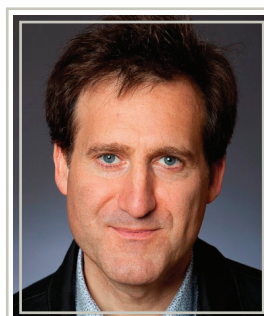
# about the authors



## Dean Karlan

**Dean Karlan** is Professor of Economics at Yale University and President and Founder of Innovations for Poverty Action (IPA). Dean started IPA in 2002 with two aims: to help learn what works and what does not

in the fight against poverty and other social problems around the world, and then to implement successful ideas at scale. IPA has worked in over 50 countries, with 1,000 employees around the world. Dean's personal research focuses on using field experiments to learn more about the effectiveness of financial services for low-income households, with a focus on using behavioral economics approaches to improve financial products and services. His research includes related areas, such as building income for those in extreme poverty, charitable fundraising, voting, health, and education. Dean is also cofounder of stickK.com, a start-up that helps people use commitment contracts to achieve personal goals, such as losing weight or completing a problem set on time, and in 2015 he founded ImpactMatters, an organization that helps assess whether charitable organizations are using and producing appropriate evidence of impact. Dean is a Sloan Foundation Research Fellow, a Guggenheim Fellow, and an Executive Committee member of the Board of the M.I.T. Jameel Poverty Action Lab. In 2007 he was awarded a Presidential Early Career Award for Scientists and Engineers. He is coeditor of the *Journal of Development Economics* and on the editorial board of *American Economic Journal: Applied Economics*. He holds a BA from University of Virginia, an MPP and MBA from University of Chicago, and a PhD in Economics from MIT. In 2016 he coauthored *Failing in the Field*, and in 2011 he coauthored *More Than Good Intentions: Improving the Ways the World's Poor Borrow, Save, Farm, Learn, and Stay Healthy*.



## Jonathan Morduch

**Jonathan Morduch** is Professor of Public Policy and Economics at New York University's Wagner Graduate School of Public Service. Jonathan focuses on innovations that expand the frontiers of finance and how financial markets shape economic growth and inequality. Jonathan has lived and worked in Asia, but his newest book, *The Financial Diaries: How American Families Cope in a World of Uncertainty* (written with Rachel Schneider and published by Princeton University Press, 2017), follows families in California, Mississippi, Ohio, Kentucky, and New York as they cope with economic ups and downs over a year. The new work jumps off from ideas in *Portfolios of the Poor: How the World's Poor Live on \$2 a Day* (Princeton University Press, 2009), which Jonathan coauthored and which describes how families in Bangladesh, India, and South Africa devise ways to make it through a year living on \$2 a day or less. Jonathan's research on financial markets is collected in *The Economics of Microfinance* and *Banking the World*, both published by MIT Press. At NYU, Jonathan is executive director of the Financial Access Initiative, a center that supports research on extending access to finance in low-income communities. Jonathan's ideas have also shaped policy through work with the United Nations, World Bank, and other international organizations. In 2009, the Free University of Brussels awarded Jonathan an honorary doctorate to recognize his work on microfinance. He holds a BA from Brown and a PhD from Harvard, both in Economics.

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**Karlan** and **Morduch** first met in 2001 and have been friends and colleagues ever since. Before writing this text, they collaborated on research on financial institutions. Together, they've written about new directions in financial access for the middle class and poor, and in Peru they set up a laboratory to study incentives in financial contracts for loans to women to start small enterprises. In 2006, together with Sendhil Mullainathan, they started the Financial Access Initiative, a center dedicated to expanding knowledge about financial solutions for the 40 percent of the world's adults who lack access to banks. This text reflects their shared passion for using economics as a tool to improve one's own life and to promote better business and public policies in the broader world.





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**We offer the second** edition of this text as a resource for professors who, like us, want to show students that *economics can make a positive impact*—in their own lives and in society as a whole. We designed the text with our own version of a “dual mandate”:

- to *deliver core economic concepts* along with *exciting new ideas* in economic thought and
- to *keep student learners engaged by confronting issues that are important in the world.*

Our intention is that this approach will help students see economics as a tool to better one’s own life, promote better public policies, and run better businesses around the world.

## Why Study Economics?

Whenever we’ve been asked why we teach economics, or why students should study the topic, our answer is simple: “*Economics helps make the world a better place.*” It’s unfortunate that economics often has a reputation for being the “dismal science.” We believe fundamentally that *economics is a good thing*. Economic principles can help students understand and respond to everyday situations. Economic ideas also help us tackle big challenges, such as fixing our health care system and keeping the government fiscally solvent. We show students how economic ideas are shaping their world in important, positive ways, and we provide them with a wide-ranging set of practical insights to help develop their economic intuition.

We have built engagement with real-world problems into the fabric of our chapters, and we present data-driven economic thinking as a way to help solve these problems. Faculty and students will find that our impact-based focus *breaks down barriers* between what goes on in the classroom and what is going on in communities, both at home and around the world.

By keeping the discussion down-to-earth and lively, we aim to make the learning materials easier to use and compelling. The chapters are organized around a familiar curriculum of introductory concepts while adding empirical context for ideas that students often find overly abstract or too simplified. The innovative, empirical orientation of the book enables us to incorporate intriguing findings from recent studies and to address material from such areas as game theory, finance, behavioral economics, and political economy. This approach connects concepts in introductory economics to important *new developments* in economic research, while placing a premium on *easy-to-understand explanations*. In every chapter we fulfill four fundamental commitments:

- **Show how economics connects to important ideas and issues in the world.** This text engages students by approaching economics as a way of explaining real people and their decisions and by providing a set of tools that serve to solve many different types of problems. *We show students that economics can make the world a better place*, while challenging them to reach their own conclusions about what “better” really means.
- **Teach principles as evidence-based tools for dealing with real situations.** The text is centered on examples and issues that resonate with students’ experience. Applications come *first*, reinforcing the relevance of the tools that students acquire. Engaging empirical cases are interspersed throughout the content. The applications open up puzzles, anomalies, and possibilities that basic economic principles help explain. The aim is, first and foremost, to ensure that students gain an intuitive grasp of basic ideas.
- **Appeal to today’s globally engaged students.** Students today live in a digital, globalized world. We recognize that they are knowledgeable and care about both local and international issues. *Microeconomics* takes a global perspective, with the United States as a leading example. We draw on a world of examples to bring to life topics like how to encourage fair

competition, create jobs, strengthen markets, protect the environment, engage in international trade, and reduce poverty.

- **Provide a balanced, data-driven view.** Economics provides a way to organize insights, integrate data, and enrich worldviews—no matter one’s personal politics. Many topics are uncontroversial; others are hotly debated. Our aim is to provide balanced approaches that help students sharpen and enrich their own understandings of the argument. We do this by focusing on the data and evidence behind the effects we see.

In the second edition of this text, we continue to offer stand-alone chapters that dig into some of the new topics in economics. We’ve watched as topics like behavioral economics, game theory, political economy, and inequality figure more and more prominently in undergraduate curricula with each passing year. We believe it is important to provide teachers with ways to share new ideas and evidence with their students—important concepts that most nonmajors would usually miss.

At the same time, we realize how selective teachers must be in choosing which material to cover in the limited time available. In light of this, we’ve been especially glad for the guidance from many teachers in finding ways to present, in a time- and space-efficient way, some of the newer, and most exciting, parts of economics today. We promise you will find the topics, discussions, and writing style of *Microeconomics* clear, concise, accessible, easy to teach from, and fun to read.

## Motivation

### Who are we? Why did we write this text?

*Microeconomics* draws on our own experiences as academic economists, teachers, and policy advisors. We are based at large research universities and often work with and advise nonprofit organizations, governments, international agencies, donors, and private firms. Much of our research involves figuring out how to improve the way real markets function. Working with partners in the United States and on six continents, we are involved in testing new economic ideas. *Microeconomics* draws on the spirit of that work, as well as similar research, taking students through the process of engaging with real problems, using analytical tools to devise solutions, and ultimately showing what works and why.

One of the best parts of writing this text, promoting its first edition, and revising for the second edition has been the opportunity to spend time with instructors across the country. We’ve been inspired by their creativity and passion and have learned from their pedagogical ideas. One of the questions we often ask fellow instructors is why they originally became interested in economics. A common response—one we share—is an attraction to the logic and power of economics as a social science. We also often hear instructors describe something slightly different: the way that economics appealed to them as a tool for making sense of life’s complexities, whether in business, politics, or daily life. We wrote this book to give instructors a way to share with their students both of those ways that economics matters.

We also are grateful to the many adopters and near-adopters of the first edition who provided many helpful suggestions for ways to make the second edition an even better resource for instructors and students. As you’ll see in the list of chapter-by-chapter changes that starts on page xxiii, we’ve worked hard to fulfill your expectations and meet that goal.

We hope this product will provide students a solid foundation for considering important issues they will confront in their lives. We hope to inspire students to continue their studies in economics, and we promise this text will give them something useful to take away even if they choose other areas of study. Finally, we hope that, in ways small and large, the tools they learn in these pages and this course will help them to think critically about their environment, to live better lives, and to make an impact on their world.

Dean Karlan  
Yale University

Jonathan Morduch  
New York University

# guided tour of features that benefit student learning

What makes this product different? Here's a quick guided tour of some key features that will engage students as they use the Karlan/Morduch content.

## Four questions about how economists think

The text's evidence-based approach is framed by *four questions* that economists ask to break down a new challenge and analyze it methodically. We explore these four questions in Chapter 1 and then carry them throughout. They shape a consistent data-driven and impact-based approach to a wide variety of examples and case studies, demonstrating how the questions can be used to address real issues. By teaching the *right questions to ask*, the text provides students with a method for working through decisions they'll face as consumers, employees, entrepreneurs, and voters. Here are the four questions:

- **Question 1:** *What are the wants and constraints of those involved?* This question introduces the concept of *scarcity*. It asks students to think critically about the preferences and resources driving decision making in a given situation. It links into discussions of utility functions, budget constraints, strategic behavior, and new ideas that expand our thinking about rationality and behavioral economics.
- **Question 2:** *What are the trade-offs?* This question focuses on *opportunity cost*. It asks students to understand trade-offs in any decision, including factors that might go beyond the immediate financial costs and benefits. Consideration of trade-offs takes us to discussions of marginal decision making, sunk costs, nonmonetary costs, and discounting.
- **Question 3:** *How will others respond?* This question asks students to focus on *incentives*, both their incentives and the incentives of others. Students consider how individual choices aggregate in both expected and unexpected ways, and what happens when incentives change. The question links into understanding supply and demand, elasticity, competition, taxation, game theory, and monetary and fiscal policy.
- **Question 4:** *Why isn't someone already doing it?* This question relates to *efficiency*. It asks students to start from an assumption that markets work to provide desired goods and services, and then to think carefully about why something that seems like a good idea isn't already being done. We encourage students to revisit their answers to the previous three questions, to see whether they missed something about the trade-offs, incentives, or other forces at work, or are looking at a genuine market failure. This fourth question links topics such as public goods, externalities, information gaps, monopoly, arbitrage, and how the economy operates in the long run versus the short run.

## Unique coverage

*Microeconomics* presents the *core principles* of economics but also seeks to present some of the new ideas that are *expanding* the basics of economic theory. The sequence of chapters follows a fairly traditional route through the core principles. In a departure from the norm, we present the chapters on individual decision making (Part 3) before firm decisions (Part 4). We believe that by thinking first about the choices faced by individuals, students become better prepared to understand the choices of firms, groups, and governments. The text proceeds step-by-step from the personal to the public, allowing students to build toward an understanding of aggregate decisions on a solid foundation of individual decision making.

*Microeconomics* offers several stand-alone chapters focused on new ideas that are expanding economic theory, which can add nuance and depth to the core principles curriculum: behavioral economics, game theory, information, time and uncertainty, political choices, and choice architecture.


In addition, because students sometimes need reinforcement with the math requirements of the course, *Microeconomics* contains six unique math appendixes that explain math topics important to understanding economics. **McGraw-Hill Create™** enables you to select and arrange the combination of traditional and unique chapters and appendixes that will be perfect for *your* course, at an affordable price for *your* students.

## Engaging pedagogical features

**Interesting examples** open each chapter. These chapter-opening stories, presented in an engaging, journalistic style, feature issues that consumers, voters, businesspeople, and family members face. The examples then take students through relevant principles that can help frame and solve the economic problem at hand.

**Boxed features** build interest. Four different types of boxed stories add interesting real-world details:


- **Real Life** boxes describe a short case or policy question, findings from history or academic studies, and anecdotes from the field.



**Real Life**  
Testing models against history


*Real Life boxes show how the concept you're reading about relates to the real world. They are your chance to test models against the data. Often these boxes will describe a situation in which people used an economic idea to solve a business or policy question, or they present interesting research ideas or experiences. Watch for links to online content, such as videos or news stories.*

Thomas Malthus, an early nineteenth-century economist, created a model that described the relationship between population growth and food production. The model predicted that mass starvation would occur as populations outgrew food supplies. In his famous work *An Essay on*



**From Another Angle**  
Does ice cream cause polio?

*From Another Angle boxes show you a different way of looking at an economic concept. Sometimes they will be a humorous story, sometimes a different way of thinking about a situation, and sometimes just an unusual application of a standard idea. We find that a little bit of weirdness goes a long way in helping us to remember things, and we hope it will work for you too.*



**What Do You Think?**  
The opportunity cost of a life

*Throughout the book, What Do You Think? boxes ask for your opinion about an important policy or life decision. These boxes will present questions that require you to combine facts and economic analysis with values and moral reasoning. They are the sort of tough questions that people face in real life. There are many "correct" answers, depending on your values and goals.*

The philosopher Peter Singer writes that opportunity costs can be a matter of life or death. Imagine you are a salesperson, and on your way to a meeting on a hot summer day, you drive by a lake. Suddenly, you notice that a child who has been swimming in the lake is drowning. No one else is in sight.

**WHAT DO YOU THINK?**

1. In what ways do the two situations presented by Singer—the sales meeting and the drowning child versus the iPod and the unvaccinated child—differ?
2. Singer argues that even something like buying an iPod is a surprisingly serious moral decision. Do you agree? What sort of opportunity costs do you typically consider when making such a decision?

- **From Another Angle** boxes show a different way of looking at an economic concept—a different way of thinking about a situation, a humorous story, or sometimes just an unusual application of a standard idea.
- **What Do You Think?** boxes offer a longer case study, with implications for public policy and student-related issues. They present relevant data or historical evidence and ask students to employ both economic analysis and normative arguments to defend a position. We leave the student with open-ended questions, which professors can assign as homework or use for classroom discussion.
- **Where Can It Take You?** boxes direct students to further classes, resources, or jobs related to the topic at hand, to show students how they might apply economics in their careers and as consumers.

In addition, two other types of boxes—**Potentially Confusing** and **Hints**—offer in-depth explanations of a concept or use of terminology. These boxes call attention to common misunderstandings or provide further explanation of tricky concepts. Students appreciate that rather than smoothing over confusing ideas and language, we offer the support they need to understand economic language and reasoning on a deeper level.

Throughout this book, every chapter contains built-in review tools and study devices for student use. **Concept Check questions tied to learning objectives** appear at the end of each major section and prompt students to make sure they understand the topics covered before moving on. **Conclusions** at the end of each chapter sum up the



overall lessons learned. **Summaries** give a deeper synopsis of what each learning objective covered. **Key Terms** provide a convenient list of the economic terminology introduced and defined in the chapter.

Also located at the ends of chapters and smoothly integrated with the chapter text are questions and problems for each learning objective:

- **Review Questions** guide students through review and application of the concepts covered in the chapter. These range from straightforward questions about theories or formulas to more open-ended narrative questions.
- High-quality **Problems and Applications** problem sets provide quantitative homework opportunities.

Both sets of content, plus additional Extra Practice Questions, are **fully integrated with Connect<sup>®</sup>**, enabling online assignments and grading.



The Karlan and Morduch product was built “from the ground up” with the expectation of *complete digital integration* of the text and related hands-on learning materials. All content in the chapter and online is tagged to the chapter learning objectives. Further, this text comes with a robust line-up of learning and teaching products, built for simple and reliable usability. See below for the highlights of our digital offer within Connect.

## McGraw-Hill Connect

**Adaptive reading experience.** SmartBook contains the same content as the print book, but actively tailors that content to the needs of the individual through adaptive probing. Instructors can assign SmartBook reading assignments for points to create incentives for students to come to class prepared.

**Extensive algorithmic and graphing assessment.** Robust, auto-gradable question banks for each chapter now include even more questions that make use of the Connect graphing tool. More questions featuring algorithmic variations have also been added.

**Interactive graphs.** This new assignable resource within Connect helps students see the relevance of subject matter by providing visual displays of real data for students to manipulate. All graphs are accompanied by assignable assessment questions and feedback to guide students through the experience of learning to read and interpret graphs and data.

**Videos.** New to this edition are videos that provide support for key economics topics. These short, engaging explanations are presented at the moment a student is struggling to help the student connect the dots and grasp challenging concepts.

**Math preparedness tutorials.** Our math preparedness assignments have been reworked to help students refresh on important prerequisite topics necessary to be successful in economics.

**Chapter 0 Orientation Assignments.** New video assignments have been added to Connect on topics such as SmartBook, graphing exercises, and the interactive graphs. These videos provide students with information about the different assignment types they will encounter in Connect, to help them be successful on their assignments and ensure a smooth start to the term.

**New Student Interface.** Connect’s new, intuitive interface gives students a view of assignments and deadlines across all courses in Connect, to help them be more organized. Students also have access to a personalized analytics dashboard designed to help them allocate study time appropriately for maximum success in the course.

## Supplementary Materials

All supplements accompany this text in a completely seamless integration. The following ancillaries are available for quick download and convenient access via the Online Learning Center at [www.mhhe.com/karlanmorduch2e](http://www.mhhe.com/karlanmorduch2e) and within Connect. Instructor resources are password protected for security.

## Test bank

The test bank has been extensively revised for this edition by Aaron Finkle at University of Maryland and Michael Machiorlatti at Oklahoma City Community College. All test bank items were also thoroughly accuracy-checked by Cindy Clement at University of Maryland and Ida Mirzaie at Ohio State University. The test bank contains thousands of quality multiple-choice questions. Each question is tagged with the corresponding learning objective, level of difficulty,

economic concept, AACSB learning category, and Bloom's Taxonomy objective. All of the test bank content is available to assign within Connect.

The test bank is also available in TestGen, a complete, state-of-the-art test generator and editing application software that allows instructors to quickly and easily select test items from McGraw-Hill's test bank content. The instructors can then organize, edit, and customize questions and answers to rapidly generate tests for paper or online administration. Questions can include stylized text, symbols, graphics, and equations that are inserted directly into questions using built-in mathematical templates. TestGen's random generator provides the option to display different text or calculated number values each time questions are used. With both quick-and-simple test creation and flexible and robust editing tools, TestGen is a complete test generator system for today's educators.

## PowerPoint presentations

Revised for this edition by Gregory Gilpin at Montana State University, the PowerPoint presentations have been carefully crafted to ensure maximum usefulness in the classroom. Each presentation covers crucial information and supplies animated figures that are identical to those in the book. The presentations also contain sample exercises, instructor notes, and more.

In addition to the instructor PowerPoint presentations, a student version is also provided. The student PowerPoints provide a review of each chapter's main points and graphs in a static, PDF form. Some information is intentionally missing from these PDFs so that students are prompted to follow along with the instructor and fill information in as it is discussed in class.

## Instructor's manual

The instructor's manual provides a wealth of resources to help organize and enrich the course. Elements include:

- **Learning Objectives:** Lists the learning objectives for each chapter.
- **Chapter Outline:** Shows an outline of the chapter organization for a quick review.
- **Beyond the Lecture:** Presents ideas and activities you can use to start discussion and engage students in class, along with team exercises and assignments you can use outside of class, revised by Dave Brown, Penn State University.
- **Clicker Questions:** Offer additional opportunities for classroom engagement, created by Dave Brown, Penn State University.
- **End-of-Chapter Solutions:** Provides answers to all end-of-chapter questions and problems, revised for this edition by Nora Underwood at University of Central Florida and Erin Moody at University of Maryland. All end-of-chapter answers and solutions have been accuracy checked by Susan Bell at Seminole State College and Greg Gilpin, Montana State University.

## Assurance of Learning Ready

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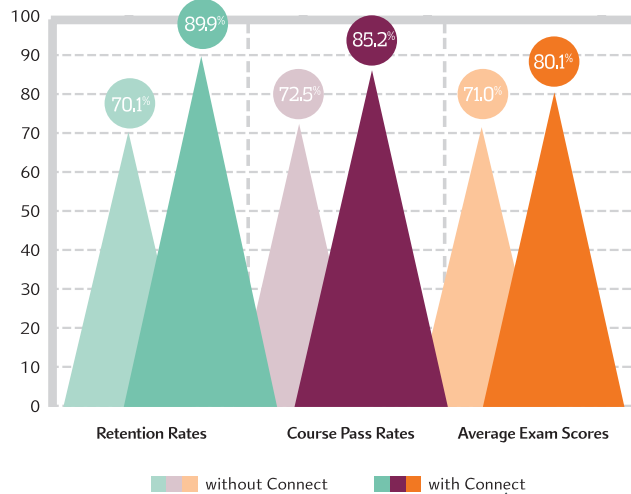
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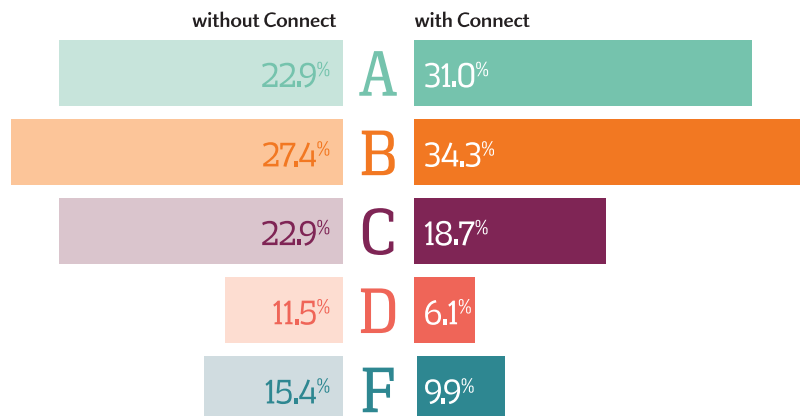
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# detailed content changes

Numerous changes were made to the second edition of this text; this section provides a detailed, chapter-by-chapter list of changes. The hope is that this list will help users of the text quickly see what has changed in each chapter so they can adjust lesson plans as needed.

## In all chapters

Throughout all chapters, the authors updated real-world data, reformatted long paragraphs into smaller paragraphs or bulleted lists for easier student reading and learning, and added additional eBook-only box features. They also added more learning objectives (as detailed below) for text subsections, with related new Concept Check questions and end-of-chapter Review Questions and Problems/Applications. The following list does not repeat these bookwide changes, but rather details specific changes made to each chapter.

## Chapter 1: Economics and Life

- Added a new paragraph discussing knowledge as a nonscarce good.
- Clarified the example of opportunity cost for self-employed consultants versus factory workers.
- Clarified the presentation of positive and negative incentives.

## Chapter 2: Specialization and Exchange

- Changed example in opening story and throughout chapter from China to Bangladesh.
- Moved Learning Objective 2.1 under the “Production Possibilities” header.
- Simplified the chapter by removing the mathematical calculation of the production possibilities frontier.
- Expanded the discussion surrounding Figure 2-7 for better clarity.

## Chapter 3: Markets

- Revised the discussion of the defining characteristics of a competitive market, as well as Table 3-1, to make it consistent with the discussion in Chapter 13.
- Slightly expanded the explanation of *ceteris paribus*.

## Chapter 4: Elasticity

- Changed the presentation of price elasticity of demand to show only the mid-point method and made more explicit the equations for percentage change in quantity demanded and percentage change in price.
- Added a new table (Table 4-1) to show estimated price elasticities of demand for some common goods.
- Added a new paragraph to further explain nonprice determinants in cross-price elasticity of demand.

## Chapter 5: Efficiency

- Clarified and simplified the examples of willingness to pay and willingness to sell.
- Expanded the discussion of total surplus, as shown in Figure 5-5.
- Expanded the discussion of deadweight loss, as shown in Figure 5-8.
- Revised text to clarify the concept of missing markets.
- Added a Concept Check question for Learning Objective 5.6 about how price changes affect the distribution of surplus between consumers and producers.

## Chapter 6: Government Intervention

- Changed the sequence of the three reasons to intervene in markets, moving market failures last.
- Introduced the term *welfare effects* in the discussion of deadweight loss.
- Added a new paragraph further explaining the effects of payday lending rates to the “Put a cap on payday lending?” box.
- Added a new Concept Check question for Learning Objective 6.2 about what can cause a price floor to become nonbinding.
- Added a new equation (Equation 6.3) on calculation of government subsidy expenditure.
- Added two new figures: Figure 6-12 shows the deadweight loss from a subsidy and Figure 6-13 shows the effect of a subsidy on surplus.
- Added a new Concept Check question for Learning Objective 6.3 about what determines the incidence of a tax.

## Chapter 7: Consumer Behavior

- Divided what used to be one learning objective in the first edition (LO 7.5) into two learning objectives (LOs 7.5 and 7.6).
- Added a short parenthetical explanation that utility numbers have no concrete meaning other than relative to each other.
- Added a new table (Table 7.1) to show marginal utility, with clarified explanation of diminishing marginal utility.
- Added a new Potentially Confusing box on the difference between inferior and normal goods to the “Changes in prices” header, under the income effect discussion.
- Added a new paragraph summarizing the income and substitution effects.
- Added a new Concept Check question for Learning Objective 7.5 about the influence of opinions on utility.

## Appendix E: Using Indifference Curves

- Added two new learning objectives: LO E.3 (shapes of indifference curves for perfect substitutes and perfect complements) and LO E.6 (how to build an individual’s demand curve using indifference curves).
- Revised the appendix to better differentiate the example used in the body of Chapter 7 (“Cody”) and the example used in the appendix (“Malik”).

## Chapter 8: Behavioral Economics

- Revised the box about stickK, a company that helps people reach their goals by committing to a course of action and facing a penalty if they fail to follow through.

## Chapter 9: Game Theory and Strategic Thinking

- Added new learning objectives: LOs 9.3 (dominant strategy in a one-time game), 9.4 (whether a Nash equilibrium will be reached in a one-time game), and 9.5 (how a commitment strategy can be used to achieve cooperation in a one-time game).
- Added a new figure (Figure 9.5) showing the payoffs in the driving game of “chicken.”
- Added a new Concept Check about how to identify whether a strategy is dominant.

- Under the “Sequential Games” header, added a new “What Do You Think?” box about strategy on the TV show *Survivor*.
- Added a new Concept Check question about backward induction.

## Chapter 10: Information

- Expanded and clarified the discussion of adverse selection.

## Chapter 11: Time and Uncertainty

- Added new Learning Objective 11.5 (risk-averse versus risk-seeking behaviors).
- Revised the formula for the future value of a sum (Equation 11.3).
- Expanded the explanation of present value computation.

## Chapter 12: The Costs of Production

- Revised the numbers in Table 12-2 that shows production and marginal product of labor.
- Revised the discussion of total, average, and marginal costs, including the columns and numbers in the costs of production table (Table 12-3).
- Revised and expanded the discussion of marginal cost.
- Changed the terminology *returns to scale* to *economies and diseconomies of scale*.

## Chapter 13: Perfect Competition

- Revised the discussion of characteristics of competitive markets to match the discussion in Chapter 3.
- Added a “Potentially Confusing” box in the discussion of the optimal quantity of output, discussing the terminology “profit increased” when referring to a negative amount.
- Added a section-concluding paragraph about why firms continue to produce when they are making negative profits.
- Added equations showing the calculation of profit using average revenue and average total cost.
- In the discussion of deciding when to operate, separated out discussions of firms’ short-run versus long-run decisions, to clarify difference between shutting down and exiting the market.
- Added new Table 13-4 showing revenue, cost, and profit data when price falls.

- Added a “Potentially Confusing” box elaborating on economists’ use of the terminology *exiting* versus *shutting down*.
- Added new subheadings to differentiate the discussions of the effects of market entry on the long-run and short-run supply curves.
- Added a “Potentially Confusing” box reviewing the difference between accounting profit and economic profit.

## Chapter 14: Monopoly

- Adjusted the curves in Figures 14-2, 14-3, 14-4, 14-5, and 14-6.
- Revised the labels in Figure 14-1, part A.
- Added new Table 14-2 to compare the characteristics of perfect competition and monopoly markets.
- Made changes in panel A of Figure 14-6 to highlight and differentiate private monopoly price and government monopoly price.
- Added a Concept Check question asking how aggressive tactics create barriers to entry.

## Chapter 15: Monopolistic Competition and Oligopoly

- Added a paragraph further explaining market categories of record companies (oligopolists) and individual musicians (monopolistic competitors).
- Adjusted the curves in Figures 15-2, 15-3, and 15-4.
- Added new Table 15-1 comparing the characteristics of market models (perfect competition, monopoly, monopolistic competition).
- Revised Figure 15-6 to show marginal revenue curve and expanded the text discussion of the profit-maximizing quantity for monopolies and perfectly competitive firms.
- Clarified the discussion of quantity effect and price effect in oligopolies.
- Added new Figure 15-7 that compares the market equilibrium in different types of markets for music albums—monopoly, duopoly, three-firm, and perfectly competitive.
- Revised and slightly expanded Learning Objective 15.7 to clarify the application of game theory to oligopolies’ decision to compete or collude.
- Expanded the section on Nash equilibriums.
- Added a new Concept Check question for Learning Objective 15.7 about collusion in repeated games.

## Chapter 16: The Factors of Production

- Clarified the text discussion of the value of marginal product (VMP) and added a new formula for calculating VMP.
- Added new Table 16-2 about nonprice determinants of labor demand and Table 16-3 about nonprice determinants of labor supply, to clarify discussion of labor supply and labor demand.
- Combined previously separate text discussions of determinants of labor demand and labor, for greater clarity.

## Chapter 17: International Trade

- Changed China to Bangladesh in chapter-opening example.
- Added new Learning Objective 17.4 addressing when and how an economy’s trade policies affect world supply of and world demand for a good.
- Added a new summary paragraph under “Incomplete Specialization” header.
- Clarified the text explanations, relating to Figures 17-4 and 17-5, about becoming a net importer and a net exporter.
- Added new Concept Check questions for Learning Objective 17.3 (what happens to domestic consumer surplus when a country becomes a net-importer of a good) and Learning Objective 17.4 (what happens to world supply and world demand when a large economy moves from restricted to unrestricted trade).

## Chapter 18: Externalities

- Major revision and reorganization of the “What Are Externalities?” section. The revised content now features separate subsections on negative externalities and positive externalities.
- The negative externalities section covers the problem of “too much”—negative production externality and negative consumption externality.
- The positive externalities section covers the problem of “too little”—positive consumption externality and positive production externality.
- The new section on private solutions to externalities discusses why private solutions don’t always occur.

- The new section on public solutions to externalities addresses taxes and subsidies, and quotas and tradable allowances.
- New “What Do You Think?” box, “Reclining Transactions,” applying the Coase theorem to the problem of people reclining their seats on airplanes.
- New figures throughout the chapter.

## Chapter 19: Public Goods and Common Resources

- Slightly expanded the discussion of nonrival goods.
- Expanded and reorganized the content dealing with the tragedy of the commons and use of government regulation to solve common resources problems.
- Revised the Concept Check question related to Learning Objective 19.3 about the effect of social norms on potential free riders.
- Added a new Concept Check question for Learning Objective 19.4 about how the tragedy of the commons affects demand for common resources and equilibrium quantity.

## Chapter 20: Taxation and the Public Budget

- Numbered the tax-revenue computation formula (Equation 20-1).
- Revised Figure 20-4 that graphs the price and quantity effects of a tax increase.
- Added subheaders to highlight and better differentiate proportional, progressive, and regressive taxation.
- Added a text discussion and table comparing tax rates of various countries.
- Moved and reformatted the discussion of personal income tax collection.

## Chapter 21: Poverty, Inequality, and Discrimination

- Added new Learning Objective 21.2 about why poverty persists.
- Expanded the “Real Life” box on “Getting out of the neighborhood?” to include recent evidence on a policy experiment that tests the effects of moving poor families out of areas with concentrated poverty.
- Added a new “What Do You Think?” box about the super-wealthy that invites students to consider the implications of widening inequality.
- Added new Learning Objective 21.7 about why economists differentiate between correlation and causation when measuring discrimination and why markets do not always eliminate discrimination.

## Chapter 22: Political Choices

- Added new Learning Objective 22.6 about major features of political structures and how they can affect policy choices.

## Chapter 23: Public Policy and Choice Architecture

- Expanded the explanation of SMartT<sup>TM</sup> retirement-savings program and the effectiveness of commitment devices, which illustrates an idea from behavioral economics that helps workers save more.
- Added a list summarizing important rules for creating effective commitment devices.
- Added new Learning Objective 23.4 about how well-presented information can help people make decisions that are good for them and a related Concept Check.



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