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THIRD EDITION

MACROECONOMICS

IN MODULES

Paul Krugman • Robin Wells

Applications in Macroeconomics in Modules

SECTION
1: Basic Economic Concepts
2: Supply and Demand
3: Macroeconomic Measurement
4: Unemployment and Inflation
5: Long-Run Economic Growth
6: Savings, Investment Spending, and the Financial System
7: Income and Expenditure
8: Aggregate Demand and Aggregate Supply
9: Fiscal Policy
10: Money, Banking, and the Federal Reserve System
11: Monetary Policy
12: Policy Responses to Unemployment and Inflation
13: Open-Economy Macroeconomics
14: Macroeconomics: Events and Ideas

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2: Blue Jean Blues
3: The New #2
4: A Very British Dilemma
5: Tall Tales
6: Funds for Facebook
7: From Boom to Bust
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9: To Stimulate or Not to Stimulate?
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11: Chairman of the Board
12: Bringing a Suitcase to the Bank
13: Switzerland Doesn't Want Your Money
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Green type indicates global example

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2: Beating the Traffic ■ Only Creatures Small and Pampered ■ The Rice Run of 2008 ■ Price Floors and School Lunches ■ The Clams of the Jersey Shore ■ Skill and Comparative Advantage
3: Defining Recessions and Expansions ■ Comparing Recessions ■ Creating the National Accounts ■ Our Imputed Lives ■ Miracle in Venezuela ■ GDP and the Meaning of Life
4: Failure to Launch ■ Natural Unemployment Around the OECD ■ Israel's Experience with Inflation ■ Indexing to the CPI
5: India Takes Off ■ The Information Technology Paradox ■ The Brazilian Breadbasket ■ Are Economies Converging?
6: America's Low Savings ■ Fifty Years of Fluctuations in U.S. Interest Rates ■ How Big Is That Jackpot, Anyway? ■ The Great American Housing Bubble
7: The Multiplier and the Great Depression ■ Interest Rates and the U.S. Housing Boom ■ Inventories and the End of a Recession
8: Moving Along the Aggregate Demand Curve, 1979–1980 ■ Prices and Output During the Great Depression ■ Supply Shocks Versus Demand Shocks in Practice
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3: Getting a Jump on GDP
4: A Monster Slump
5: Big Box Boom
7: Making It Through in Muskegon
8: United in Pain
9: Priming the Pumps
10: The Perfect Gift: Cash or a Gift Card?
11: PIMCO Bets on Cheap Money
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Paul Krugman • Robin Wells

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To beginning students everywhere,
which we all were at one time.

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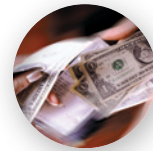
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PREFACE

“It is not how much empty space there is, but rather how it is used. It is not how much information there is, but rather how effectively it is arranged.”

—Edward R. Tufte

An Innovative Modular Format

For a long while, we have been hearing from instructors who wanted to use the Krugman/Wells text in their principles course, but needed a less comprehensive version: a book that was shorter overall, with a focus on the essential principles of economics, and with less in the way of theory and analytics. We’ve responded to these requests, and you are holding the result in your hands.

Macroeconomics in Modules is a streamlined textbook that incorporates an innovative format geared toward how students learn today. Instead of tackling 24 chapters of about 25 to 40 pages each, students encounter 6- to 10-page *modules* designed to be read in a single sitting. What exactly is a module? We think users and reviewers have come up with the best definition. They consistently describe modules as “short, digestible chunks” of text that students actually read. We should also add that shorter does not mean taking shortcuts. Although each module is a short, easy-to-manage reading assignment, each is also informative and thorough, with adequate rigor.

This text includes carefully crafted pedagogy that works within the modular format to enhance the student learning experience. The modular format offers a unique opportunity for structured learning and assessment. Each module concentrates on a specific topic using a learning-objectives approach and then concludes with three types of self-assessment questions: “Check Your Understanding” and multiple-choice questions that allow students to test their comprehension of module content, followed by critical-thinking questions that encourage reflection and analysis. Answers to these questions appear at the end of the book, so students can actually see how well they’ve mastered concepts.

There is additional opportunity for assessment at the end of each section (a section is a grouping of modules): thoughtful problems that test related concepts across all of the modules in a section, encouraging students to make connections among ideas as well as apply and practice what they’ve learned.

We’ve refined the modular structure in this edition to offer even greater flexibility.

We’ve added six new sections to help unpack some of the more module-heavy sections. The result: more focused sections with fewer modules in each. Important topics are contained within their own sections, making it easier for instructors to navigate through the book and assign the topics they want to teach without breaking chapters apart (often done with non-modular texts), which can undermine narrative flow and diminish comprehension.

The Science Behind Modules

We see it for ourselves, we have heard it from reviewers, and the research confirms it: students are reading less, for shorter periods of time, and they continue to struggle with comprehension. So, when we began thinking about the idea of developing a more streamlined principles text, we also thought a lot about the best way to format it.

The modular format, which is popular in other disciplines, appealed to us. It was in keeping with the findings of cognitive psychologists who have demonstrated that comprehension is best attained when material is “chunked” into smaller reading assignments, reinforced with frequent questioning (the “testing effect”), and incentivized by a sense of accomplishment earned from completing discrete reading tasks. These findings are at the heart of the modular format of this text and its pedagogy.

Comments from users confirm the benefits of this new way of presenting economic concepts. Each user reported an almost identical story: students were actually completing their reading assignments, something that was rare when traditional textbook chapters were assigned. Overall, they found students coming to lectures better prepared. And, each of these users couldn’t imagine returning to a textbook with a more traditional format.

This result makes intuitive sense. Why wouldn’t students prefer to read short modules instead of long chapters? Of course it would enrich the learning experience if students could check their comprehension more frequently, at the end of short modules.

For a closer look at the text’s format and feature set, see the walkthrough on pages xxiv–xxxi.

About the Revision

This edition of *Macroeconomics in Modules* represents a major revision. We had three goals in mind as we worked: adding important new content, improving the organization of sections, and updating examples and data to keep the book current and relevant. We even added a new feature.

Decisions about many of the changes were made with the help of feedback from a devoted group of adopters and reviewers—all fans of the modular format who offered us excellent suggestions for how we could make the text an even better match for their principles courses. Here is an overview of the major revisions.

New Coverage of the Keynesian Cross

This was an omission that prompted the most vocal response from instructors and we've remedied it in this edition with **new Module 26, "The Income-Expenditure Model."** The new module offers a detailed look at the aggregate-expenditure model and presents the famous 45-degree diagram for those who cover this material. We worked hard to keep this module focused and free of unnecessary complexity.

New Modules and Organizational Improvements

In addition to the new module on the Keynesian cross, we've included two new modules on topics that mean a lot to us and, that we hope, will allow you to enrich your own teaching. **Module 8, "International Trade,"** has been included for those who wish to delve deeper into trade topics than is possible with the coverage of comparative advantage and trade presented in Module 3.

Module 42, "Crises and Consequences," offers a unique look at the financial crisis of 2008, examining the aspects of the banking system that allowed the crisis to happen, the reasons why banking crises are so bad for so many, and the role that government and regulation play in crises.

Organizational Improvements We made the following changes in this edition. But for those who prefer to teach using a different order, the sections and modules remain completely flexible.

Many new sections: We've already touched on the benefits of more sections. Those of you familiar with the second edition will notice that we've virtually doubled the number of them, a structural change that alters the look of our table of contents, we think, for the better. Material that had been submerged previously, such as ADAS (Section 8), Fiscal Policy (Section 9), and Money, Banking, and the Fed (Section 10), is now prominent. Some modules have moved to accommodate the new structure, resulting, overall, in a more logical flow of ideas.

New early growth coverage: Following the section on unemployment and inflation is an early, all-new section devoted to economic growth (Section 5). This early coverage allows us to emphasize the idea that economic growth, along with low unemployment and stable inflation, are important policy goals. In addition, early coverage of long-run economic growth in real GDP helps students understand why

the business cycle involves fluctuations around an upward trend. And we are now able to highlight the role that the markets and institutions covered next, in Section 6, play in economic growth.

New Feature: Business Case Studies

Now, more than ever, students need a strong understanding of economic principles and their applications to business decisions. To meet this need, virtually every section now concludes with a real-world business case that illustrates how the economic principles just covered play out in the world of entrepreneurs and bottom lines.

The cases are wide-ranging and provide insight into business decision making. They include an examination of how lean production techniques at Boeing and Toyota increased efficiency at both companies and led to a worldwide manufacturing revolution. (Section 1: "Efficiency, Opportunity Cost, and the Logic of Lean Production"). Another case looks at the changing job market during a recession, examined through the lens of companies like Monster Worldwide and its competitors (Section 4: "A Monster Slump"). One of our favorites is the case addressing the role of gift cards in secondary markets and the value of *breakage* when individual consumers fail to pay down their gift cards completely (Section 10: "The Perfect Gift: Cash or a Gift Card?").

Each case concludes with "Questions for Thought" that help students engage more deeply with economic concepts by seeing them applied in actual business situations. A list of the new Business Cases appears on the inside front cover.

Extensive Updates

This edition includes 15 new "Economics in Actions" (formerly called "In Real Life"). Many of those not replaced outright have been updated to include recent developments and research. Virtually every module includes at least one "Economics in Action" feature. In addition, all but two of our section-opening stories are new to this edition, for a grand total of 12 new openers. We have also undertaken a thorough updating of examples, data, and applications.

It is important to us to emphasize currency and to use stories from real life and the news. This makes every revision a work-intensive endeavor, but we believe that currency drives student interest.

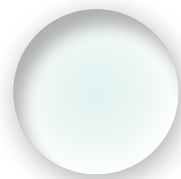
A Closer Look at the Table of Contents and Feature Set

The annotated table of contents that follows shows how the modular format works and explains the focus of each section. Although the sections are grouped into building blocks in which conceptual material learned at one stage is built upon and then integrated into the next stage, the coverage is also flexible enough to allow instructors to organize content to best meet their needs.

Following the table of contents is a visual tour of our feature set that clarifies how well the content of this text is supplemented by real-world examples and ample opportunity for practice and review (pages xxiv–xxvii).

Annotated Table of Contents . . .

A Closer Look at Content and Format



The text contains 14 sections with two to five modules in each.

An introduction to basic economic principles that will help students develop an understanding of economic modeling and the nature of markets.

Each component of the supply and demand model is covered in its own module, allowing students to master the model incrementally. The section includes a **new module** on international trade.

Introduces macroeconomics and explains how macroeconomic aggregates are measured.

A **new** stand-alone section examining unemployment, how it's measured, and the problems posed by inflation.

NEW TO THIS EDITION Early treatment of long-run growth. The section looks at sources of economic growth and explains why some countries have been more successful than others.

An introduction to the financial system with the background students will need to tackle upcoming topics such as monetary policy and international capital flows.

NEW TO THIS EDITION Coverage of Keynesian cross analysis in **new Module 26**. It is preceded by a look at the logic of the multiplier and determinants of consumer and investment spending.

A thorough treatment of AD–AS focusing on the aggregate price level using the traditional approach to AD–AS, with coverage on the ability of economies to recover in the long run.

Section 1

Basic Economic Concepts

- MODULE 1 The Study of Economics
- MODULE 2 The Production Possibility Frontier Model
- MODULE 3 Comparative Advantage and Trade

Section 2

Supply and Demand

- MODULE 4 Demand
- MODULE 5 Supply and Equilibrium
- MODULE 6 Changes in Equilibrium
- MODULE 7 Price and Quantity Controls
- MODULE 8 International Trade

Section 3

Macroeconomic Measurement

- MODULE 9 Introduction to Macroeconomics
- MODULE 10 The Circular-Flow Diagram and the National Accounts
- MODULE 11 Gross Domestic Product (GDP)
- MODULE 12 Interpreting Real Gross Domestic Product

Section 4

Unemployment and Inflation

- MODULE 13 Defining Unemployment
- MODULE 14 Categories of Unemployment
- MODULE 15 The Costs of Inflation
- MODULE 16 Measuring Inflation

Section 5

Long-Run Economic Growth

- MODULE 17 Sources of Long-Run Economic Growth
- MODULE 18 Productivity and Growth
- MODULE 19 Long-Run Growth Policy

Section 6

Savings, Investment Spending, and the Financial System

- MODULE 20 Savings and Investment Spending
- MODULE 21 The Market for Loanable Funds
- MODULE 22 The Time Value of Money
- MODULE 23 The Financial System

Section 7

Income and Expenditure

- MODULE 24 The Multiplier
- MODULE 25 Consumption and Investment Spending
- MODULE 26 The Income-Expenditure Model

Section 8

Aggregate Demand and Aggregate Supply

- MODULE 27 Aggregate Demand
- MODULE 28 Aggregate Supply
- MODULE 29 The AD–AS Model

The addition of six new section divisions on major topics in macroeconomics, like fiscal policy and monetary policy, means fewer modules in each section and more flexibility.

Section 9

Fiscal Policy

- MODULE 30 Fiscal Policy Basics
- MODULE 31 Fiscal Policy and the Multiplier
- MODULE 32 Budget Deficits and Public Debt

Section 10

Money, Banking, and the Federal Reserve System

- MODULE 33 Defining and Measuring Money
- MODULE 34 Banking and Money Creation
- MODULE 35 The Federal Reserve System

Section 11

Monetary Policy

- MODULE 36 The Federal Reserve and Monetary Policy
- MODULE 37 The Money Market
- MODULE 38 Monetary Policy and the Interest Rate
- MODULE 39 Money, Output, and Prices in the Long Run

Section 12

Policy Responses to Unemployment and Inflation

- MODULE 40 Inflation, Disinflation, and Deflation
- MODULE 41 The Phillips Curve
- MODULE 42 Crises and Consequences

Section 13

Open-Economy Macroeconomics

- MODULE 43 Capital Flows and the Balance of Payments
- MODULE 44 The Foreign Exchange Market
- MODULE 45 Exchange Rate Policy
- MODULE 46 Exchange Rates and Macroeconomic Policy

Section 14

Macroeconomics: Events and Ideas

- MODULE 47 History and Alternative Views of Macroeconomics
- MODULE 48 The Modern Macroeconomic Consensus

APPENDICES

- APPENDIX A Graphs in Economics
- APPENDIX B Macroeconomic Data Tables

Solutions to Module Review Questions

A **new** stand-alone section devoted to how fiscal policy can be used to manage the ups and downs of the business cycle, with an in-depth look at discretionary fiscal policy and automatic stabilizers.

This section examines the roles of money, money creation, and the structure and role of the Federal Reserve System—including historical background on the evolution of money and monetary institutions.

A **new** stand-alone section examining the use of monetary policy in the face of recession or inflation, with a close look at the Fed's role in driving interest rates and aggregate demand.

This section addresses the causes and consequences of inflation, deflation, and the dangers of disinflation. **NEW TO THIS EDITION** Module 42 on financial crises, offering a detailed and up-to-date look at the recent crisis and its aftermath.

Analyzes the special issues raised by an open economy: a weak dollar, foreign accumulation of dollar reserves, and debates about the euro.

A unique overview of the history of macroeconomic thought set in the context of changing policy concerns and current macroeconomic debates.

These appendices offer a helpful review of graphing skills and easy access to select macroeconomic data for reference.

Solutions allow students to independently test their mastery of concepts.

Tools for Learning . . . Getting the Most from This Book

Each section consists of interrelated modules with a consistent set of features and pedagogy. Each module is self-contained giving students discrete reading assignments to complete. Instructors have the freedom to assign only those modules that are important to their course.

SECTION 2

Module 5: Demand
Module 6: Supply and Equilibrium
Module 7: Changes in Equilibrium

The **SECTION-OPENING OUTLINE** offers a quick opening preview of the modules in each section.

Supply and Demand

BLUE JEAN BLUES



If you bought a pair of blue jeans in 2011, you may have been shocked at the price. Or maybe not: fashions change, and maybe you thought you were paying the price for being fashionable. But you weren't—you were paying for cotton. Jeans are made of denim, which is a particular weave of cotton, and by December 2010, the price had hit a 140-year high, the highest it had been since the 1870s.

Why were cotton prices so high? The world struggled with the effects of the 2009-2010 drought, with the worst apparently over by the end of 2010, with the worst apparently over, the price of cotton fell. On the supply side, Pakistan, the world's largest cotton producer, was hit by devastating floods that destroyed its cotton crop. Consumers had limited tolerance for large increases in the price of cotton clothing, apparel makers began scrambling to find ways to reduce costs. They adopted changes like smaller buttons, cheaper linings, and—yes—polyester, doubting that consumers would be willing to pay more for cotton goods. In fact, some experts on the

cotton market warned that the sky-high prices of cotton in 2010–2011 might lead to a permanent shift in tastes, with consumers becoming more willing to wear synthetics even when cotton prices came down.

At the same time, it was not all bad news for everyone connected with the cotton trade. In the United States, cotton producers had not been hit by bad weather and were relishing the higher prices. American farmers responded to sky-high cotton prices by sharply increasing the acreage devoted to the crop. None of this was enough, however, to produce immediate price relief.

Wait a minute: how, exactly, does flooding in Pakistan translate into higher jeans prices and more polyester in your T-shirts? It's a matter of supply and demand—but what does that mean? Many people use "supply and demand" as a sort of catchphrase to mean "the laws of the marketplace at work." To economists, however, the concept of supply and demand has a precise meaning: it is a *model of how a market behaves*.

In this section, we lay out the pieces that make up the *supply and demand model*, put them together, and show how this model can be used to understand how many—but not all—markets behave.

SECTION-OPENING STORY Each section begins with a compelling story that often extends through the modules. The opening stories are designed to illustrate important concepts, to build intuition with realistic examples, and then to encourage students to read on and learn more.



WHAT YOU WILL LEARN

1 What a competitive market is and how it is described by the supply and demand model

What the demand curve is

The difference between movements along the demand curve and changes in demand

The factors that shift the demand curve

Each module begins with **WHAT YOU WILL LEARN**, a numbered list of learning objectives in an easy-to-review format that alerts students to critical concepts in the pages ahead.

Supply and Demand:
A Model of a Competitive Market

Cotton sellers and cotton buyers constitute a *market*—a group of producers and consumers who exchange a good or service for payment. In this section, we'll focus on a particular type of market known as a *competitive market*. Roughly, a **competitive market** is a market in which there are many buyers and sellers of the same good or service. More precisely, the key feature of a competitive market is that no individual's actions have a noticeable effect on the price at which the good or service is sold. It's important to understand, however, that this is not an accurate description of every market.

For example, it's not an accurate description of the market for cola beverages. That's because in the market for cola beverages, Coca-Cola and Pepsi account for such a large proportion of total sales that they are able to influence the price at which cola beverages are bought and sold. But it *is* an accurate description of the market for cotton. The global marketplace for cotton is so huge that even a jeans maker as large as Levi Strauss & Co. accounts for only a tiny fraction of transactions, making it unable to influence the price at which cotton is bought and sold.

It's a little hard to explain why competitive markets are different from other markets until we've seen how a competitive market works. For now, let's just say that it's

A **competitive market** is a market in which there are many buyers and sellers of the same good or service, and no one of whom can influence the price at which the good or service is sold.

The **supply and demand model** is a model of how a competitive market works.

KEY TERMS Every key term is defined in the text and then again in the margin, making it easier for students to study and review important vocabulary.

ECONOMICS IN ACTION



BEATING THE TRAFFIC

All big cities have traffic problems, and many local authorities try to discourage driving in the crowded city center. If we think of an auto trip to the city center as a good that people consume, we can use the economics of demand to analyze anti-traffic policies.

One common strategy is to reduce the demand for auto trips by lowering the prices of substitutes. Many metropolitan areas subsidize bus and rail service, hoping to lure commuters out of their cars. An alternative is to raise the price of complements: several major U.S. cities impose high taxes on commercial parking garages and impose short time limits on parking meters, both to raise revenue and to discourage people from driving into the city.

A few major cities—including Singapore, London, Oslo, Stockholm, and Milan—have been willing to adopt a direct and politically controversial approach: reducing congestion by raising the price of driving. Under “congestion pricing” (or “congestion charging” in the United Kingdom), a charge is imposed on cars entering the city center during business hours. Drivers buy passes, which are then debited electronically as they drive by monitoring stations. Compliance is monitored with automatic cameras that photograph license plates.

The current daily cost of driving in London ranges from £8 to £10 (about \$13 to \$16). And drivers who don't pay and are caught pay a fine of £120 (about \$195) for each transgression.

Not surprisingly, studies have shown that after the implementation of congestion pricing, traffic does indeed decrease. In the 1990s, London had some of the worst traffic in Europe. The introduction of its congestion charge in 2003 immediately reduced traffic in the London city center by about 15%, with overall traffic falling by 21% between 2002 and 2006. And there was increased use of substitutes, such as public

GLOBAL STAMPS identify features that are global in focus.



ECONOMICS IN ACTION This feature, which appears in every module, provides a compelling real-life application of major concepts covered in the module. Students experience an immediate payoff when they can apply concepts they've just read about to real phenomena.

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Each module concludes with a unique set of **REVIEW QUESTIONS**.

MODULE 5 Review

Solutions appear at the back of the book.

Check Your Understanding

1. Explain whether each of the following events represents (i) a *change in demand* (a *shift of the demand curve*) or (ii) a *change in the quantity demanded* (a *movement along the demand curve*).
 - a. A decrease in the price of a long-distance telephone service results in reduced rates on weekends, and calling increased sharply.
 - b. A decrease in the price of a substitute good results in an increase in the quantity demanded of the good.
 - c. People buy more long-stem roses the week of Valentine's Day, even though the prices are higher than at other times during the year.
 - d. A sharp rise in the price of gasoline leads many commuters to join carpools in order to reduce their gasoline purchases.

CHECK YOUR UNDERSTANDING

review questions allow students to immediately test their understanding of a module. By checking their answers with those found in the back of the book, students will know when they need to reread the module before moving on.

SECTION 2 SUPPLY AND DEMAND

Multiple-Choice Questions

1. Which of the following would increase demand for a normal good? A decrease in
 - a. price.
 - b. income.
 - c. the price of a substitute.
 - d. consumer taste for a good.
 - e. the price of a complement.
2. A decrease in the price of butter would most likely cause the demand for margarine to
 - a. increase.
 - b. decrease.
 - c. be jetty.
 - d. be milk.
 - e. be syrup.
3. If an increase in income leads to a decrease in demand, the good is
 - a. a complement.
 - b. a substitute.
 - c. inferior.
 - d. abnormal.
 - e. normal.
4. Which of the following will occur if consumers expect the price of a good to fall in the coming months?
 - a. The quantity demanded will rise today.
 - b. The quantity demanded will remain the same today.
 - c. Demand will increase today.
 - d. Demand will decrease today.
 - e. No change will occur today.
5. Which of the following will increase the demand for disposable diapers?
 - a. a new "baby boom"
 - b. concern over the environmental effect of landfills
 - c. a decrease in the price of cloth diapers
 - d. a move toward earlier potty training of children
 - e. a decrease in the price of disposable diapers

MULTIPLE-CHOICE

QUESTIONS offer students additional opportunity to practice what they've learned.

Critical-Thinking Question

CRITICAL-THINKING QUESTIONS

offer students an opportunity to think more deeply about content in the module.

On a correctly labeled graph showing the demand for apples, illustrate what happens to the demand curve if a new report from the Surgeon General states that eating an apple a day really *does* keep the doctor away.

PITFALLS

DEMAND VERSUS QUANTITY DEMANDED

Consider how the term *demand* is used in the following sentence. Why is the sentence incorrect?

If the price of the good goes up then people will buy less and this will lead to a fall in demand which shifts the demand curve to the left.

THIS STATEMENT MISTAKES A CHANGE IN QUANTITY DEMANDED FOR A CHANGE IN DEMAND. WHEN DOING ECONOMIC ANALYSIS, IT IS IMPORTANT TO MAKE THE DISTINCTION BETWEEN CHANGES IN DEMAND, WHICH MEAN SHIFTS OF THE DEMAND CURVE, AND CHANGES IN QUANTITY DEMANDED. When economists say "an increase in demand," they mean a rightward shift of the demand curve, and when they say "a decrease in demand," they mean a leftward shift of the demand curve—that is, when they're being careful. Or, most people, including professional economists, use the word *demand* casually. For example, an economist might say "the demand for air travel has doubled over the last fifteen years, partly because of falling prices." What she really means is that the *quantity demanded* has doubled. The key point to remember is that a change in the price of a good causes a *movement along the demand curve*, not a shift of the demand curve.

Figure 5.3 for an illustration of a movement along the demand curve versus a shift of the demand curve. For an explanation, see pages 38–40.

NEW The **PITFALLS** feature, appearing at the end of select modules, helps students come to a better understanding of commonly misunderstood concepts, using a question-and-answer format.

Solutions to all module-review questions can be found at the back of the book.