

GLENN
HUBBARD

ANTHONY PATRICK
O'BRIEN



Economics

EIGHTH EDITION



Economics

This page intentionally left blank

Economics

Eighth Edition

Glenn Hubbard

Columbia University

Anthony Patrick O'Brien

Lehigh University



Please contact <https://support.pearson.com/getsupport/s/contactsupport> with any queries on this content.

Copyright © 2021, 2019, 2017 by Pearson Education, Inc. or its affiliates, 221 River Street, Hoboken, NJ 07030. All Rights Reserved. Manufactured in the United States of America. This publication is protected by copyright, and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise. For information regarding permissions, request forms, and the appropriate contacts within the Pearson Education Global Rights and Permissions department, please visit www.pearsoned.com/permissions/.

Acknowledgments of third-party content appear on the appropriate page within the text or on page C-1, which constitutes an extension of this copyright page.

Cover image: Venus Angel/Shutterstock

PEARSON, ALWAYS LEARNING, and MYLAB are exclusive trademarks owned by Pearson Education, Inc. or its affiliates in the U.S. and/or other countries.

Unless otherwise indicated herein, any third-party trademarks, logos, or icons that may appear in this work are the property of their respective owners, and any references to third-party trademarks, logos, icons, or other trade dress are for demonstrative or descriptive purposes only. Such references are not intended to imply any sponsorship, endorsement, authorization, or promotion of Pearson's products by the owners of such marks, or any relationship between the owner and Pearson Education, Inc., or its affiliates, authors, licensees, or distributors.

Library of Congress Cataloging-in-Publication Data

Names: Hubbard, Glenn, author. | O'Brien, Anthony Patrick, author.

Title: Economics / Glenn Hubbard, Columbia University, Anthony Patrick O'Brien, Lehigh University.

Description: Eighth edition. | Hoboken, NJ : Pearson, [2021] | Includes bibliographical references and index.

Identifiers: LCCN 2019050759 (print) | LCCN 2019050760 (ebook) | ISBN 9780135957554 (paperback) | ISBN 9780135957363 (ebook)

Subjects: LCSH: Economics--Textbooks.

Classification: LCC HB171.5 .H79 2021 (print) | LCC HB171.5 (ebook) | DDC 330--dc23

LC record available at <https://lcn.loc.gov/2019050759>

LC ebook record available at <https://lcn.loc.gov/2019050760>

ScoutAutomatedPrintCode



ISBN 10: 0-13-595755-9
ISBN 13: 978-0-13-595755-4

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

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

This page intentionally left blank

ABOUT THE **AUTHORS**



Glenn Hubbard, policymaker, professor, and researcher.

Glenn Hubbard is dean emeritus and Russell L. Carson Professor of Finance and Economics in the Graduate School of Business at Columbia University and professor of economics in Columbia's Faculty of Arts and Sciences. He is also a research associate of the National Bureau of Economic Research and a director of Automatic Data Processing, Black Rock Fixed-Income Funds, and MetLife. He received a PhD in economics from Harvard University in 1983. From 2001 to 2003, he served as chair of the White House Council of Economic

Advisers and chair of the OECD Economic Policy Committee, and from 1991 to 1993, he was deputy assistant secretary of the U.S. Treasury Department. He currently serves as co-chair of the nonpartisan Committee on Capital Markets Regulation. Hubbard's fields of specialization are public economics, financial markets and institutions, corporate finance, macroeconomics, industrial organization, and public policy. He is the author of more than 100 articles in leading journals, including *American Economic Review*, *Brookings Papers on Economic Activity*, *Journal of Finance*, *Journal of Financial Economics*, *Journal of Money, Credit, and Banking*, *Journal of Political Economy*, *Journal of Public Economics*, *Quarterly Journal of Economics*, *RAND Journal of Economics*, and *Review of Economics and Statistics*. His research has been supported by grants from the National Science Foundation, the National Bureau of Economic Research, and numerous private foundations.



Tony O'Brien, award-winning professor and researcher.

Anthony Patrick O'Brien is a professor of economics at Lehigh University. He received a PhD from the University of California, Berkeley, in 1987. He has taught principles of economics for more than 20 years, in both large sections and small honors classes. He received the Lehigh University Award for Distinguished Teaching. He was formerly the director of the Diamond Center for Economic Education and was named a Dana Foundation Faculty Fellow and Lehigh Class of 1961 Professor of Economics. He has been a visiting professor

at the University of California, Santa Barbara, and the Graduate School of Industrial Administration at Carnegie Mellon University. O'Brien's research has dealt with issues such as the evolution of the U.S. automobile industry, the sources of U.S. economic competitiveness, the development of U.S. trade policy, the causes of the Great Depression, and the causes of black–white income differences. His research has been published in leading journals, including *American Economic Review*, *Quarterly Journal of Economics*, *Journal of Money, Credit, and Banking*, *Industrial Relations*, *Journal of Economic History*, and *Explorations in Economic History*. His research has been supported by grants from government agencies and private foundations.

BRIEF CONTENTS

Preface	P-1
A Word of Thanks	P-28

PART 1 Introduction

Chapter 1: Economics: Foundations and Models	2
Appendix: Using Graphs and Formulas	27
Chapter 2: Trade-offs, Comparative Advantage, and the Market System	40
Chapter 3: Where Prices Come From: The Interaction of Demand and Supply	72
Chapter 4: Economic Efficiency, Government Price Setting, and Taxes	108
Appendix: Quantitative Demand and Supply Analysis	143

PART 2 Markets in Action: Policy and Applications

Chapter 5: Externalities, Environmental Policy, and Public Goods	148
Chapter 6: Elasticity: The Responsiveness of Demand and Supply	182
Chapter 7: The Economics of Health Care	216

PART 3 Firms in the Domestic and International Economies

Chapter 8: Firms, the Stock Market, and Corporate Governance	250
Appendix: Using Present Value	274
*Online Appendix: Income Statements and Balance Sheets	
Chapter 9: Comparative Advantage and the Gains from International Trade	280

PART 4 Microeconomic Foundations: Consumers and Firms

Chapter 10: Consumer Choice and Behavioral Economics	316
Appendix: Using Indifference Curves and Budget Lines to Understand Consumer Behavior	350

Chapter 11: Technology, Production, and Costs	364
*Online Appendix: Using Isoquants and Isocost Lines to Understand Production and Cost	

PART 5 Market Structure and Firm Strategy

Chapter 12: Firms in Perfectly Competitive Markets	394
Chapter 13: Monopolistic Competition: The Competitive Model in a More Realistic Setting	430
Chapter 14: Oligopoly: Firms in Less Competitive Markets	458
Chapter 15: Monopoly and Antitrust Policy	486

PART 6 Labor Markets, Public Choice, and the Distribution of Income

Chapter 16: The Markets for Labor and Other Factors of Production	526
Chapter 17: Public Choice, Taxes, and the Distribution of Income	564

PART 7 Macroeconomic Foundations and Long-Run Growth

Chapter 18: GDP: Measuring Total Production and Income	602
Chapter 19: Unemployment and Inflation	630
Chapter 20: Economic Growth, the Financial System, and Business Cycles	670
Chapter 21: Long-Run Economic Growth: Sources and Policies	704

PART 8 Short-Run Fluctuations

Chapter 22: Aggregate Expenditure and Output in the Short Run	746
Appendix: The Algebra of Macroeconomic Equilibrium	790
Chapter 23: Aggregate Demand and Aggregate Supply Analysis	792
Appendix: Macroeconomic Schools of Thought	828

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

PART 9 Monetary and Fiscal Policy

Chapter 24: Money, Banks, and the Federal Reserve System	832
Chapter 25: Monetary Policy	870
Chapter 26: Fiscal Policy	914
Appendix: A Closer Look at the Multiplier	958
Chapter 27: Inflation, Unemployment, and Federal Reserve Policy	964

PART 10 The International Economy

Chapter 28: Macroeconomics in an Open Economy	998
*Online Appendix: The Gold Standard and the Bretton Woods System	
Glossary	G-1
Company Index	I-1
Subject Index	I-4
Credits	C-1

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

This page intentionally left blank

CONTENTS

Preface	P-1	Graphs of Two Variables	29
A Word of Thanks	P-28	Slopes of Lines	30
PART 1 Introduction		Taking into Account More Than Two Variables on a Graph	31
CHAPTER 1: Economics: Foundations and Models	2	Positive and Negative Relationships	31
Does Apple Manufacture the iPhone in the United States?	2	Determining Cause and Effect	32
1.1 Three Key Economic Ideas	4	Are Graphs of Economic Relationships Always Straight Lines?	33
People Are Rational	5	Slopes of Nonlinear Curves	34
People Respond to Economic Incentives	5	Formulas	35
Apply the Concept: Would a Congressional Bill Aimed at Increasing the Pay of Low-Wage Workers Backfire?	5	Formula for a Percentage Change	36
Optimal Decisions Are Made at the Margin	6	Formulas for the Areas of a Rectangle and a Triangle	36
Solved Problem 1.1: The Marginal Benefit and Marginal Cost of Delivering Packages for Amazon	7	Summary of Using Formulas	37
1.2 The Economic Problem That Every Society Must Solve	8	Problems and Applications	38
What Goods and Services Will Be Produced?	8	CHAPTER 2: Trade-offs, Comparative Advantage, and the Market System	40
How Will the Goods and Services Be Produced?	8	Elon Musk and Tesla Motors Face a Trade-off	40
Who Will Receive the Goods and Services Produced?	9	2.1 Production Possibilities Frontiers and Opportunity Costs	42
Centrally Planned Economies versus Market Economies	9	Graphing the Production Possibilities Frontier	42
The Modern “Mixed” Economy	10	Solved Problem 2.1: Analyzing Trade-offs Using a Production Possibilities Frontier for Tesla Motors	44
Efficiency and Equity	10	Increasing Marginal Opportunity Costs	46
1.3 Economic Models	11	Economic Growth	47
The Role of Assumptions in Economic Models	12	2.2 Comparative Advantage and Trade	47
Forming and Testing Hypotheses in Economic Models	12	Specialization and Gains from Trade	48
Positive and Normative Analysis	13	Absolute Advantage versus Comparative Advantage	50
Don't Let This Happen to You: Don't Confuse Positive Analysis with Normative Analysis	14	Comparative Advantage and the Gains from Trade	51
Economics as a Social Science	14	Don't Let This Happen to You: Don't Confuse Absolute Advantage and Comparative Advantage	51
Apply the Concept: What Can Economics Contribute to the Debate over Tariffs?	14	Solved Problem 2.2: Comparative Advantage and the Gains from Trade	51
1.4 Microeconomics and Macroeconomics	15	Apply the Concept: Comparative Advantage, Opportunity Cost, and Housework	53
1.5 Economic Skills and Economics as a Career	16	2.3 The Market System	54
1.6 A Preview of Important Economic Terms	17	The Circular Flow of Income	55
Conclusion	19	The Gains from Free Markets	56
An Inside Look: Are Tariffs Bringing Manufacturing Jobs Back Home or Just Raising Prices?	20	The Market Mechanism	56
*Chapter Summary and Problems	22	Apply the Concept: A Story of the Market System in Action: How Do You Make an iPad?	57
Key Terms, Summary, Review Questions, Problems and Applications, and Critical Thinking Exercises		The Role of the Entrepreneur in the Market System	59
Appendix: Using Graphs and Formulas	27	The Legal Basis of a Successful Market System	59
Graphs of One Variable	28	Apply the Concept: What Is Socialism?	61
		Conclusion	63
		An Inside Look: A Plug-in Porsche?	64
		Chapter Summary and Problems	66

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

CHAPTER 3: Where Prices Come From:

The Interaction of Demand and Supply 72

A Basketball Player Takes a Tumble—And So Does Nike 72

3.1 The Demand Side of the Market 74

Demand Schedules and Demand Curves 74

The Law of Demand 75

What Explains the Law of Demand? 75

Holding Everything Else Constant: The *Ceteris Paribus* Condition 76

Variables That Shift Market Demand 76

Apply the Concept: Millennials and Generation Z Shake Up the Markets for Groceries, Big Macs, and Running Shoes 78

A Change in Demand versus a Change in Quantity Demanded 79

Apply the Concept: Forecasting the Demand for Athletic Shoes 80

3.2 The Supply Side of the Market 82

Supply Schedules and Supply Curves 82

The Law of Supply 83

Variables That Shift Market Supply 83

Apply the Concept: Fracking, the U.S. Oil Boom, and Expected Oil Prices 84

A Change in Supply versus a Change in Quantity Supplied 85

3.3 Market Equilibrium: Putting Demand and Supply Together 87

How Markets Eliminate Surpluses and Shortages 88

Demand and Supply Both Count 89

Solved Problem 3.3: Demand and Supply Both Count: A Tale of Two Letters 89

3.4 The Effect of Demand and Supply Shifts on Equilibrium 90

The Effect of Shifts in Demand on Equilibrium 90

The Effect of Shifts in Supply on Equilibrium 90

The Effect of Shifts in Demand and Supply over Time 91

Apply the Concept: Higher Demand for Cobalt—But Lower Prices? 93

Solved Problem 3.4: Can We Predict Changes in the Price and Quantity of Merino Wool? 94

Shifts in a Curve versus Movements along a Curve 95

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 96

Conclusion 97

An Inside Look: If the Shoe Fits . . . Print It? 98

Chapter Summary and Problems 100

CHAPTER 4: Economic Efficiency, Government Price Setting, and Taxes 108

What Do Food Riots in Venezuela and the Rise of Uber in the United States Have in Common? 108

4.1 Consumer Surplus and Producer Surplus 110

Consumer Surplus 110

Apply the Concept: The Consumer Surplus from Uber 112

Producer Surplus 114

What Consumer Surplus and Producer Surplus Measure 115

4.2 The Efficiency of Competitive Markets 115

Marginal Benefit Equals Marginal Cost in Competitive Equilibrium 115

Economic Surplus 116

Deadweight Loss 117

Economic Surplus and Economic Efficiency 117

4.3 Government Intervention in the Market: Price Floors and Price Ceilings 118

Price Floors: Government Policy in Agricultural Markets 118

Apply the Concept: Price Floors in Labor Markets: The Debate over Minimum Wage Policy 119

Price Ceilings: Government Rent Control Policy in Housing Markets 121

Don't Let This Happen to You: Don't Confuse "Scarcity" with "Shortage" 122

Black Markets and Peer-to-Peer Sites 122

Solved Problem 4.3: What's the Economic Effect of a Black Market in Renting Apartments? 123

The Results of Government Price Controls: Winners, Losers, and Inefficiency 124

Apply the Concept: Price Controls Lead to Economic Crisis in Venezuela 124

Positive and Normative Analysis of Price Ceilings and Price Floors 126

4.4 The Economic Effect of Taxes 126

The Effect of Taxes on Economic Efficiency 126

Tax Incidence: Who Actually Pays a Tax? 127

Solved Problem 4.4: Who Bears the Burden of the Seattle Beverage Tax? 128

Apply the Concept: Is the Burden of the Social Security Tax Really Shared Equally between Workers and Firms? 131

Conclusion 133

An Inside Look: Uber Fights to Repeal New York City Restrictions 134

Chapter Summary and Problems 136

Appendix: Quantitative Demand and Supply Analysis 143

Demand and Supply Equations 143

Calculating Consumer Surplus and Producer Surplus 144

Review Questions 146

Problems and Applications 147

PART 2 Markets in Action: Policy and Applications

CHAPTER 5: Externalities, Environmental Policy, and Public Goods 148

Are NextEra Energy and Green Power the Future? 148

5.1 Externalities and Economic Efficiency	150	Don't Let This Happen to You: Don't Confuse	
The Effect of Externalities	150	Inelastic with Perfectly Inelastic	190
Externalities and Market Failure	152	6.2 The Determinants of the Price Elasticity of Demand	190
What Causes Externalities?	153	Availability of Close Substitutes	190
5.2 Private Solutions to Externalities:		Passage of Time	191
The Coase Theorem	153	Luxuries versus Necessities	191
The Economically Efficient Level of Pollution Reduction	154	Definition of the Market	191
Apply the Concept: The Clean Air Act: How a Government Policy Reduced Infant Mortality	154	Share of a Good in a Consumer's Budget	191
The Basis for Private Solutions to Externalities	156	Some Estimated Price Elasticities of Demand	191
Don't Let This Happen to You: Remember That It's the Net Benefit That Counts	157	6.3 The Relationship between Price Elasticity of Demand and Total Revenue	192
Do Property Rights Matter?	157	Elasticity and Revenue with a Linear Demand Curve	193
The Problem of Transactions Costs	158	Solved Problem 6.3: Price and Revenue	
The Coase Theorem	158	Don't Always Move in the Same Direction	195
Apply the Concept: How Can You Defend Your Knees on a Plane Flight?	158	Apply the Concept: Amazon and Netflix Test the Price Elasticity of Demand for Their Services	196
5.3 Government Policies to Deal with Externalities	159	6.4 Other Demand Elasticities	197
Imposing a Tax When There Is a Negative Externality	159	Cross-Price Elasticity of Demand	197
Providing a Subsidy When There Is a Positive Externality	160	Income Elasticity of Demand	198
Apply the Concept: Should the Government Tax Cigarettes and Soda?	161	Apply the Concept: Price Elasticity, Cross-Price Elasticity, and Income Elasticity in the Market for Alcoholic Beverages	198
Solved Problem 5.3: Are Congestion Fees the Answer to Big City Traffic Problems?	162	6.5 Using Elasticity to Analyze the Disappearing Family Farm	199
Command-and-Control versus Market-Based Approaches	164	Solved Problem 6.5: Using Price Elasticity to Analyze the Effects of a Soda Tax	200
The End of the Sulfur Dioxide Cap-and-Trade System	165	6.6 The Price Elasticity of Supply and Its Measurement	201
Are Tradable Emission Allowances Licenses to Pollute?	165	Measuring the Price Elasticity of Supply	202
Apply the Concept: Does the United States Need a Green New Deal?	165	Determinants of the Price Elasticity of Supply	202
5.4 Four Categories of Goods	167	Apply the Concept: Why Are Oil Prices So Unstable?	202
The Demand for a Public Good	168	Polar Cases of Perfectly Elastic and Perfectly Inelastic Supply	204
The Optimal Quantity of a Public Good	170	Using Price Elasticity of Supply to Predict Changes in Price	204
Solved Problem 5.4: Determining the Optimal Level of Public Goods	171	Conclusion	207
Common Resources	173	Chapter Summary and Problems	208
Conclusion	175	CHAPTER 7: The Economics of Health Care	216
Chapter Summary and Problems	176	Goodbye to Blue Cross and Blue Shield?	216
CHAPTER 6: Elasticity: The Responsiveness of Demand and Supply	182	7.1 The Improving Health of People in the United States	218
Do Soda Taxes Work?	182	Changes over Time in U.S. Health	218
6.1 The Price Elasticity of Demand and Its Measurement	184	Reasons for Long-Run Improvements in U.S. Health	219
Measuring the Price Elasticity of Demand	184	7.2 Health Care around the World	220
Elastic Demand and Inelastic Demand	185	The U.S. Health Care System	220
An Example of Calculating Price Elasticities	185	Apply the Concept: The Increasing Importance of Health Care in the U.S. Economy	222
The Midpoint Formula	186	The Health Care Systems of Canada, Japan, and the United Kingdom	223
Solved Problem 6.1: Calculating the Price Elasticity of Demand	187	Comparing Health Care Outcomes around the World	224
When Demand Curves Intersect, the Flatter Curve Is More Elastic	188	How Useful Are Cross-Country Comparisons of Health Outcomes?	225
Polar Cases of Perfectly Inelastic and Perfectly Elastic Demand	188	7.3 Information Problems and Externalities in the Market for Health Care	226
		Adverse Selection and the Market for "Lemons"	226

Asymmetric Information in the Market for Health Insurance	227
Don't Let This Happen to You: Don't Confuse Adverse Selection with Moral Hazard	228
Externalities in the Market for Health Care	229
Should the Government Run the Health Care System?	231
7.4 The Debate over Health Care Policy in the United States	232
The Rising Cost of Health Care	232
Apply the Concept: Are U.S. Firms Handicapped by Paying for Their Employees' Health Insurance?	234
Explaining Increases in Health Care Spending	235
The Continuing Debate over Health Care Policy	238
Solved Problem 7.4: Recent Trends in U.S. Health Care	239
Market-Based Reforms	240
Apply the Concept: Medicare for All?	241
Conclusion	243
Chapter Summary and Problems	244

PART 3 Firms in the Domestic and International Economies

CHAPTER 8: Firms, the Stock Market, and Corporate Governance	250
Investing in Lyft, a Company That Has Never Earned a Profit?	250
8.1 Types of Firms	252
Who Is Liable? Limited and Unlimited Liability Corporations Earn the Majority of Revenue and Profits	252
Apply the Concept: Why Are Fewer Young People Starting Businesses?	254
The Structure of Corporations and the Principal-Agent Problem	255
8.2 How Firms Raise Funds	256
Sources of External Funds	256
Apply the Concept: The Rating Game: Are Federal, State, or City Governments Likely to Default on Their Bonds?	257
Stock and Bond Markets Provide Capital—and Information	259
The Fluctuating Stock Market	260
Don't Let This Happen to You: When Lyft Shares Are Sold, Lyft Doesn't Get the Money	260
Why Is It So Hard to Beat the Market?	262
Apply the Concept: Why Would Anyone Buy Lyft's Stock?	263
Solved Problem 8.2: Why Does Warren Buffett Like Mutual Funds?	264
8.3 Using Financial Statements to Evaluate a Corporation	265
The Income Statement	265
The Balance Sheet	266
Problems in Corporate Governance	266

Apply the Concept: Should Investors Worry about Corporate Governance at Lyft?	267
Conclusion	269
Chapter Summary and Problems	270
Appendix: Using Present Value	274
The Concept of Present Value	274
Solved Problem 8A.1: How to Receive Your Contest Winnings	276
Using Present Value to Calculate Bond Prices	276
Using Present Value to Calculate Stock Prices	277
A Simple Formula for Calculating Stock Prices	277
Review Questions	278
Problems and Applications	278
Online Appendix: Income Statements and Balance Sheets	
CHAPTER 9: Comparative Advantage and the Gains from International Trade	280
Being Careful What You Wish For: Trade Wars and Whirlpool	280
9.1 The United States in the International Economy	282
The Importance of Trade to the U.S. Economy	283
U.S. International Trade in a World Context	284
9.2 Comparative Advantage in International Trade	285
A Brief Review of Comparative Advantage	285
Comparative Advantage and Absolute Advantage	285
9.3 How Countries Gain from International Trade	286
Increasing Consumption through Trade	287
Solved Problem 9.3: The Gains from Trade	288
Why Don't We See Complete Specialization?	289
Does Anyone Lose as a Result of International Trade?	290
Don't Let This Happen to You: Remember That Trade Creates Both Winners and Losers	290
Apply the Concept: Who Gains and Who Loses from U.S. Trade with China?	290
Where Does Comparative Advantage Come From?	293
9.4 Government Policies That Restrict International Trade	294
Tariffs	295
Quotas and Voluntary Export Restraints	296
Measuring the Economic Effect of the Sugar Quota	296
Solved Problem 9.4: Measuring the Economic Effect of a Quota	298
The High Cost of Preserving Jobs with Tariffs and Quotas	299
Apply the Concept: Smoot-Hawley, the Politics of Tariffs, and the Cost of Protecting a Vanishing Industry	299
Gains from Unilateral Elimination of Tariffs and Quotas	301
Other Barriers to Trade	301
9.5 The Debate over Trade Policies and Globalization	301
Why Do Some People Oppose the World Trade Organization?	302
Dumping	304
Apply the Concept: The Trade War of 2018	305
Positive versus Normative Analysis (Once Again)	306
Conclusion	307
Chapter Summary and Problems	308

PART 4 Microeconomic Foundations: Consumers and Firms

CHAPTER 10: Consumer Choice and Behavioral Economics 316

What Happened to Sears and the Other Department Stores? 316

10.1 Utility and Consumer Decision Making 318

An Overview of the Economic Model of Consumer Behavior 318

Utility 318

The Principle of Diminishing Marginal Utility 319

The Rule of Equal Marginal Utility per Dollar Spent 319

Solved Problem 10.1: Finding the Optimal Level of Consumption 322

What if the Rule of Equal Marginal Utility per Dollar Does Not Hold? 323

Don't Let This Happen to You: Equalize Marginal Utilities *per Dollar* 324

The Income Effect and Substitution Effect of a Price Change 325

Don't Let This Happen to You: The Income Effect Doesn't Involve an Increase in Money Income 325

10.2 Where Demand Curves Come From 327

Apply the Concept: Are There Any Upward-Sloping Demand Curves in the Real World? 328

10.3 Social Influences on Decision Making 329

The Effects of Celebrity Endorsements 330

Network Externalities 330

Does Fairness Matter? 331

Apply the Concept: Taylor Swift Tries to Please Fans *and* Make Money 334

Solved Problem 10.3: Why Doesn't Tesla Charge Its Employees to Park Their Cars? 335

10.4 Behavioral Economics: Do People Make Rational Choices? 337

Pitfalls in Decision Making 337

Apply the Concept: Sunk Costs and Sports Teams 338

"Nudges": Using Behavioral Economics to Guide Behavior 339

The Behavioral Economics of Shopping 340

Apply the Concept: Trying to Use the Apple Approach to Save J.C. Penney 341

Conclusion 343

Chapter Summary and Problems 344

Appendix: Using Indifference Curves and Budget Lines to Understand Consumer Behavior 350

Consumer Preferences 350

Indifference Curves 350

The Slope of an Indifference Curve 351

Can Indifference Curves Ever Cross? 351

The Budget Constraint 352

Choosing the Optimal Consumption of Pizza and Coke 353

Apply the Concept: Apple Determines the Optimal Mix of iPhone Features 354

Deriving the Demand Curve 355

Solved Problem 10A.1: When Does a Price Change Make a Consumer Better Off? 356

The Income Effect and the Substitution Effect of a Price Change 357

How a Change in Income Affects Optimal Consumption 359

The Slope of the Indifference Curve, the Slope of the Budget Line, and the Rule of Equal Marginal Utility per Dollar Spent 360

The Rule of Equal Marginal Utility per Dollar Spent Revisited 360

Review Questions 362

Problems and Applications 362

CHAPTER 11: Technology, Production, and Costs 364

Fracking Lowers the Cost of Oil and Revolutionizes the World Market 364

11.1 Technology: An Economic Definition 366

Apply the Concept: Oil Roughnecks Encounter Robots and Drones 366

11.2 The Short Run and the Long Run in Economics 367

The Difference between Fixed Costs and Variable Costs 367

Apply the Concept: Fixed Costs in the Publishing Industry 368

Implicit Costs versus Explicit Costs 368

The Production Function 369

A First Look at the Relationship between Production and Cost 369

11.3 The Marginal Product of Labor and the Average Product of Labor 371

The Law of Diminishing Returns 371

Graphing Production 372

Apply the Concept: Adam Smith's Famous Account of the Division of Labor in a Pin Factory 373

The Relationship between Marginal Product and Average Product 373

An Example of Marginal and Average Values: College Grades 374

11.4 The Relationship between Short-Run Production and Short-Run Cost 375

Marginal Cost 375

Why Are the Marginal and Average Cost Curves U Shaped? 375

Solved Problem 11.4: Calculating Marginal Cost and Average Total Cost 377

11.5 Graphing Cost Curves 378

11.6 Costs in the Long Run 380

Economies of Scale 380

Long-Run Average Cost Curves for Automobile Factories 381

Solved Problem 11.6: Using Long-Run Average Cost Curves to Understand a Business Merger	381
Apply the Concept: The Colossal River Rouge: Diseconomies of Scale at Ford Motor Company	383
Don't Let This Happen to You: Don't Confuse Diminishing Returns with Diseconomies of Scale	384
Conclusion	385
Chapter Summary and Problems	386
Online Appendix: Using Isoquants and Isocost Lines to Understand Production and Cost	

PART 5 Market Structure and Firm Strategy

CHAPTER 12: Firms in Perfectly Competitive Markets	394
Are Cage-Free Eggs the Road to Riches?	394
12.1 Perfectly Competitive Markets	397
A Perfectly Competitive Firm Cannot Affect the Market Price	397
The Demand Curve for the Output of a Perfectly Competitive Firm	398
Don't Let This Happen to You: Don't Confuse the Demand Curve for Farmer Parker's Wheat with the Market Demand Curve for Wheat	398
12.2 How a Firm Maximizes Profit in a Perfectly Competitive Market	399
Revenue for a Firm in a Perfectly Competitive Market	400
Determining the Profit-Maximizing Level of Output	400
12.3 Illustrating Profit or Loss on the Cost Curve Graph	403
Showing Profit on a Graph	403
Solved Problem 12.3: Determining Profit-Maximizing Price and Quantity	404
Don't Let This Happen to You: Remember That Firms Maximize Their Total Profit, Not Their Profit per Unit	406
Illustrating When a Firm Is Breaking Even or Operating at a Loss	406
12.4 Deciding Whether to Produce or to Shut Down in the Short Run	407
The Supply Curve of a Firm in the Short Run	407
Apply the Concept: What Does "Break Even" Mean in the Oil Fields?	408
Solved Problem 12.4: When to Shut Down a Farm	410
The Market Supply Curve in a Perfectly Competitive Industry	411
12.5 "If Everyone Can Do It, You Can't Make Money at It": The Entry and Exit of Firms in the Long Run	412
Economic Profit and the Entry or Exit Decision	412
Long-Run Equilibrium in a Perfectly Competitive Market	414
The Long-Run Supply Curve in a Perfectly Competitive Market	416
Apply the Concept: The Winding Path to Long-Run Equilibrium in the Egg Market	417
Increasing-Cost and Decreasing-Cost Industries	418

12.6 Perfect Competition and Economic Efficiency	418
Productive Efficiency	418
Solved Problem 12.6: How Productive Efficiency Benefits Consumers	419
Allocative Efficiency	420
Conclusion	421
Chapter Summary and Problems	422

CHAPTER 13: Monopolistic Competition: The Competitive Model in a More Realistic Setting	430
The Coffee Industry: From Supermarket Cans to Third Wave Coffeehouse	430
13.1 Demand and Marginal Revenue for a Firm in a Monopolistically Competitive Market	432
The Demand Curve for a Monopolistically Competitive Firm	432
Marginal Revenue for a Firm with a Downward-Sloping Demand Curve	433
13.2 How a Monopolistically Competitive Firm Maximizes Profit in the Short Run	435
Solved Problem 13.2: Does Minimizing Cost Maximize Profit at Apple?	436
13.3 What Happens to Profits in the Long Run?	438
How Does the Entry of New Firms Affect the Profits of Existing Firms?	438
Don't Let This Happen to You: Don't Confuse Zero Economic Profit with Zero Accounting Profit	440
Apply the Concept: Can Third Wave Coffeehouses Remain Profitable?	440
Is Zero Economic Profit Inevitable in the Long Run?	441
Solved Problem 13.3: The Profitability of Amazon Go	442
13.4 Comparing Monopolistic Competition and Perfect Competition	443
Excess Capacity under Monopolistic Competition	443
Is Monopolistic Competition Inefficient?	444
How Consumers Benefit from Monopolistic Competition	444
Apply the Concept: Are Ghost and Virtual Restaurants the Wave of the Future?	444
13.5 How Marketing Differentiates Products	445
Brand Management	446
Advertising	446
Defending a Brand Name	446
13.6 What Makes a Firm Successful?	447
Apply the Concept: Is Being the First Firm in the Market a Key to Success?	448
Conclusion	449
Chapter Summary and Problems	450
CHAPTER 14: Oligopoly: Firms in Less Competitive Markets	458
Apple, Spotify, and the Music Streaming Revolution	458
14.1 Oligopoly and Barriers to Entry	460
Barriers to Entry	461

Apply the Concept:	Are Unlicensed Yoga Instructors a Menace to Public Health?	463
14.2 Game Theory and Oligopoly		464
A Duopoly Game: Price Competition between Two Firms		465
Firm Behavior and the Prisoner's Dilemma		466
Don't Let This Happen to You:	Don't Misunderstand Why Each Firm Ends Up Charging a Price of \$9.99	466
Solved Problem 14.2:	Is Offering a College Student Discount a Prisoner's Dilemma for Apple and Spotify?	466
Can Firms Escape the Prisoner's Dilemma?		468
Apply the Concept:	Are the Big Four Airlines Colluding?	469
Cartels: The Case of OPEC		470
14.3 Sequential Games and Business Strategy		472
Detering Entry		472
Solved Problem 14.3:	Is Detering Entry Always a Good Idea?	474
Bargaining		474
14.4 The Five Competitive Forces Model		476
Competition from Existing Firms		476
The Threat from Potential Entrants		476
Competition from Substitute Goods or Services		476
The Bargaining Power of Buyers		477
The Bargaining Power of Suppliers		477
Apply the Concept:	Do Large Firms Live Forever?	477
Conclusion		479
Chapter Summary and Problems		480
CHAPTER 15: Monopoly and Antitrust Policy		486
The Monopoly in Your Mailbox		486
15.1 Is Any Firm Ever Really a Monopoly?		488
Apply the Concept:	Has the USPS Outlived Its Usefulness?	488
15.2 Where Do Monopolies Come From?		490
Government Action Blocks Entry		490
Apply the Concept:	Does Hasbro Have a Monopoly on Monopoly?	491
Control of a Key Resource		492
Apply the Concept:	Are Diamond Profits Forever? The De Beers Diamond Monopoly	492
Network Externalities		493
Natural Monopoly		494
15.3 How Does a Monopoly Choose Price and Output?		495
Marginal Revenue Once Again		495
Profit Maximization for a Monopolist		495
Solved Problem 15.3:	Finding the Profit-Maximizing Price and Output for a Cable Monopoly	497
Don't Let This Happen to You:	Don't Assume That Charging a Higher Price Is Always More Profitable for a Monopolist	498
15.4 Does Monopoly Reduce Economic Efficiency?		499
Comparing Monopoly and Perfect Competition		499
Measuring the Efficiency Losses from Monopoly		500
How Large Are the Efficiency Losses Due to Monopoly?		501
Market Power and Technological Change		501
15.5 Price Discrimination: Charging Different Prices for the Same Product		502
The Requirements for Successful Price Discrimination		502
An Example of Price Discrimination		502
Don't Let This Happen to You:	Don't Confuse Price Discrimination with Other Types of Discrimination	503
Solved Problem 15.5:	How Apple Uses Price Discrimination to Increase Profits	504
Airlines: The Kings of Price Discrimination		505
Big Data and Dynamic Pricing		506
Perfect Price Discrimination		508
Price Discrimination across Time		509
Can Price Discrimination Be Illegal?		510
15.6 Government Policy toward Monopoly		510
Antitrust Laws and Antitrust Enforcement		510
Mergers: The Trade-off between Market Power and Efficiency		511
The Department of Justice and FTC Merger Guidelines and the Herfindahl-Hirschman Index of Concentration		512
Regulating Natural Monopolies		513
Apply the Concept:	Should the Justice Department Break Up Google, Amazon, and Facebook?	514
Conclusion		516
Chapter Summary and Problems		517

PART 6 Labor Markets, Public Choice, and the Distribution of Income

CHAPTER 16: The Markets for Labor and Other Factors of Production		526
Great Hamburger? Thank a Robot		526
16.1 The Demand for Labor		528
The Marginal Revenue Product of Labor		528
Solved Problem 16.1:	Hiring Decisions by a Firm That Is a Price Maker	530
The Market Demand Curve for Labor		531
Factors That Shift the Market Demand Curve for Labor		531
16.2 The Supply of Labor		532
The Market Supply Curve of Labor		533
Factors That Shift the Market Supply Curve of Labor		533
16.3 Equilibrium in the Labor Market		534
The Effect on Equilibrium Wages of a Shift in Labor Demand		535
Apply the Concept:	Does It Matter Which College You Attend?	535
The Effect of Immigration on the U.S. Labor Market		537
Apply the Concept:	Will You Compete with a Robot for a Job—Or Work with One?	539

16.4 Explaining Differences in Wages	541
Don't Let This Happen to You: Remember That Prices and Wages Are Determined at the Margin	543
Apply the Concept: Technology and the Earnings of "Superstars"	543
Compensating Differentials	544
Discrimination	544
Solved Problem 16.4: Is Passing "Comparable Worth" Legislation a Good Way to Close the Gap between Men's and Women's Pay?	546
Apply the Concept: Does Greg Have an Easier Time Finding a Job Than Jamal?	547
Labor Unions	549
16.5 Personnel Economics	550
Should Workers' Pay Depend on How Much They Work or on How Much They Produce?	550
Apply the Concept: A Better Way to Sell Contact Lenses	551
Other Considerations in Setting Compensation Systems	552
16.6 The Markets for Capital and Natural Resources	552
The Market for Capital	552
The Market for Natural Resources	553
Monopsony	553
The Marginal Productivity Theory of Income Distribution	555
Conclusion	555
Chapter Summary and Problems	556
 CHAPTER 17: Public Choice, Taxes, and the Distribution of Income	 564
Should Your Small Business Be Taxed Like Apple?	564
17.1 Public Choice	566
How Do We Know the Public Interest? Models of Voting	566
Government Failure?	568
Is Government Regulation Necessary?	570
17.2 The Tax System	570
An Overview of the U.S. Tax System	571
Progressive and Regressive Taxes	572
Apply the Concept: Which Groups Pay the Most in Federal Taxes?	573
Marginal and Average Income Tax Rates	574
The Corporate Income Tax	574
International Comparison of Corporate Income Taxes	574
Evaluating Taxes	575
Apply the Concept: Should the Federal Government Begin to Tax Wealth?	578
17.3 Tax Incidence Revisited: The Effect of Price Elasticity	579
Don't Let This Happen to You: Don't Confuse Who Pays a Tax with Who Bears the Burden of the Tax	580
Apply the Concept: Do Corporations Really Bear the Burden of the Federal Corporate Income Tax?	580

Solved Problem 17.3: The Effect of Price Elasticity on the Excess Burden of a Tax	581
17.4 Income Distribution and Poverty	582
Measuring the Income Distribution and Measuring Poverty	582
Showing the Income Distribution with a Lorenz Curve	584
Problems in Measuring Poverty and the Distribution of Income	585
Explaining Income Inequality	588
Policies to Reduce Income Inequality	589
Apply the Concept: Who Are the 1 Percent, and How Do They Earn Their Incomes?	591
Poverty around the World	592
Conclusion	594
Chapter Summary and Problems	595

PART 7 Macroeconomic Foundations and Long-Run Growth

CHAPTER 18: GDP: Measuring Total Production and Income	602
Politics, Macroeconomics, and General Motors	602
18.1 Gross Domestic Product Measures Total Production	605
Measuring Total Production: Gross Domestic Product	605
Solved Problem 18.1: Calculating GDP Production, Income, and the Circular-Flow Diagram	606
Components of GDP	608
Don't Let This Happen to You: Remember What Economists Mean by <i>Investment</i>	609
An Equation for GDP and Some Actual Values	609
Apply the Concept: Microsoft's Steve Ballmer Uses the U.S. Constitution to Reorganize Government Data	610
Measuring GDP Using the Value-Added Method	612
18.2 Does GDP Measure What We Want It to Measure?	612
Shortcomings in GDP as a Measure of Total Production	612
Apply the Concept: Why Do Many Developing Countries Have Such Large Underground Economies?	613
Shortcomings of GDP as a Measure of Well-Being	614
18.3 Real GDP versus Nominal GDP	615
Calculating Real GDP	616
Solved Problem 18.3: Calculating Real GDP Comparing Real GDP and Nominal GDP	617
The GDP Deflator	618
18.4 Other Measures of Total Production and Total Income	618
Gross National Product	619
National Income	619
Personal Income	619

Disposable Personal Income	619	CHAPTER 20: Economic Growth, the Financial System, and Business Cycles	670
The Division of Income	619	Millennials Experience the iPhone, Snapchat, . . . and the Great Recession	670
Apply the Concept: Should We Pay More Attention to Gross Domestic Income?	621	20.1 Long-Run Economic Growth	672
Conclusion	622	Apply the Concept: The Connection between Economic Prosperity and Health	673
Chapter Summary and Problems	623	Calculating Growth Rates and the Rule of 70	675
CHAPTER 19: Unemployment and Inflation	630	What Determines the Rate of Long-Run Growth?	676
Former Inmates and Stoughton Trailers Meet in a High-Pressure Economy	630	Solved Problem 20.1: Where Does Productivity Come From?	677
19.1 Measuring the Unemployment Rate, the Labor Force Participation Rate, and the Employment–Population Ratio	632	Apply the Concept: Can India Sustain Its Rapid Growth?	678
The Household Survey	632	Potential GDP	680
Solved Problem 19.1: What Happens if the BLS Includes the Military?	634	20.2 Saving, Investment, and the Financial System	681
Problems with Measuring the Unemployment Rate	635	An Overview of the Financial System	681
Unemployment Rates for Different Groups	636	The Macroeconomics of Saving and Investment	682
How Long Are People Typically Unemployed?	637	The Market for Loanable Funds	684
Trends in Labor Force Participation	637	Apply the Concept: Ebenezer Scrooge: Accidental Promoter of Economic Growth?	685
Apply the Concept: How Large Is the Potential U.S. Labor Force?	638	Solved Problem 20.2: Are Future Budget Deficits a Threat to the Economy?	687
The Establishment Survey: Another Measure of Employment	640	20.3 The Business Cycle	689
Revisions in the Establishment Survey Employment Data: How Bad Was the 2007–2009 Recession?	641	Some Basic Business Cycle Definitions	689
Job Creation and Job Destruction over Time	642	How Do We Know When the Economy Is in a Recession?	690
19.2 Types of Unemployment	642	What Happens during the Business Cycle?	691
Frictional Unemployment and Job Search	642	Don't Let This Happen to You: Don't Confuse the Price Level and the Inflation Rate	692
Structural Unemployment	643	Has the U.S. Economy Returned to Stability?	696
Cyclical Unemployment	644	Conclusion	697
Full Employment	644	Chapter Summary and Problems	698
Apply the Concept: Will Advances in Information Technology Permanently Increase Structural Unemployment?	644	CHAPTER 21: Long-Run Economic Growth: Sources and Policies	704
19.3 Explaining Unemployment	646	Technological Change, Creative Destruction, and Rising Living Standards	704
Government Policies and the Unemployment Rate	646	21.1 Economic Growth over Time and around the World	706
Labor Unions	647	Economic Growth from 1,000,000 B.C.E. to the Present	706
Efficiency Wages	648	Apply the Concept: Why Did the Industrial Revolution Begin in England?	707
19.4 Measuring Inflation	648	Small Differences in Growth Rates Are Important	708
The Consumer Price Index	648	The Problem with Slow Economic Growth	709
Is the CPI Accurate?	650	Don't Let This Happen to You: Don't Confuse the Average Annual Percentage Change with the Total Percentage Change	709
Don't Let This Happen to You: Don't Miscalculate the Inflation Rate	650	The Variation in per Capita Income around the World	709
The Producer Price Index	651	Is Income All That Matters?	710
19.5 Using Price Indexes to Adjust for the Effects of Inflation	651	21.2 What Determines How Fast Economies Grow?	711
Solved Problem 19.5: What Has Been Happening to Real Wages in the United States?	652	The Per-Worker Production Function	712
19.6 Nominal Interest Rates versus Real Interest Rates	653	Which Is More Important for Economic Growth: More Capital or Technological Change?	713
19.7 Does Inflation Impose Costs on the Economy?	655	Technological Change: The Key to Sustaining Economic Growth	713
Inflation Affects the Distribution of Income	656		
The Problem with Anticipated Inflation	656		
The Problem with Unanticipated Inflation	657		
Apply the Concept: What's So Bad about Falling Prices?	657		
Conclusion	659		
Chapter Summary and Problems	660		

Apply the Concept: What Explains the Economic Failure of the Soviet Union?	714
Solved Problem 21.2: Using the Economic Growth Model to Analyze the Failure of the Soviet Economy	715
New Growth Theory	716
Joseph Schumpeter and Creative Destruction	717
21.3 Economic Growth in the United States	718
Economic Growth in the United States since 1950	719
Is the United States Headed for a Long Period of Slow Growth?	719
21.4 Why Isn't the Whole World Rich?	721
Catch-up: Sometimes but Not Always	722
Solved Problem 21.4: The Economic Growth Model's Prediction of Catch-up	724
Why Haven't Most Western European Countries, Canada, and Japan Caught Up to the United States?	725
Why Don't More Low-Income Countries Experience Rapid Growth?	727
Apply the Concept: Why Hasn't Mexico Grown as Fast as China?	727
The Benefits of Globalization	730
21.5 Growth Policies	730
Enhancing Property Rights and the Rule of Law	731
Apply the Concept: Will China's Standard of Living Ever Exceed That of the United States?	731
Improving Health and Education	732
Policies That Promote Technological Change	733
Policies That Promote Saving and Investment	733
Apply the Concept: Is Sub-Saharan Africa on the Road to Economic Growth?	734
Is Economic Growth Good or Bad?	735
Conclusion	736
Chapter Summary and Problems	737
Solved Problem 22.2: Calculating the Marginal Propensity to Consume and the Marginal Propensity to Save	758
Planned Investment	759
Apply the Concept: Is Student Loan Debt Causing Fewer Young People to Buy Houses?	760
Government Purchases	762
Net Exports	763
Apply the Concept: The iPhone Is Made in China . . . or Is It?	764
22.3 Graphing Macroeconomic Equilibrium	765
Showing a Recession on the 45°-Line Diagram	768
The Important Role of Inventories	769
A Numerical Example of Macroeconomic Equilibrium	770
Don't Let This Happen to You: Don't Confuse Aggregate Expenditure with Consumption Spending	771
Solved Problem 22.3: Determining Macroeconomic Equilibrium	771
22.4 The Multiplier Effect	772
Apply the Concept: The Multiplier in Reverse: The Great Depression of the 1930s	775
A Formula for the Multiplier	776
Summarizing the Multiplier Effect	777
Solved Problem 22.4: Using the Multiplier Formula	778
The Paradox of Thrift	779
22.5 The Aggregate Demand Curve	779
Conclusion	782
Chapter Summary and Problems	783
Appendix: The Algebra of Macroeconomic Equilibrium	790
Review Questions	791

PART 8 Short-Run Fluctuations

CHAPTER 22: Aggregate Expenditure and Output in the Short Run	746
Glamping and Airstream's Ride on the Business Cycle	746
22.1 The Aggregate Expenditure Model	748
Aggregate Expenditure	748
The Difference between Planned Investment and Actual Investment	749
Macroeconomic Equilibrium	749
Adjustments to Macroeconomic Equilibrium	750
22.2 Determining the Level of Aggregate Expenditure in the Economy	751
Consumption	751
The Volatility of Consumer Spending on Durables	753
The Relationship between Consumption and National Income	756
Income, Consumption, and Saving	757
CHAPTER 23: Aggregate Demand and Aggregate Supply Analysis	792
General Motors Hopes the Economic Expansion Doesn't Die of Old Age	792
23.1 Aggregate Demand	794
Why Is the Aggregate Demand Curve Downward Sloping?	794
Shifts of the Aggregate Demand Curve versus Movements along It	796
The Variables That Shift the Aggregate Demand Curve	796
Don't Let This Happen to You: Understand Why the Aggregate Demand Curve Is Downward Sloping	797
Solved Problem 23.1: Movements along the Aggregate Demand Curve or Shifts of the Curve?	798
Apply the Concept: Which Components of Aggregate Demand Changed the Most during the 2007–2009 Recession?	799
23.2 Aggregate Supply	801
The Long-Run Aggregate Supply Curve	801
The Short-Run Aggregate Supply Curve	802

Apply the Concept: How Sticky Are Wages?	803	Using T-accounts to Show How a Bank Can	
Shifts of the Short-Run Aggregate Supply Curve	805	Create Money	845
Variables That Shift the Short-Run Aggregate Supply Curve	805	The Simple Deposit Multiplier	847
23.3 Macroeconomic Equilibrium in the Long Run and the Short Run	807	Don't Let This Happen to You: Don't Confuse	
Recessions, Expansions, and Supply Shocks	808	Assets and Liabilities	848
Apply the Concept: Does It Matter What Causes a Decline in Aggregate Demand?	809	Solved Problem 24.3: Showing How Banks	
Apply the Concept: Is the Business Cycle Really a Cycle?	812	Create Money	848
23.4 A Dynamic Aggregate Demand and Aggregate Supply Model	814	The Simple Deposit Multiplier versus the Real-World Deposit Multiplier	850
What Is the Usual Cause of Inflation?	815	24.4 The Federal Reserve System	851
The Recession of 2007–2009	815	The Establishment of the Federal Reserve System	851
Solved Problem 23.4: Showing the Oil Shock of 1974–1975 on a Dynamic Aggregate Demand and Aggregate Supply Graph	818	How the Federal Reserve Manages the Money Supply	853
Conclusion	819	The “Shadow Banking System” and the Financial Crisis of 2007–2009	856
Chapter Summary and Problems	820	24.5 The Quantity Theory of Money	858
Appendix: Macroeconomic Schools of Thought	828	Connecting Money and Prices: The Quantity Equation	858
The Monetarist Model	828	The Quantity Theory Explanation of Inflation	858
The New Classical Model	829	How Accurate Are Forecasts of Inflation Based on the Quantity Theory?	859
The Real Business Cycle Model	829	High Rates of Inflation	860
The Austrian Model	830	Apply the Concept: The German Hyperinflation of the Early 1920s	861
Apply the Concept: Karl Marx: Capitalism's Severest Critic	830	Conclusion	862
		Chapter Summary and Problems	863
		CHAPTER 25: Monetary Policy	870
		Who Elected the Fed?	870
		25.1 What Is Monetary Policy?	872
		The Goals of Monetary Policy	872
		25.2 The Money Market and the Fed's Choice of Monetary Policy Targets	874
		Monetary Policy Targets	874
		The Demand for Money	874
		Shifts in the Money Demand Curve	875
		How the Fed Manages the Money Supply:	
		A Quick Review	876
		Equilibrium in the Money Market	876
		A Tale of Two Interest Rates	878
		Choosing a Monetary Policy Target	878
		The Importance of the Federal Funds Rate	878
		Managing the Federal Funds Rate Today	879
		25.3 Monetary Policy and Economic Activity	880
		How Interest Rates Affect Aggregate Demand	880
		The Effects of Monetary Policy on Real GDP and the Price Level	881
		Apply the Concept: Quantitative Easing, the Fed's Balance Sheet, and Negative Interest Rates in Europe	882
		Can the Fed Eliminate Recessions?	884
		Fed Forecasts	886
		Apply the Concept: Trying to Hit a Moving Target: Making Policy with “Real-Time Data”	886
		A Summary of How Monetary Policy Works	888
		Don't Let This Happen to You: Remember That with Monetary Policy, It's the Interest Rates—Not the Money—That Counts	888
PART 9 Monetary and Fiscal Policy			
CHAPTER 24: Money, Banks, and the Federal Reserve System	832		
Is Venmo the End of Money?	832		
24.1 What Is Money, and Why Do We Need It?	834		
Barter and the Invention of Money	834		
The Functions of Money	835		
What Can Serve as Money?	836		
Apply the Concept: Your Money Is No Good Here!	837		
24.2 How Is Money Measured in the United States Today?	838		
M1: A Narrow Definition of the Money Supply	838		
M2: A Broad Definition of Money	839		
Don't Let This Happen to You: Don't Confuse Money with Income or Wealth	840		
Solved Problem 24.2: The Definitions of M1 and M2	840		
What about Credit Cards and Debit Cards?	840		
Apply the Concept: Are Bitcoins Money?	841		
24.3 How Do Banks Create Money?	842		
Bank Balance Sheets	842		
Apply the Concept: Help for Young Borrowers: Fintech or Ceilings on Interest Rates?	843		

25.4 Monetary Policy in the Dynamic Aggregate Demand and Aggregate Supply Model	889	Does Government Spending Reduce Private Spending?	932
The Effects of Monetary Policy on Real GDP and the Price Level: A More Complete Account	889	Crowding Out in the Short Run	932
Using Monetary Policy to Fight Inflation	890	Crowding Out in the Long Run	933
Solved Problem 25.4: The Effects of Monetary Policy	892	Fiscal Policy in Action: Did the Stimulus Package of 2009 Succeed?	934
25.5 A Closer Look at the Fed's Setting of Monetary Policy Targets	893	26.6 Deficits, Surpluses, and Federal Government Debt	936
Should the Fed Target the Money Supply?	893	How the Federal Budget Can Serve as an Automatic Stabilizer	937
Why Doesn't the Fed Target Both the Money Supply and the Interest Rate?	894	Should the Federal Budget Always Be Balanced?	939
The Taylor Rule	895	Solved Problem 26.6: The Italian Government Confronts a Budget Deficit	939
Solved Problem 25.5: Applying the Taylor Rule	896	The Federal Government Debt	940
Inflation Targeting . . . or Nominal GDP Targeting?	897	Is Government Debt a Problem?	941
Apply the Concept: Should the Fed Worry about the Prices of Food and Gasoline?	898	Apply the Concept: Modern Monetary Theory: Should We Stop Worrying and Love the Debt?	941
25.6 Fed Policies during the 2007–2009 Recession	899	26.7 Long-Run Fiscal Policy and Economic Growth	942
The Inflation and Deflation of the Housing Market Bubble	899	Explaining Long-Run Increases in Real GDP	943
The Changing Mortgage Market	900	How Can Fiscal Policy Affect Long-Run Economic Growth? The Long-Run Effects of Tax Policy	944
The Role of Investment Banks	900	Tax Simplification	945
Apply the Concept: The Wonderful World of Leverage	901	The Economic Effects of Tax Reform	945
The Fed and the Treasury Department Respond	902	How Large Are Supply-Side Effects?	946
Conclusion	904	Apply the Concept: Will President Trump's Fiscal Policy Raise the Rate of Economic Growth?	947
Chapter Summary and Problems	905	Conclusion	949
CHAPTER 26: Fiscal Policy	914	Chapter Summary and Problems	950
Can Fiscal Policy Increase Economic Growth?	914	Appendix: A Closer Look at the Multiplier	958
26.1 What Is Fiscal Policy?	916	An Expression for Equilibrium Real GDP	958
What Fiscal Policy Is and What It Isn't	916	A Formula for the Government Purchases Multiplier	959
Automatic Stabilizers versus Discretionary Fiscal Policy	916	A Formula for the Tax Multiplier	960
An Overview of Government Spending and Taxes	916	The "Balanced Budget" Multiplier	960
Apply the Concept: Is Spending on Social Security and Medicare a Fiscal Time Bomb?	919	The Effects of Changes in Tax Rates on the Multiplier	961
26.2 The Effects of Fiscal Policy on Real GDP and the Price Level	921	The Multiplier in an Open Economy	961
Short-Run Expansionary and Contractionary Fiscal Policy	921	Problem and Applications	963
A Summary of How Fiscal Policy Affects Aggregate Demand	923	CHAPTER 27: Inflation, Unemployment, and Federal Reserve Policy	964
Don't Let This Happen to You: Don't Confuse Fiscal Policy and Monetary Policy	923	The Fed Deals with Inflation, Unemployment, . . . and the President	964
26.3 Fiscal Policy in the Dynamic Aggregate Demand and Aggregate Supply Model	923	27.1 The Discovery of the Short-Run Trade-off between Unemployment and Inflation	966
26.4 The Government Purchases and Tax Multipliers	925	Explaining the Phillips Curve with Aggregate Demand and Aggregate Supply Curves	967
The Effect of Changes in the Tax Rate	928	Is the Phillips Curve a Policy Menu?	968
Taking into Account the Effects of Aggregate Supply	928	Is the Short-Run Phillips Curve Stable?	968
The Multipliers Work in Both Directions	929	The Long-Run Phillips Curve	968
Solved Problem 26.4: Fiscal Policy Multipliers	929	The Role of Expectations of Future Inflation	969
26.5 The Limits to Using Fiscal Policy to Stabilize the Economy	930	Apply the Concept: Do Workers Understand Inflation?	970
Apply the Concept: Why Was the Recession of 2007–2009 So Severe?	930	27.2 The Short-Run and Long-Run Phillips Curves	971
		Shifts in the Short-Run Phillips Curve	972
		How Does a Vertical Long-Run Phillips Curve Affect Monetary Policy?	973

Apply the Concept: Does the Natural Rate of Unemployment Ever Change?	974	28.2 The Foreign Exchange Market and Exchange Rates	1004
Solved Problem 27.2: Changing Views of the Phillips Curve	975	Equilibrium in the Market for Foreign Exchange	1004
27.3 Monetary Policy and Expectations of the Inflation Rate	976	Shifts in Demand and Supply in the Foreign Exchange Market	1005
The Implications of Rational Expectations for Monetary Policy	976	How Movements in the Exchange Rate Affect Exports and Imports	1007
Is the Short-Run Phillips Curve Really Vertical?	977	Apply the Concept: Is a Strong Currency Good for a Country?	1008
Real Business Cycle Models	978	Don't Let This Happen to You: Don't Confuse What Happens When a Currency Appreciates with What Happens When It Depreciates	1009
27.4 Federal Reserve Policy from the 1970s to the Present	978	Solved Problem 28.2: Toyota Rides the Exchange Rate Rollercoaster	1009
The Effect of a Supply Shock on the Phillips Curve	979	The Real Exchange Rate	1010
Paul Volcker and Disinflation	980	Exchange Rates in the Long Run	1010
Don't Let This Happen to You: Don't Confuse Disinflation with Deflation	981	Apply the Concept: The Big Mac Theory of Exchange Rates	1012
Solved Problem 27.4: Using Monetary Policy to Lower the Inflation Rate	981	28.3 Exchange Rate Systems	1013
Recent Fed Chairs and the Debate over the Fed's Future	983	The Floating Dollar	1013
Apply the Concept: Has the Phillips Curve Disappeared?	985	The Euro	1014
Should the Fed Be Independent of Congress and the President?	987	Pegging against the Dollar	1015
Conclusion	990	Apply the Concept: The Chinese Yuan: The World's Most Controversial Currency	1016
Chapter Summary and Problems	991	28.4 The International Sector and National Saving and Investment	1018
		Net Exports Equal Net Foreign Investment	1018
		Domestic Saving, Domestic Investment, and Net Foreign Investment	1018
		Solved Problem 28.4: Arriving at the Saving and Investment Equation	1019
		28.5 The Effect of a Government Budget Deficit on Investment	1020
		28.6 Monetary Policy and Fiscal Policy in an Open Economy	1022
		Monetary Policy in an Open Economy	1022
		Fiscal Policy in an Open Economy	1022
		Conclusion	1023
		Chapter Summary and Problems	1024
		Online Appendix: The Gold Standard and the Bretton Woods System	
		Glossary	G-1
		Company Index	I-1
		Subject Index	I-4
		Credits	C-1

PART 10 The International Economy

CHAPTER 28: Macroeconomics in an Open Economy 998

Amazon Deals with a Fluctuating Dollar 998

28.1 The Balance of Payments: Linking the United States to the International Economy 1000

The Current Account	1000
The Financial Account	1002
The Capital Account	1002
Why Is the Balance of Payments Always Zero?	1002

Don't Let This Happen to You: Don't Confuse the Trade Balance, the Current Account Balance, and the Balance of Payments	1003
--	------

This page intentionally left blank

PREFACE

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

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

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

New to This Edition

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

Overview of Changes

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

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

New Content and Features by Chapter

Here is a description of key changes by chapter.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

To make room for new content, we cut 21 *Apply the Concepts* and 9 *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. As noted earlier, as a result of market feedback and analysis of instructor assignments we moved three appendices to appear within MyLab Economics, cut one chapter, and streamlined and merged two chapters.

Solving Teaching and Learning Challenges

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

The Foundation: Contextual Learning and Modern Organization

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

Microeconomics

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

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

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

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

Macroeconomics

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

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

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

This “dynamic” AD–AS model provides students with a more accurate understanding of the causes and consequences of fluctuations in real GDP and the price level. We introduce this model in Chapter 23 and use it to discuss monetary policy in Chapter 25, “Monetary Policy,” and fiscal policy in Chapter 26, “Fiscal Policy.” The material on dynamic AD–AS is presented in self-contained sections in Chapters 23, 25, and 26, so instructors may safely omit the sections on the dynamic AD–AS model without any loss in continuity to the discussion of macroeconomic theory and policy.

- **Extensive coverage of monetary policy.** Because of the central role monetary policy plays in the economy and in students’ curiosity about business and financial news, we devote two chapters to the topic: Chapter 25, “Monetary Policy,” and Chapter 27, “Inflation, Unemployment, and Federal Reserve Policy.” We emphasize the issues involved in the Fed’s choice of monetary policy targets, and we include coverage of the Taylor rule. We also cover the Fed’s new policy tools and the debate over whether the Fed’s policies during and after the 2007–2009 financial crisis were consistent with its mandate under the Federal Reserve Act, and recent challenges to the Fed’s independence.
- **Coverage of both the demand-side and supply-side effects of fiscal policy.** Our discussion of fiscal policy in Chapter 26, “Fiscal Policy,” carefully distinguishes between automatic stabilizers and discretionary fiscal policy. We also provide significant coverage of the supply-side effects of fiscal policy. A new section discusses the requirements for the Trump administration to hit its goal of restoring the long-run annual growth rate of real GDP to 3 percent.

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

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

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

Business Cases and *An Inside Look* News Articles

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

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

A Basketball Player Takes a Tumble—And So Does Nike

Zion Williamson of Duke University was probably the best male college basketball player during the 2018–2019 season. So it was big news when during a game against archival University of North Carolina, Zion's Nike athletic shoe split open while he was dribbling the ball, causing him to fall to the floor and injure his knee. Nike was immediately subjected to intense criticism on social media—a damaging development for a firm in the intensely competitive athletic shoe industry.

The manufacture of shoes designed specifically for playing sports or exercising dates to the mid-1800s, after Charles Goodyear invented the vulcanizing process, which hardened rubber enough for it to be used on the soles of shoes. Initially, athletic shoes were expensive, and they were worn primarily by wealthy people when playing tennis. By the late 1800s, mass production of athletic shoes in factories made them widely available at prices comparable to those of other shoes. Albert Spalding is credited with inventing the basketball in 1894 and the basketball shoe in 1907.

Today, Nike has the largest market share among athletic shoe firms. The firm that became Nike was founded in 1963 by University of Oregon track coach Bill Bowerman and track team member Phil Knight. At first the firm sold only imported shoes that a Japanese firm produced. Nike's goal was to compete with the German firm Adidas, as the time the main supplier of running shoes in the U.S. market. In 1971, the firm introduced the Nike Oregon Waffle, which used a distinctive waffle pattern that provided excellent cushioning and traction. Nike was able to achieve lasting success by combining innovative shoe designs with heavily advertised endorsements from celebrities and star athletes.

In recent years, new entrants to the athletic shoe industry have competed by offering shoes made of different materials in different styles. For instance, Allbirds began selling shoes with wool uppers, and Skechers focused on comfort. Adopting such strategies allowed these firms to avoid



choosing the latest styles or paying for the endorsements of the hottest celebrities and athletes.

Athletic shoes are manufactured primarily in factories in Asia that employ low-wage labor. Contracting with these factories to launch a new shoe brand is relatively low cost, what does the entry of new firms into the industry. As a result, competition is intense, and firms have to respond quickly to changes in consumer tastes. Nike has adapted to other once fashionable products, from men's hats to wrist-watches? Although competition is not always good news for firms, it is great news for consumers because it increases the choice of available products and lowers the prices consumers pay for those products.

AN INSIDE LOOK At the end of this chapter discusses plans by BASF and Reebok to release 3D printed liquid-speed shoes.

Chapter Outline & Learning Objectives

- 1.1 The Demand Side of the Market**, page 74
List and describe the variables that influence demand.
- 1.2 The Supply Side of the Market**, page 82
List and describe the variables that influence supply.
- 1.3 Market Equilibrium: Pulling Demand and Supply Together**, page 87
Use a graph to illustrate market equilibrium.
- 1.4 The Effect of Demand and Supply Shifts on Equilibrium**, page 92
Use demand and supply graphs to predict changes in prices and quantities.

Economics in Your Life & Career

Can You Forecast the Future Demand for Athletic Shoes?

Firms face many challenges in responding to changes in consumer demand. For example, firms selling athletic shoes need to forecast future demand in order to determine how much production capacity they will need. If you were a manager for a firm that sells athletic shoes,

such as Nike, Adidas, or Allbirds, what factors would you take into account in forecasting future demand? As you read this chapter, try to answer this question. You can check your answer against the one we provide at the end of this chapter.

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

AN INSIDE LOOK If the Shoe Fits . . . Print It?

3D PRINT, COM BASF and Reebok to Release Additional 3D Printed Liquid Speed Shoes, More Projects in Development

Multiple major shoe manufacturing corporations have been turning to 3D printing over the last couple of years. While 3D printed shoes aren't filling shoe stores just yet, companies are being attracted to the technology for its design potential and customization possibilities. Now we're in the age of the on-demand exclusive 3D printing shoe. Earlier this year, Nike introduced the first shoe with a 3D printed upper, while New Balance had held way with the first partially 3D printed shoe to be made commercially available. And in 2016, Reebok introduced the Liquid Speed shoe, which uses liquid development by BASF to draw a frame directly onto the shoe. This allows for a lighter fit, and it's pretty cool-looking, too.

The technique also dovetails with the traditional mold-driven process, which is expensive and time-consuming, and allows for localized production. Currently, nearly all athletic footwear is made in Asian factories due to the labor-intensive nature of the mold process, but thanks to Reebok's 3D printing technology, the Liquid Speed shoe can be made anywhere, including in the company's Liquid Factory, which is located in Rhode Island.

"The point of automation is to shorten the production cost and enable that automation," said Chau Nguyen, Market Segment Manager for Footwear, PM North America, BASF. "So instead of a person sitting there and putting a sole on, they were able to dispense it in 3D on the part itself—that saved a lot of time."

Reebok approached BASF, which it had worked with before, about creating a polyurethane material that it could use to create a unique outsole. BASF formulated a urethane-based ink that could be drawn on to create an outsole that molds with the lacing on the shoe.

"We provide the material to Reebok that has the required liquidity and reactivity to produce a part with no molds," said Nguyen. "Look at it as if drawing with ketchup. When you draw with this material, it's already curing, it's already started to solidify."

Comfort is key to any shoe (except, some formal wear), but especially running shoes, where performance depends largely on how comfortably the shoe fits. The design of the Liquid Speed shoe allows for an especially secure and comfortable fit, according to Nguyen.

"In this case the outsole has wings on it and it wraps around to the sides of the shoe. You have tension at the top of your foot, and usually all of the materials are combined together," he explained. "Well, in this case you have material attached to the sides, the

medial and the lateral parts of your foot, so you get a more custom fit." Nguyen also calls the shoe the first high-rebound outsole. Until now, most outsoles have been made from rubber, but the polyurethane allows for better rebound.

"When you're running, a certain amount of energy is going to the ground," he said. "So, when you hit the ground, in this case, it absorbs the energy and then it returns it, that's why it's called high rebound."

When the Liquid Speed shoe was first released in November, only 900 pairs were made, and they sold out within hours for \$149.50 each. The first batch was so limited because Reebok was borrowing lab time, but now that it has opened its own Liquid Factory there will be more extensive reactivity and more time to create an outsole that molds with the lacing on the shoe.

So keep an eye out for Liquid Speed to reemerge on the market before long, or well as some new developments from Reebok. As 3D printed shoes become more easily and frequently made, costs will likely go down as well, making them more accessible—Liquid Speed shoes are already relatively inexpensive compared to some of the other 3D printed shoes that have been released. Many of these shoes have been made especially for professional athletes, but Reebok seems to have the average consumer in mind.

Key Points in the Article

3D printing technology has entered the realm of the highly competitive athletic shoe market. In 2016, Reebok introduced the Liquid Speed shoe, made in part using 3D printing, with competitors such as Nike and New Balance adopting this technology for a limited number of products in 2018. 3D printing allows shoe manufacturers to improve the fit and performance of their products and eliminates the need for the expensive and time-consuming mold-driven production process common in traditional shoe manufacturing. The cost savings also enables manufacturers to relocate production from low-wage regions such as Asia, as Reebok did by establishing its Liquid Factory in Rhode Island. As 3D printed shoe manufacturing expands, consumers can expect greater accessibility as a result of economies in cost.

Analyzing the News

Manufacturers are starting to incorporate 3D printing technology into their design and production processes. While still relatively new, companies such as Reebok, Nike, and New Balance are using the

technology to produce components for certain product lines. 3D printing allows for expedited design possibilities and product customization. Although 3D printing is not yet a dominant production technique, companies see the potential for this process to improve productivity and increase profits. Using 3D printers would allow shoe companies to avoid much of the traditional production process, which is both time-consuming and expensive. 3D printing represents a positive technological change, allowing a firm to produce more output using the same amount of inputs. Suppose Figure 1 below illustrates the market for athletic shoes. This positive technological change shifts the supply curve to the right, from S_1 to S_2 , resulting in a decrease in the equilibrium price (from P_1 to P_2) and an increase in the equilibrium quantity (from Q_1 to Q_2). The lower equilibrium price will also result in an increase in quantity demanded, illustrated by the movement from the original equilibrium (point A) to the new equilibrium (point B).

Reebok is increasing production of its Liquid Speed shoe and plans to expand 3D printing to other models. Reebok also hopes to attract more customers

who are looking for the better fit and performance these shoes offer. Figure 2 illustrates an increase in consumers' taste for athletic shoes as a result of the better fit these shoes provide. This increase in taste shifts the demand curve to the right, from D_1 to D_2 , resulting in an increase in both the equilibrium price (from P_1 to P_2) and the equilibrium quantity (from Q_1 to Q_2). The higher equilibrium price results in an increase in quantity supplied, illustrated by the movement from equilibrium point A to equilibrium point B.

Thinking Critically

1. Why is it particularly important for a firm like Reebok to stay informed of technological advancements and seek out the ones it could possibly use in its operations?

2. Suppose that athletic shoe firms experience an improvement in technology from the use of 3D printing and that the improved performance and fit of these 3D printed shoes increase consumers' taste for the shoes. Draw a demand and supply graph to illustrate this situation and explain what happens to equilibrium price and equilibrium quantity.

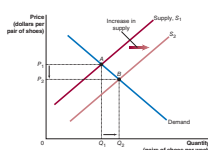


Figure 1: A positive technological change shifts the supply curve for Reebok shoes to the right. All else equal, equilibrium price decreases, and equilibrium quantity increases.

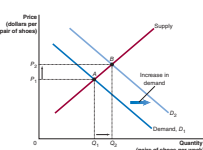


Figure 2: An increase in consumers' taste for Reebok shoes shifts the demand curve to the right. All else equal, both equilibrium price and equilibrium quantity increase.

Solved Problems

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

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

94 CHAPTER 3 Where Prices Come From: The Interaction of Demand and Supply

Solved Problem 3.4
Can We Predict Changes in the Price and Quantity of Merino Wool?

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

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

Solving the Problem
Step 1: Review the chapter material. This problem is about how shifts in demand and supply curves affect the equilibrium price, so you might want to review the section “The Effect of Shifts in Demand and Supply over Time.”
Step 2: Answer part (a) using demand and supply analysis. The problem gives you the information that consumer tastes have changed, leading to an increase in the demand for merino wool in athletic shoes and other products. So, the demand curve has shifted to the right. The problem also gives you the information that farmers in Australia and New Zealand have been moving out of sheep farming. So, the supply curve for merino wool has shifted to the left. The following graph shows both of these shifts.

As Table 1.3 summarizes, if the demand curve shifts to the right and the supply curve shifts to the left, the equilibrium price must increase. Therefore, we can answer part (a) by stating that we are certain that the equilibrium price of merino wool has increased.

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

Unlike the graph in step 2, which shows the equilibrium quantity increasing, this graph shows the equilibrium quantity decreasing. The uncertainty about whether the equilibrium quantity has increased or decreased is consistent with what Table 1.3 indicates happens when the demand curve shifts to the right and the supply curve shifts to the left. Therefore, the answer to part (b) is that we cannot be certain whether the equilibrium quantity of merino wool has increased or decreased.

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

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

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

Apply the Concept

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

Apply the Concept

Forecasting the Demand for Athletic Shoes

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

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



Patrick T. Fallon/Bloomberg via Getty Images
How will changes in demographics, income, and tastes shape the market for athletic shoes?

Phase 1	Phase 2	Phase 3
Evolution: <ul style="list-style-type: none"> Many large firms Each firm producing a relatively small volume of goods and charging high prices Examples: <ul style="list-style-type: none"> The carbonated soft drink industry in the late nineteenth century The automobile industry in the early twentieth century The personal computer industry in the late 1970s The athletic shoe industry in the late nineteenth century 	Evolution: <ul style="list-style-type: none"> Market consolidation, with one or a few brands attaining high market shares. Each firm selling a large number of units at lower prices Examples: <ul style="list-style-type: none"> The carbonated soft drink industry during the middle of the twentieth century The automobile industry during the 1920s The personal computer industry in the late 1980s The athletic shoe industry in the 1970s 	Evolution: <ul style="list-style-type: none"> A rapid multiplication of products introduced by the dominant firms Examples: <ul style="list-style-type: none"> The carbonated soft drink industry today, with Coca-Cola and Pepsi being the dominant firms The automobile industry today The personal computer industry today The athletic shoe industry today

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

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

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

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

Don't Let This Happen to You

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

Concept Checks

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

Graphs and Summary Tables

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

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

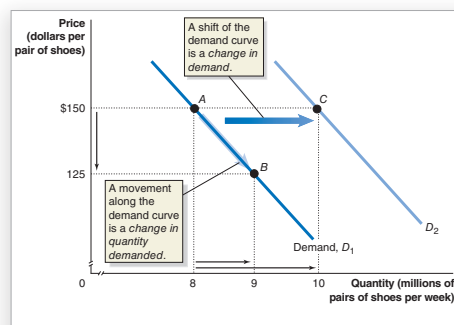
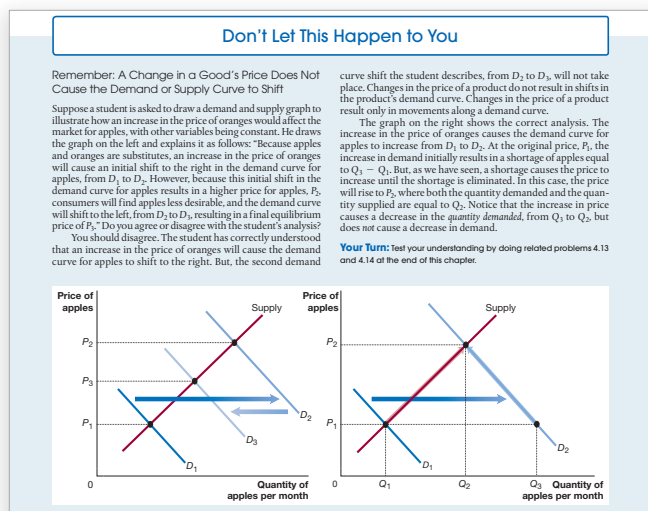


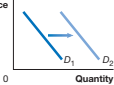
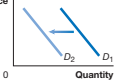
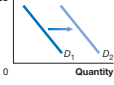
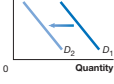
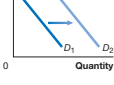
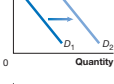
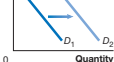
Figure 3.3

A Change in Demand versus a Change in Quantity Demanded

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

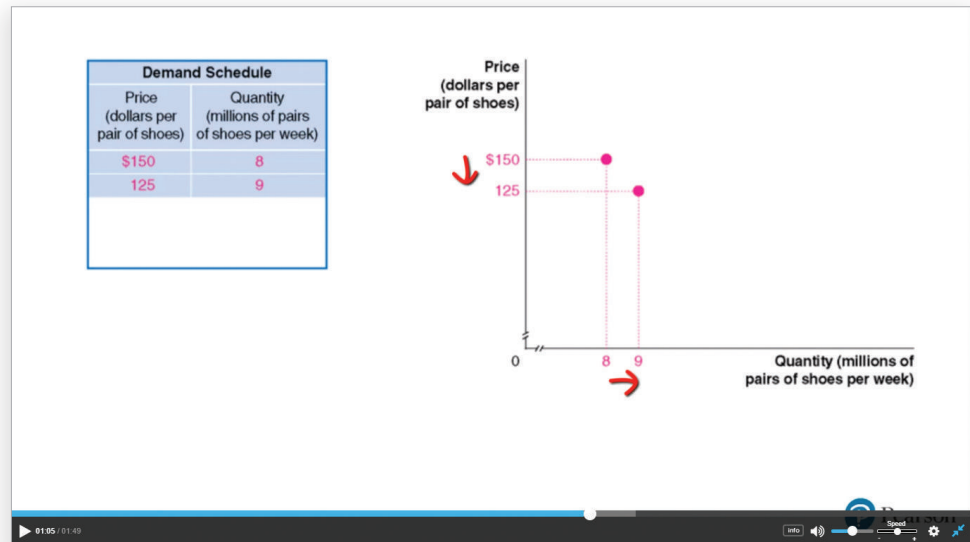
Table 3.1

Variables That Shift Market Demand Curves

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

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

Figure Animation 3.1 A Demand Schedule and Demand Curve



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

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

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

Critical Thinking Exercises

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

Real-Time Data Exercises

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

Developing Career Skills

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

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

Economics in Your Life & Career

Can You Forecast the Future Demand for Athletic Shoes?

Firms face many challenges in responding to changes in consumer demand. For example, firms selling athletic shoes need to forecast future demand in order to determine how much production capacity they will need. If you were a manager for a firm that sells athletic shoes,

such as Nike, Adidas, or Allbirds, what factors would you take into account in forecasting future demand? As you read this chapter, try to answer this question. You can check your answer against the one we provide at the end of this chapter.

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

Economics in Your Life & Career

Can You Forecast the Future Demand for Athletic Shoes?

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

In forecasting demand for athletic shoes, you should take into account factors such as changing demographics, as millennials and members of generation Z become larger fractions of prime-age consumers, and the extent to which

changing consumer tastes may help or hurt demand. You may also need to consider whether increased advertising of athletic shoes by large firms such as Adidas and Nike in developing countries with rising incomes will raise consumer awareness of the product in those countries and increase demand for athletic shoes being sold by other firms as well.

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

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

Instructor Teaching Resources

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

Supplements Available to Instructors for Download at www.pearsonhighered.com	Features of the Supplement
Instructor's Manuals for <i>Microeconomics</i> and for <i>Macroeconomics</i> Authored by Edward Scahill of the University of Scranton	<ul style="list-style-type: none"> • Chapter-by-chapter summaries organized by learning objectives • Extended examples and class exercises • Teaching outlines incorporating key terms and definitions, teaching tips, and topics for class discussion • New <i>Solved Problems</i> • New <i>Apply the Concept</i> features • Solutions to all review questions, problems, and <i>Real-Time Data Exercises</i> in the book
Two Test Banks for <i>Microeconomics</i> and for <i>Macroeconomics</i> Authored by Randy Methenitis of Richland College	<ul style="list-style-type: none"> • Each volume includes 4,000 multiple-choice, true/false, short-answer, and graphing questions. • Test questions are annotated with the following categories: Difficulty—1 for straight recall, 2 for some analysis, and 3 for complex analysis Type—multiple-choice, true/false, short-answer, essay Topic—the term or concept the question supports Learning outcome Page number in the main book Special feature in the main book The Association to Advance Collegiate Schools of Business (AACSB) Guidelines, which propose learning experiences in the following categories of Assurance of Learning Standards: Written and Oral Communication; Ethical Understanding and Reasoning; Analytical Thinking; Information Technology; Interpersonal Relations and Teamwork, Diverse and Multicultural Work; Reflective Thinking; and Application of Knowledge
Computerized TestGen	<ul style="list-style-type: none"> • Allows instructors to customize, save, and generate classroom tests. • Instructors can edit, add, or delete questions from the Test Banks; analyze test results; and organize a database of tests and student results. • Many options are available for organizing and displaying tests, along with search and sort features. • The software and the Test Banks can be downloaded from www.pearsonhighered.com.
Three Sets of PowerPoint Lecture Presentations Authored by Paul Holmes of Ashland University	<ul style="list-style-type: none"> • A comprehensive set of PowerPoint slides can be used by instructors for class presentations or by students for lecture preview or review. These slides include all the graphs, tables, and equations in the textbook. Two versions are available: step-by-step mode, in which you can build graphs as you would on a blackboard, and automated mode, in which you use a single click per slide. • A comprehensive set of PowerPoint slides have Classroom Response Systems (CRS) questions built in so that instructors can incorporate CRS “clickers” into their classroom lectures. • Student versions of the PowerPoint slides are available as .pdf files. This version allows students to print the slides and bring them to class for note taking.

This page intentionally left blank

FLEXIBILITY CHART

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

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

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

Acknowledgments

The guidance and recommendations of the following instructors helped us develop the revision plans for the eighth edition and the supplements package. While we could not incorporate every suggestion from every consultant board member, reviewer, or accuracy checker, we do thank every one of you and acknowledge that your feedback was indispensable in developing this text. We greatly appreciate your assistance in making this the best text it could be; you have helped a new generation of students learn about the exciting world of economics.

Consultant Board

Eva Dziadula, University of Notre Dame
Robert Gillette, University of Kentucky
William L. Goffe, Pennsylvania State University
Jill K. Hayter, East Tennessee State University
Randy Methenitis, Richland College
Samuel Raisanen, Central Michigan University
Michael J. Ryan, Western Michigan University
Nora Underwood, University of Central Florida

Accuracy Review Board

Our accuracy checkers did a particularly painstaking and thorough job of helping us proof the graphs, equations, and features of the text and supplements. We are grateful for their time and commitment:

Fatma Abdel-Raouf, Goldey-Beacom College
Harry Ellis, University of North Texas
Robert Gillette, University of Kentucky
Anthony Gyapong, Pennsylvania State University–Abington
Randy Methenitis, Richland College
Brian Rosario, American River College
Michael J. Ryan, Western Michigan University
Edward Scahill, University of Scranton

Reviewers

The guidance and thoughtful recommendations of many instructors helped us develop and implement a revision plan that improved the book's content, enhanced the figures, and strengthened the assessment features. We extend special thanks to Randy Methenitis of Richland College for helping us revise the *An Inside Look* feature in Chapters 1–4, and to Instructional Designer Fernando Quijano for creating all the figures in the book, supplements, and media. We are also grateful for the comments and many helpful suggestions received from the following reviewers:

Prasun Bhattacharjee, East Tennessee State University
Jennis Biser, Austin Peay State University
Avis Brown, Navarro College

Lisa Citron, Cascadia College
Antoinette Criss, University of South Florida
Eva Dziadula, University of Notre Dame
Robert Gillette, University of Kentucky
Paul Graf, University of Indiana–Bloomington
Colin Knapp, Pennsylvania State University
Pallavi Panda, State University of New York–Geneseo
Van Pham, Salem State University
Bobby Puryear, North Carolina State University
Tracy Regan, Boston College
Brian Rosario, American River College
Eva Schaffer, Tarrant County College
Jens Schubert, University of Delaware
Michael Tasto, Southern New Hampshire University
Marco Vincenzi, University of New Hampshire
Laura Wolff, Southern Illinois University,
Edwardsville
Jadrian Wooten, Penn State University

Previous Edition Class Testers, Accuracy Reviewers, and Consultants

The guidance and recommendations of the following instructors helped us shape the previous editions.

Class Testers

We are grateful to both the instructors who class-tested the manuscript of the first edition and their students for providing useful recommendations on how to make chapters more interesting, relevant, and accurate:

Charles A. Bennett, Gannon University
Anne E. Bresnock, University of California,
Los Angeles, and California State Polytechnic
University–Pomona
Linda Childs-Leatherbury, Lincoln University
John Eastwood, Northern Arizona University
David Eaton, Murray State University
Paul Elgatian, St. Ambrose University
Patricia A. Freeman, Jackson State University
Robert Godby, University of Wyoming
Frank Gunter, Lehigh University
Ahmed Ispahani, University of La Verne

Brendan Kennelly, Lehigh University and National
University of Ireland–Galway
Ernest Massie, Franklin University
Merve Meral, University of Massachusetts–Dartmouth
Carol McDonough, University of Massachusetts–Lowell
Shah Mehrabi, Montgomery College
Sharon Ryan, University of Missouri–Columbia
Bruce G. Webb, Gordon College
Madelyn Young, Converse College
Susan Zumas, Lehigh University

Accuracy Review Boards

We are grateful to the following accuracy checkers of the previous editions for their hard work on the book and supplements:

Fatma Abdel-Raouf, Goldey-Beacom College
Gbenga Ajilore, The University of Toledo
Anne Alexander, University of Wyoming
Clare Battista, California Polytechnic State University
Mohammad Bajwa, Northampton Community College
Cynthia Bansak, St. Lawrence University
Hamid Bastin, Shippensburg University
Doris Bennett, Jacksonville State University
Kelly Hunt Blanchard, Purdue University
Don Bumpass, Sam Houston State University
Charles Callahan III, State University of New
York–Brockport
Mark S. Chester, Reading Area Community College
Kenny Christianson, Binghamton University
Ishita Edwards, Oxnard College
Harold Elder, University of Alabama
Harry Ellis, University of North Texas
Can Erbil, Brandeis University
Marc Fusaro, Arkansas Tech University
Sarah Ghosh, University of Scranton
Robert Gillette, University of Kentucky
Maria Giuli, Diablo Valley College
Mark Gius, Quinnipiac University
Robert Godby, University of Wyoming
William L. Goffe, Pennsylvania State University
Edward T. Gullason, Dowling College, Emeritus
Anthony Gyapong, Pennsylvania State
University–Abington
Travis Hayes, University of Tennessee–Chattanooga
Carol Hogan, University of Michigan–Dearborn
Anisul M. Islam, University of Houston–Downtown
Aaron Jackson, Bentley College
Nancy Jianakoplos, Colorado State University
Thomas C. Kinnaman, Bucknell University
Mary K. Knudson, University of Iowa
Faik A. Koray, Louisiana State University
Stephan Kroll, California State University–Sacramento
Tony Lima, California State University–East Bay
Randy Methenitis, Richland College
Normal C. Miller, Miami University

David Mitch, University of Maryland–Baltimore County
James A. Moreno, Blinn College
Michael Potepan, San Francisco State University
Mary L. Pranzo, California State University–Fresno
Fernando Quijano, Dickinson State University, Emeritus
Matthew Rafferty, late of Quinnipiac University
Ratha Ramoo, Diablo Valley College
Jeff Reynolds, Northern Illinois University
Brian Rosario, American River College
Joseph M. Santos, South Dakota State University
Edward Scahill, University of Scranton
Mark V. Siegler, California State University–Sacramento
Rachel Small, University of Colorado–Boulder
Stephen Smith, Bakersfield College
Rajeev Sooreea, Pennsylvania State University–Altoona
Rebecca Stein, University of Pennsylvania
Ed Steinberg, New York University
Michael Stone, Quinnipiac University
Arlena Sullivan, Jones County Junior College
Wendine Thompson–Dawson, University of Utah
Julianne Treme, University of North
Carolina–Wilmington
Robert Whaples, Wake Forest University

Consultant Boards

We received guidance from a dedicated consultant board during the development of the previous editions at several critical junctures. We relied on the board for input on content, figure treatment, and design:

Shawn Abbott, College of the Siskiyous
Gbenga Ajilore, The University of Toledo
Kate Antonovics, University of California, San Diego
Robert Beekman, University of Tampa
Valerie Bencivenga, University of Texas–Austin
Kelly Blanchard, Purdue University
Kalok Chu, Loyola University–Chicago
Susan Dadres, Southern Methodist University
Eva Dziadula, University of Notre Dame
Harry Ellis, Jr., University of North Texas
Sherman T. Folland, Oakland University
Robert Gillette, University of Kentucky
Robert Godby, University of Wyoming
William L. Goffe, Pennsylvania State University
Jane S. Himarios, University of Texas–Arlington
Donn M. Johnson, Quinnipiac University
Mark Karscig, Central Missouri State University
Randy Methenitis, Richland College
Jenny Minier, University of Kentucky
David Mitch, University of Maryland–Baltimore County
Nicholas Noble, Miami University
Michael Potepan, San Francisco State University
Matthew Rafferty, late of Quinnipiac University
Christian Raschke, Sam Houston State University
Helen Roberts, University of Illinois–Chicago

Robert Rosenman, Washington State University
 Michael J. Ryan, Western Michigan University
 Joseph M. Santos, South Dakota State University
 Edward Scahill, University of Scranton
 Stephen Snyder, University of Pittsburgh
 Martin C. Spechler, Indiana University–Purdue
 University Indianapolis
 Robert Whaples, Wake Forest University
 Jonathan B. Wight, University of Richmond

Reviewers

Alabama

William P. Aldridge, University of Alabama
 Doris Bennett, Jacksonville State University
 Harold W. Elder, University of Alabama–Tuscaloosa
 Wanda Hudson, Alabama Southern Community College
 Keith D. Malone, University of North Alabama
 Edward Merkel, Troy University
 James L. Swofford, University of Southern Alabama
 Christopher Westley, Jacksonville State University

Arizona

Doug Conway, Mesa Community College
 John Eastwood, Northern Arizona University
 Price Fishback, University of Arizona
 Brian Goegan, Arizona State University
 Claudiney Pereira, Arizona State University
 Mehul Rangwala, University of Phoenix
 Anne Williams, Gateway Community College

Arkansas

Jerry Crawford, Arkansas State University
 Marc Fusaro, Arkansas Tech University
 Randall Kesselring, Arkansas State University
 Dan Marburger, Arkansas State University

California

Mark Abajian, University of San Diego
 Shawn Abbott, College of the Siskiyous
 Renatte Adler, San Diego State University
 Ercument Aksoy, Los Angeles Valley College
 Maneeza Aminy, Golden Gate University
 Kate Antonovics, University of California, San Diego
 Becca Arnold, Mesa College
 Asatar Bair, City College of San Francisco
 Diana Bajrami, College of Alameda
 Robert Bise, Orange Coast Community College
 Victor Brajer, California State University–Fullerton
 Anne E. Bresnock, University of California, Los Angeles,
 and California State Polytechnic University–Pomona
 David Brownstone, University of California, Irvine
 Maureen Burton, California State Polytechnic
 University–Pomona

Annette Chamberlin, National College
 Anoshua Chaudhuri, San Francisco State University
 Mark Cullivan, University of San Diego
 James G. Devine, Loyola Marymount University
 Jose Esteban, Palomar College
 Roger Frantz, San Diego State University
 Craig Gallet, California State University–Sacramento
 Andrew Gill, California State University–Fullerton
 Maria Giuli, Diablo Valley College
 Julie Gonzalez, University of California–Santa Cruz
 Lisa Grobar, California State University–Long Beach
 Steve Hamilton, California State University–Fullerton
 Dewey Heinsma, Mt. San Jacinto Community College
 Mike Hilmer, San Diego State University
 Jessica Howell, California State University–
 Sacramento
 Greg Hunter, California State University–Pomona
 John Ifcher, Santa Clara University
 Ahmed Ispahani, University of La Verne
 George A. Jouganatos, California State
 University–Sacramento
 Jonathan Kaplan, California State University–
 Sacramento
 Leland Kempe, California State University–Fresno
 Philip King, San Francisco State University
 Lori Kletzer, University of California, Santa Cruz
 Stephan Kroll, California State University–Sacramento
 David Lang, California State University–Sacramento
 Carsten Lange, California State Polytechnic
 University–Pomona
 Don Leet, California State University–Fresno
 Rose LeMont, Modesto Junior College
 Tony Lima, California State University–East Bay
 Solina Lindahl, California Polytechnic State
 University–San Luis Obispo
 Roger Mack, DeAnza College
 Michael Marlow, California Polytechnic State University
 Scott McGann, Grossmont College
 Kristen Monaco, California State University–
 Long Beach
 W. Douglas Morgan, University of California, Santa
 Barbara
 Nivedita Mukherji, Oakland University
 Solomon Namala, Cerritos College
 Andrew Narwold, University of San Diego
 Fola Odebunmi, Cypress College
 Hanna Paulson, West Los Angeles College
 Joseph M. Pogodzinski, San Jose State University
 Michael J. Potepan, San Francisco State University
 Mary L. Pranzo, California State University–Fresno
 Sasha Radisich, Glendale Community College
 Ratha Ramoo, Diablo Valley College
 Scott J. Sambucci, California State University–East Bay
 Ariane Schauer, Marymount College
 Frederica Shockley, California State University–Chico

Mark Siegler, California State University–Sacramento
 Jonathan Silberman, Oakland University
 Lisa Simon, California Polytechnic State University–San
 Louis Obispo
 Richard Lee Slotkin, Pasadena City College
 Stephen Smith, Bakersfield College
 Rodney B. Swanson, University of California–Los
 Angeles
 Derek Stimel, University of California, Davis
 Martha Stuffer, Irvine Valley College
 Lea Templer, College of the Canyons
 Regina Trevino, University of San Diego
 Kristin A. Van Gaasbeck, California State
 University–Sacramento
 Va Nee Van Vleck, California State University–Fresno
 Michael Visser, Sonoma State University
 Steven Yamarik, California State University–Long Beach
 Guy Yamashiro, California State University–Long Beach
 Kevin Young, Diablo Valley College
 Anthony Zambelli, Cuyamaca College

Colorado

Mohammed Akacem, Metropolitan State College of
 Denver
 Rhonda Corman, University of Northern Colorado
 Dale DeBoer, University of Colorado–Colorado Springs
 Debbie Evercloud, University of Colorado–Denver
 Karen Gebhardt, Colorado State University
 Scott Houser, Colorado School of Mines
 Murat Iyigun, University of Colorado–Boulder
 Nancy Jianakoplos, Colorado State University
 Jay Kaplan, University of Colorado–Boulder
 William G. Mertens, University of Colorado–Boulder
 Giacomo Rondina, University of Colorado–Boulder
 Rachael Small, University of Colorado–Boulder
 Stephen Weiler, Colorado State University

Connecticut

Christopher P. Ball, Quinnipiac University
 Leon Battista, Quinnipiac University
 Mark Gius, Quinnipiac University
 Mark Jablonowski, University of Hartford
 Donn M. Johnson, Quinnipiac University
 Robert Martel, University of Connecticut
 Charles Meyrick, Housatonic Community College
 Judith Mills, Southern Connecticut State University
 Matthew Rafferty, late of Quinnipiac University
 Christian Zimmermann, University of Connecticut

Delaware

Fatma Abdel-Raouf, Goldey-Beacom College
 Ali Ataiifar, Delaware County Community College
 Andrew T. Hill, University of Delaware

Florida

Frank Albritton, Seminole State College
 Herman Baine, Broward Community College
 Robert L. Beekman, University of Tampa
 Susan Bell, Seminole State College
 William Browning, Florida Gulf Coast University
 Regina Cassady, Valencia College
 Eric P. Chiang, Florida Atlantic University
 Martine Duchatelet, Barry University
 Hadley Hartman, Santa Fe Community College
 Richard Hawkins, University of West Florida
 Mark Isaac, Florida State University
 Brad Kamp, University of South Florida
 Brian Kench, University of Tampa
 Carrie B. Kerekes, Florida Gulf Coast University
 Thomas McCaleb, Florida State University
 Barbara A. Moore, University of Central Florida
 Augustine Nelson, University of Miami
 Jamie Ortiz, Florida Atlantic University
 Deborah Paige, Santa Fe Community College
 Robert Pennington, University of Central Florida
 Bob Potter, University of Central Florida
 Jerry Schwartz, Broward Community College–North
 William Stronge, Florida Atlantic University
 Nora Underwood, University of Central Florida
 Zhiguang Wang, Florida International University
 Joan Wiggenhorn, Barry University

Georgia

Greg Brock, Georgia Southern University
 Donna Fisher, Georgia Southern University
 Shelby Frost, Georgia State University
 John King, Georgia Southern University
 Susan Laury, Georgia State University
 Constantin Ogloblin, Georgia Southern University
 Dr. Greg Okoro, Georgia Perimeter College–Clarkston
 Michael Reksulak, Georgia Southern University
 Bill Yang, Georgia Southern University

Idaho

David Barrus, Brigham Young University–Idaho
 Cynthia Hill, Idaho State University
 Don Holley, Boise State University
 Tesa Stegner, Idaho State University

Illinois

Teshome Abebe, Eastern Illinois University
 Ali Akarca, University of Illinois–Chicago
 Zsolt Becsi, Southern Illinois University–Carbondale
 James Bruehler, Eastern Illinois University
 Louis Cain, Loyola University and Northwestern University
 Rosa Lea Danielson, College of DuPage
 Kevin Dunagan, Oakton Community College

Scott Gilbert, Southern Illinois University
 Rajeev K. Goel, Illinois State University
 David Gordon, Illinois Valley Community College
 Alan Grant, Eastern Illinois University
 Rik Hafer, Southern Illinois University–Edwardsville
 Alice Melkumian, Western Illinois University
 Christopher Mushrush, Illinois State University
 Jeff Reynolds, Northern Illinois University
 Helen Roberts, University of Illinois–Chicago
 Thomas R. Sadler, Western Illinois University
 Eric Schulz, Northwestern University
 Dennis Shannon, Southwestern Illinois College
 Charles Sicotte, Rock Valley Community College
 Neil T. Skaggs, Illinois State University
 Kevin Sylwester, Southern Illinois University–
 Carbondale
 Wendine Thompson-Dawson, Monmouth College
 Tara Westerhold, Western Illinois University
 Mark Witte, Northwestern University
 Laurie Wolff, Southern Illinois University–Carbondale
 Paula Worthington, Northwestern University

Indiana

Kelly Blanchard, Purdue University
 Cecil Bohanon, Ball State University
 Kirk Doran, University of Notre Dame
 Eva Dziadula, University of Notre Dame
 Mary Flannery, University of Notre Dame
 Thomas Gresik, University of Notre Dame
 Robert B. Harris, Indiana University–Purdue University
 Indianapolis
 Fred Herschede, Indiana University–South Bend
 Tom Lehman, Indiana Wesleyan University
 Abraham Mathew, Indiana University–Purdue University
 Indianapolis
 John Pomery, Purdue University
 Curtis Price, University of Southern Indiana
 Rob Rude, Ivy Tech Community College
 James K. Self, Indiana University–Bloomington
 Esther-Mirjam Sent, University of Notre Dame
 Virginia Shingleton, Valparaiso University
 Martin C. Spechler, Indiana University–Purdue
 University Indianapolis
 Arun K. Srinivasan, Indiana University–Southeast
 Geetha Suresh, Purdue University

Iowa

Terry Alexander, Iowa State University
 Paul Elgatian, St. Ambrose University
 Jennifer Fuhrman, University of Iowa
 Ken McCormick, University of Northern Iowa
 Andy Schuchart, Iowa Central Community College
 John Solow, University of Iowa
 Jonathan Warner, Dordt College

Kansas

Guatam Bhattacharya, University of Kansas
 Amanda Freeman, Kansas State University
 Dipak Ghosh, Emporia State University
 Alan Grant, Baker University
 Wayne Oberle, St. Ambrose University
 Jodi Messer Pelkowski, Wichita State University
 Martin Perline, Wichita State University
 Joel Potter, Kansas State University
 Joshua Rosenbloom, University of Kansas
 Shane Sanders, Kansas State University
 Dosse Toulaboe, Fort Hays State University
 Bhavneet Walia, Kansas State University

Kentucky

Tom Cate, Northern Kentucky University
 Nan-Ting Chou, University of Louisville
 David Eaton, Murray State University
 Ann Eike, University of Kentucky
 Robert Gillette, University of Kentucky
 Barry Haworth, University of Louisville
 Gail Hoyt, University of Kentucky
 Donna Ingram, Eastern Kentucky University
 Waithaka Iraki, Kentucky State University
 Hak Youn Kim, Western Kentucky University
 Martin Milkman, Murray State University
 Jenny Minier, University of Kentucky
 David Shideler, Murray State University
 John Vahaly, University of Louisville

Louisiana

Lara Gardner, Southeastern Louisiana University
 Jay Johnson, Southeastern Louisiana University
 Faik Koray, Louisiana State University
 Paul Nelson, University of Louisiana–Monroe
 Sung Chul No, Southern University and A&M College
 Tammy Parker, University of Louisiana–Monroe
 Wesley A. Payne, Delgado Community College
 Nancy Rumore, University of Louisiana–Lafayette

Maryland

Carey Borkoski, Anne Arundel Community College
 Kathleen A. Carroll, University of Maryland–Baltimore
 County
 Jill Caviglia-Harris, Salisbury University
 Dustin Chambers, Salisbury University
 Hong Duong, Salisbury University
 Karl Einolf, Mount Saint Mary's University
 Marsha Goldfarb, University of Maryland–
 Baltimore City
 Bruce Madariaga, Montgomery College
 Shah Mehrabi, Montgomery College
 Gretchen Mester, Anne Arundel Community College

David Mitch, University of Maryland–Baltimore County
 John Neri, University of Maryland
 Henry Terrell, University of Maryland

Massachusetts

William L. Casey, Jr., Babson College
 Arthur Schiller Casimir, Western New England College
 Michael Enz, Western New England College
 Can Erbil, Brandeis University
 Lou Foglia, Suffolk University
 Gerald Friedman, University of Massachusetts
 Todd Idson, Boston University
 Aaron Jackson, Bentley College
 Russell A. Janis, University of Massachusetts–Amherst
 Anthony Laramie, Merrimack College
 An Li, University of Massachusetts–Amherst
 Carol McDonough, University of Massachusetts–Lowell
 William O'Brien, Worcester State College
 Ahmad Saranjam, Bridgewater State College
 Howard Shore, Bentley College
 Janet Thomas, Bentley College
 John Tommasi, University of Massachusetts–Lowell
 Gregory H. Wassall, Northeastern University
 Bruce G. Webb, Gordon College
 Gilbert Wolpe, Newbury College
 Jay Zagorsky, Boston University

Michigan

Eric Beckman, Delta College
 Jared Boyd, Henry Ford Community College
 Victor Claar, Hope College
 Sonia Dalmia, Grand Valley State University
 Daniel Giedeman, Grand Valley State University
 Allen C. Goodman, Wayne State University
 Steven Hayworth, Eastern Michigan University
 Gregg Heidebrink, Washtenaw Community College
 Carol Hogan, University of Michigan–Dearborn
 Marek Kolar, Delta College
 Susan J. Linz, Michigan State University
 James Luke, Lansing Community College
 Ilir Miteza, University of Michigan–Dearborn
 John Nader, Davenport University
 Norman P. Obst, Michigan State University
 Laudo M. Ogura, Grand Valley State University
 Nitin Paranjpe, Wayne State University
 Robert J. Rossana, Wayne State University
 Michael J. Ryan, Western Michigan University
 Jonathan Silberman, Oakland University
 Arjun Sondhi, Wayne State University
 Charles A. Stull, Kalamazoo College
 Michael J. Twomey, University of Michigan–Dearborn
 Mark Wheeler, Western Michigan University
 Wendy Wysocki, Monroe County Community College

Minnesota

Anna Antus, North Hennepin Community College
 Mary Edwards, Saint Cloud State University
 Phillip J. Grossman, Saint Cloud State University
 Monica Hartman, University of St. Thomas
 Matthew Hyle, Winona State University
 Dan Norgard, Normandale Community College
 David J. O'Hara, Metropolitan State University–
 Minneapolis
 Kwang Woo (Ken) Park, Minnesota State
 University–Mankato
 Artatrana Ratha, Saint Cloud State University
 Ken Rebeck, Saint Cloud State University
 Katherine Schmeiser, University of Minnesota
 Bedassa Tadesse, University of Minnesota–Duluth

Mississippi

Becky Campbell, Mississippi State University
 Randall Campbell, Mississippi State University
 Patricia A. Freeman, Jackson State University
 Arlena Sullivan, Jones County Junior College

Missouri

Chris Azevedo, University of Central Missouri
 Ariel Belasen, Saint Louis University
 Catherine Chambers, University of Central Missouri
 Paul Chambers, University of Central Missouri
 Kermit Clay, Ozarks Technical Community College
 Ben Collier, Northwest Missouri State University
 John R. Crooker, University of Central Missouri
 Jo Durr, Southwest Missouri State University
 Julie H. Gallaway, Southwest Missouri State University
 Terrel Gallaway, Southwest Missouri State University
 Timothy Hamilton, Columbia College
 Mark Karscig, Central Missouri State University
 Eric Nielsen, Saint Louis Community College–Meramec
 Nicholas D. Peppes, Saint Louis Community
 College–Forest Park
 Steven T. Petty, College of the Ozarks
 Sharon Ryan, University of Missouri–Columbia
 Ben Young, University of Missouri–Kansas City

Montana

Agnieszka Bielinska-Kwapisz, Montana State
 University–Bozeman
 Jeff Bookwalter, University of Montana–Missoula

Nebraska

John Dogbey, University of Nebraska–Omaha
 Ward Hooker, Central Community College
 Allan Jenkins, University of Nebraska–Kearney
 James Knudsen, Creighton University

Shawna Koger, Arlington Public Schools/Metro
Community College
Craig MacPhee, University of Nebraska–Lincoln
Kim Sosin, University of Nebraska–Omaha
Mark E. Wohar, University of Nebraska–Omaha

Nevada

Michael H. Lampert, Truckee Meadows Community
College
Bernard Malamud, University of Nevada–Las Vegas
Sheri Perez, College of Southern Nevada
Bill Robinson, University of Nevada–Las Vegas

New Hampshire

Evelyn Gick, Dartmouth College
Robert Mohr, University of New Hampshire
Neil Niman, University of New Hampshire

New Jersey

Len Anyanwu, Union County College
Maharuk Bhiladwalla, Rutgers University–New
Brunswick
Giuliana Campanelli-Andreopoulos, William Paterson
University
Basanta Chaudhuri, Rutgers University
Gary Gigliotti, Rutgers University–New Brunswick
John Graham, Rutgers University–Newark
Berch Haroian, William Paterson University
Paul Harris, Camden County College
Jeff Rubin, Rutgers University
Henry Ryder, Gloucester County College
Laura Storino, Rowan University
Donna Thompson, Brookdale Community College

New Mexico

Ali Arshad, Central New Mexico Community College
Donald Coes, University of New Mexico
Kate Krause, University of New Mexico
Cristina Reiser, University of New Mexico
Curt Shepherd, University of New Mexico

New York

Seemi Ahmad, Dutchess Community College
Chris Annala, State University of New York–Geneseo
Erol Balkan, Hamilton College
John Bockino, Suffolk County Community
College–Ammerman
Charles Callahan III, State University of New
York–Brockport
Michael Carew, Baruch College
Sean Corcoran, New York University
Ranjit S. Dighe, City University of New York–Bronx
Community College

Debra Dwyer, Stony Brook University
Glenn Gerstner, Saint John's University–Queens
Susan Glanz, Saint John's University–Queens
Wayne A. Grove, LeMoyne College
Nancy Howe, Hudson Valley Community College
Christopher Inya, Monroe Community College
Ghassan Karam, Pace University
Clifford Kern, State University of New York–
Binghamton
Mary Lesser, Iona College
Anna Musatti, Columbia University
Theodore Muzio, St. John's University, New York
Emre Ozsoz, Fashion Institute of Technology
Howard Ross, Baruch College
Eric Rothenburg, Kingsborough Community College
Ed Steinberg, New York University
Leonie Stone, State University of New York–
Geneseo
Ganti Subrahmanyam, University of Buffalo
Jogindar S. Uppal, State University of New York–Albany
Susan Wolcott, Binghamton University
Daniel Wolman, Nassau Community College

North Carolina

Rita Balaban, University of North Carolina
Otilia Boldea, North Carolina State University
Walter Boyle, Fayetteville Technical Community College
Robert Burrus, University of North
Carolina–Wilmington
Lee A. Craig, North Carolina State University
Alexander Deshkovski, North Carolina Central University
Kathleen Dorsainvil, Winston-Salem State University
Lydia Gan, University of North Carolina–Pembroke
Michael Goode, Central Piedmont Community College
Salih Hakeem, North Carolina Central University
Melissa Hendrickson, North Carolina State University
Haiyong Liu, East Carolina University
Kosmas Marinakis, North Carolina State University
Todd McFall, Wake Forest University
Shahriar Mostashari, Campbell University
Jonathan Phillips, North Carolina State University
Bobby Puryear, North Carolina State University
Jeff Sarbaum, University of North Carolina–Greensboro
Peter Schuhmann, University of North
Carolina–Wilmington
Robert Shoffner, Central Piedmont Community College
Catherine Skura, Sandhills Community College
Carol Stivender, University of North Carolina–Charlotte
Vera Tabakova, East Carolina University
Eric Taylor, Central Piedmont Community College
Julianne Treme, University of North
Carolina–Wilmington
Hui-Kuan Tseng, University of North Carolina at Charlotte
Robert Whaples, Wake Forest University

John Whitehead, Appalachian State University
 Gary W. Zinn, East Carolina University
 Rick Zuber, University of North Carolina at Charlotte

Ohio

Olugbenga Ajilore, The University of Toledo
 Bruce Bellner, Ohio State University
 Benjamin Blair, Columbus State University
 John P. Blair, Wright State University
 Bolong Cao, Ohio University–Athens
 Kyongwook Choi, Ohio University
 James D'Angelo, University of Cincinnati
 Darlene DeVera, Miami University
 Edward Durkin, Cuyahoga Community College
 Rudy Fichtenbaum, Wright State University
 Tim Fuerst, Bowling Green University
 Harley Gill, Ohio State University
 Leroy Gill, Ohio State University
 Steven Heubeck, Ohio State University
 Daniel Horton, Cleveland State University
 Sarah Jenyk, Youngstown State University
 Michael Jones, University of Cincinnati
 Kristen Keith, University of Toledo
 Janice Kinghorn, Miami University
 Jean Kujawa, Lourdes College
 Ernest Massie, Franklin University
 David McClough, Ohio Northern University
 Ida A. Mirzaie, Ohio State University
 Jay Mutter, University of Akron
 Mike Nelson, University of Akron
 Nicholas Noble, Miami University
 Dennis C. O'Neill, University of Cincinnati
 Joseph Palardy, Youngstown State University
 Dennis Petruska, Youngstown State University
 Charles Reichheld, Cuyahoga Community College
 Teresa Riley, Youngstown State University
 Rochelle Ruffer, Youngstown State University
 Kate Sheppard, University of Akron
 Richard Stratton, University of Akron
 Albert Sumell, Youngstown State University
 Steve Szheghi, Wilmington College
 Melissa Thomasson, Miami University
 Yaqin Wang, Youngstown State University
 Bert Wheeler, Cedarville University
 Kathryn Wilson, Kent State University
 Sourushe Zandvakili, University of Cincinnati

Oklahoma

David Hudgins, University of Oklahoma
 Bill McLean, Oklahoma State University
 Denny Myers, Oklahoma City Community College
 Ed Price, Oklahoma State University
 Abdulhamid Sukar, Cameron University
 Zhen Zhu, University of Central Oklahoma

Oregon

Bill Burrows, Lane Community College
 Tom Carroll, Central Oregon Community College
 Tim Duy, University of Oregon
 Alan S. Fudge, Linn-Benton Community College
 B. Starr McMullen, Oregon State University
 Ted Scheinman, Mount Hood Community College
 Larry Singell, University of Oregon
 Ayca Tekin-Koru, Oregon State University

Pennsylvania

Bradley Andrew, Juniata College
 Mohammad Bajwa, Northampton Community College
 Gustavo Barboza, Mercyhurst College
 Charles A. Bennett, Gannon University
 Cynthia Benzing, West Chester University
 Kelly Blanchard, Purdue University
 Howard Bodenhorn, Lafayette College
 Milica Bookman, St. Joseph's University
 Robert Brooker, Gannon University
 Dave Brown, Pennsylvania State University
 Eric Brucker, Widener University
 Shirley Cassing, University of Pittsburgh
 Linda Childs-Leatherbury, Lincoln University
 Scott J. Dressler, Villanova University
 Fatma El-Hamidi, Dietrich School of Arts and Sciences
 Satyajit Ghosh, University of Scranton
 William L. Goffe, Pennsylvania State University
 Anthony Gyapong, Pennsylvania State University–Abington
 Mehdi Haririan, Bloomsburg University
 Andrew Hill, Federal Reserve Bank of Philadelphia
 Steven Husted, University of Pittsburgh
 James Jozefowicz, Indiana University of Pennsylvania
 Stephanie Brewer Jozefowicz, Indiana University of Pennsylvania
 Nicholas Karatjas, Indiana University of Pennsylvania
 Mary Kelly, Villanova University
 Brendan Kennelly, Lehigh University and National University of Ireland, Galway
 Thomas C. Kinnaman, Bucknell University
 Christopher Magee, Bucknell University
 Svitlana Maksymenko, University of Pittsburgh
 Katherine McCann, Penn State
 Judy McDonald, Lehigh University
 Ranganath Murthy, Bucknell University
 Hong V. Nguyen, University of Scranton
 Cristian Pardo, Saint Joseph's University
 Iordanis Petsas, University of Scranton
 Denis Raihall, West Chester University
 Adam Renhoff, Drexel University
 Nicole L. Sadowski, York College of Pennsylvania

Edward Scahill, University of Scranton
 Ken Slaysman, York College of Pennsylvania
 Rajeev Sooreea, Pennsylvania State University—
 Altoona
 Rebecca Stein, University of Pennsylvania
 Sandra Trejos, Clarion University
 Peter Zaleski, Villanova University
 Ann Zech, Saint Joseph's University
 Lei Zhu, West Chester University
 Susan Zumas, Lehigh University

Rhode Island

Jongsung Kim, Bryant University
 Leonard Lardaro, University of Rhode Island
 Nazma Latif-Zaman, Providence College

South Carolina

Calvin Blackwell, College of Charleston
 Ward Hooker, Orangeburg—Calhoun Technical College
 Woodrow W. Hughes, Jr., Converse College
 John McArthur, Wofford College
 Chad Turner, Clemson University
 Victoria Wills-Miller, Piedmont Technical College
 Madelyn Young, Converse College

South Dakota

Joseph M. Santos, South Dakota State University
 Jason Zimmerman, South Dakota State University

Tennessee

Sindy Abadie, Southwest Tennessee Community College
 Charles Baum, Middle Tennessee State University
 Jennis Biser, Austin Peay State University
 Michaël Bonnal, University of Tennessee—Chattanooga
 John Brassel, Southwest Tennessee Community
 College
 Maria Edlin, Middle Tennessee State University
 Bichaka Fayissa, Middle Tennessee State University
 Michael J. Gootzeit, University of Memphis
 Travis Hayes, University of Tennessee—Chattanooga
 Christopher C. Klein, Middle Tennessee State
 University
 Leila Pratt, University of Tennessee—Chattanooga
 Millicent Sites, Carson-Newman College

Texas

Carlos Aguilar, El Paso Community College
 Rashid Al-Hmoud, Texas Tech University
 William Beaty, Tarleton State University
 Klaus Becker, Texas Tech University
 Alex Brown, Texas A&M University
 Jack A. Bucco, Austin Community College—Northridge
 and Saint Edward's University

Don Bumpass, Sam Houston State University
 Marilyn M. Butler, Sam Houston State University
 Mike Cohick, Collin County Community College
 Cesar Corredor, Texas A&M University
 Steven Craig, University of Houston
 Patrick Crowley, Texas A&M University—Corpus
 Christi
 Richard Croxdale, Austin Community College
 Susan Dadres, Southern Methodist University
 David Davenport, McLennan Community College
 Harry Ellis, Jr., University of North Texas
 Paul Emberton, Texas State University
 Diego Escobari, Texas A&M University
 Christi Esquivel, Navarro College
 Nicholas Feltovich, University of Houston
 Charles Harold Fifield, Baylor University
 Mark Frank, Sam Houston State University
 Alejandro Gelves, Midwestern State University
 Edgar Ghossoub, University of Texas—San Antonio
 Richard Gosselin, Houston Community College—
 Central
 Tina J. Harvell, Blinn College—Bryan
 James W. Henderson, Baylor University
 Wayne Hickenbottom, University of Texas—Austin
 Jane S. Himarios, University of Texas—Arlington
 James Holcomb, University of Texas—El Paso
 Jamal Husein, Angelo State University
 Ansul Islam, University of Houston—Downtown
 Karen Johnson, Baylor University
 Kathy Kelly, University of Texas—Arlington
 Thomas Kemp, Tarrant County College—Northwest
 Jim Lee, Texas A&M University—Corpus Christi
 Ronnie W. Liggett, University of Texas—Arlington
 Akbar Marvasti, University of Houston—Downtown
 James Mbata, Houston Community College
 Kimberly Mencken, Baylor University
 Randy Methenitis, Richland College
 Carl Montano, Lamar University
 James Moreno, Blinn College
 Mike Munoz, Northwest Vista College
 Camille Nelson, Texas A&M University
 Michael Nelson, Texas A&M University
 Charles Newton, Houston Community
 College—Southwest College
 Azucena Peralta, El Paso Community College
 Ryan Phelps, Stephen F. Austin State University
 Sheila Amin Gutierrez de Pineros, University of
 Texas—Dallas
 John Pisciotta, Baylor University
 Shofiqur Rahman, University of Texas—El Paso
 Sara Saderion, Houston Community
 College—Southwest College
 George E. Samuels, Sam Houston State University
 Rolando Sanchez, Northwest Vista College
 David Schutte, Mountain View College

Ivan Tasic, Texas A&M University
 David Torres, University of Texas–El Paso
 Ross vanWassenhove, University of Houston
 Roger Wehr, University of Texas–Arlington
 Elizabeth Wheaton, Southern Methodist University
 Jim Wollscheid, Texas A&M University–Kingsville
 J. Christopher Wreh, North Central Texas College
 David W. Yoskowitz, Texas A&M University–Corpus Christi
 Inske Zandvliet, Brookhaven College

Utah

Chris Fawson, Utah State University
 Lowell Glenn, Utah Valley State College
 Aric Krause, Westminster College
 Arden Pope, Brigham Young University

Vermont

Nancy Brooks, University of Vermont

Virginia

Lee Badgett, Virginia Military Institute
 Lee A. Coppock, University of Virginia
 Erik Craft, University of Richmond
 Janelle Davenport, Hampton University
 Philip Heap, James Madison University
 George E. Hoffer, Virginia Commonwealth University
 Oleg Korenok, Virginia Commonwealth University
 Larry Landrum, Virginia Western Community College
 Frances Lea, Germanna Community College
 Carrie Meyer, George Mason University
 John Min, Northern Virginia Community College
 James Roberts, Tidewater Community College–Virginia Beach
 Robert Rycroft, University of Mary Washington
 Araine A. Schauer, Mary Mount College
 Sarah Stafford, The College of William & Mary
 Bob Subrick, James Madison University
 Susanne Toney, Hampton University
 Michelle Vachris, Christopher Newport University
 James Wetzels, Virginia Commonwealth University
 George Zestos, Christopher Newport University

Washington

Genevieve Briand, Washington State University
 Lisa Citron, Cascadia College
 Andrew Ewing, University of Washington
 Stacey Jones, Seattle University
 Dean Peterson, Seattle University
 Robert Rosenman, Washington State University

West Virginia

Jacqueline Agesa, Marshall University
 Richard Agesa, Marshall University
 Robin S. McCutcheon, Marshall University College of Business
 Eugene Bempong Nyantakyi, West Virginia University

Wisconsin

Peng Huang, Ripon College
 Yan Li, University of Wisconsin–Eau Claire
 Marina Karabelas, Milwaukee Area Technical College
 Elizabeth Sawyer Kelly, University of Wisconsin–Madison
 Pascal Ngoboka, University of Wisconsin–River Falls
 Kevin Quinn, St. Norbert College
 John R. Stoll, University of Wisconsin–Green Bay

Wyoming

Robert Godby, University of Wyoming

District of Columbia

Leon Battista, American Enterprise Institute
 Robert Berman, American University
 Michael Bradley, George Washington University
 Colleen M. Callahan, American University
 Eliane P. Catilina, Graduate School USA
 Robert Feinberg, American University
 Irene Foster, The George Washington University
 Walter Park, American University
 Ralph Sonenshine, American University

International

Minh Quang Dao, Carleton University–Ottawa, Canada

A Word of Thanks

Once again, we benefited greatly from the dedication and professionalism of the Pearson Economics team. Former Portfolio Manager David Alexander's energy and support through seven editions were indispensable. David helped mold the presentation and provided words of encouragement whenever our energy flagged. Content Editor Lena Buonanno worked tirelessly to ensure that this text was as good as it could be and to coordinate the many moving parts involved in a project of this magnitude. This new edition posed particular challenges, and we remain astonished at the amount of time, energy, and unfailing good humor she brings to this project. On this edition, Chris DeJohn served as Manager of Content Strategy and Samantha Lewis served as Product Manager. As we worked on the first edition, former Director of Key Markets David Theisen provided invaluable insight into how best to structure a principles text. His advice helped shape nearly every chapter.

Courtney Kamauf, Digital Content Project Lead, skillfully managed the selection and placement of the many assessments in the product. We thank Melissa Honig who served as Digital Studio producer. We thank Nancy Freihofer for managing the entire production process and the extensive supplement package and media that accompanies the book and Kelly Murphy and Kathy Smith of SPi Global for coordinating the many moving pieces of this complex project. We also extend our thanks to Nayke Heine, Senior Product Marketing Manager, and Ashley Bryan, Product Solutions Specialist, for skillfully presenting our book and digital products to both instructors and students.

We received excellent research assistance on previous editions from Dante DeAntonio, Ed Timmons, Matthew Saboe, David Van Der Goes, and Jason Hockenberry. We thank Elena Zeller, Jennifer Brailsford, Ellen Vandevort Wolf, Emily Webster, Mollie Sweet, Jayme Wagner, and Rebecca Barney for their careful proofreading of first- and second-round page proofs. Through each edition of our books, we received helpful feedback and recommendations from Lehigh University faculty colleagues Frank R. Gunter, Thomas J. Hyclak, and Robert J. Thornton.

As instructors, we recognize how important it is for students to view graphs that are clear and accessible. We are fortunate to have instructional designer Fernando Quijano render all the figures in our books and also our supplements. Market feedback on the figures continues to be positive. We extend our thanks to Fernando not only for collaborating with us in creating the best figures possible but also for his patience with our demanding schedule.

This eighth edition has several media components, which required skilled and patient creators and developers. We extend special thanks to Andy Taylor of Hodja Media for preparing the video clips and to Paul Graf of the University of Indiana–Bloomington for preparing the graph animations. These videos and animations are an important part of our revision.

New to this edition are Solved Problem videos. We extend our thanks to Mike Ryan of Western Michigan University and Kim Holder of the University of West Georgia for their wonderful work in creating these useful learning videos.

We extend our thanks to the following readers of page proof pages: Jennifer Brailsford, Lindsay Clark, Deborah Crowell, Dena Holland Duran, Beth Brockman Miller, Ellen Vandevort Wolf, and Elena Zeller.

A good part of the burden of an undertaking on this scale is borne by our families. We appreciate the patience, support, and encouragement of our wives and children.

This page intentionally left blank

1

Economics: Foundations and Models

Does Apple Manufacture the iPhone in the United States?

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

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

It was unclear whether the Trump administration's policies would be successful. Apple and other U.S. firms were manufacturing some products in other countries because in a *market system*, firms respond to economic incentives. In the case of Apple, the lower wages earned by Chinese workers and their experience in electronics manufacturing significantly reduce the costs of assembling iPhones. Technological progress often creates economic incentives for firms to change how they produce goods and services. For example, U.S. automobile manufacturers have replaced some workers with robots, reducing employment in the



Pieter Greyling/Alamy Stock Photo

industry. Firms also respond to changes in consumer tastes. When more people began using smartphones rather than computers to connect to the Internet, they reduced their demand for computers. Firms also react to incentives resulting from government policy. For example, in response to the Trump administration's trade policies and tax reductions offered by the state government, Foxconn planned to build a factory in Wisconsin to manufacture LCD television screens. And in 2019, many U.S. firms were awaiting the outcome of trade negotiations between China and United States before deciding in which country to expand their operations.

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

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