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Essential Foundations of Economics

SEVENTH EDITION

Robin Bade • Michael Parkin



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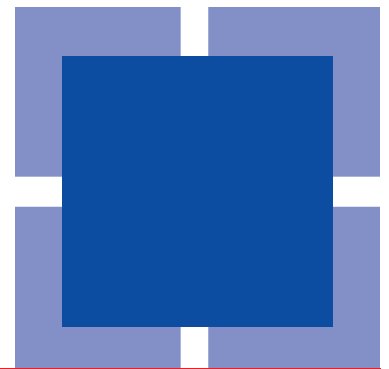
Essential Foundations of
ECONOMICS

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Robin Bade

Michael Parkin

University of Western Ontario



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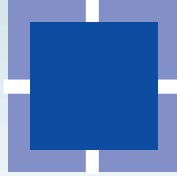
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To Erin, Tessa, Jack, Abby, and Sophie

About the Authors



Robin Bade was an undergraduate at the University of Queensland, Australia, where she earned degrees in mathematics and economics. After a spell teaching high school math and physics, she enrolled in the Ph.D. program at the Australian National University, from which she graduated in 1970. She has held faculty appointments at the University of Edinburgh in Scotland, at Bond University in Australia, and at the Universities of Manitoba, Toronto, and Western Ontario in Canada. Her research on international capital flows appears in the *International Economic Review* and the *Economic Record*.

Robin first taught the principles of economics course in 1970 and has taught it (alongside intermediate macroeconomics and international trade and finance) most years since then. She developed many of the ideas found in this text while conducting tutorials with her students at the University of Western Ontario.



Michael Parkin studied economics in England and began his university teaching career immediately after graduating with a B.A. from the University of Leicester. He learned the subject on the job at the University of Essex, England's most exciting new university of the 1960s, and at the age of 30 became one of the youngest full professors. He is a past president of the Canadian Economics Association and has served on the editorial boards of the *American Economic Review* and the *Journal of Monetary Economics*. His research on macroeconomics, monetary economics, and international economics has resulted in more than 160 publications in journals and edited volumes, including the *American Economic Review*, the *Journal of Political Economy*, the *Review of Economic Studies*, the *Journal of Monetary Economics*, and the *Journal of Money, Credit, and Banking*. He is author of the best-selling textbook, *Economics* (Addison-Wesley), now in its Eleventh Edition.

Robin and Michael are a wife-and-husband team. Their most notable joint research created the Bade-Parkin Index of central bank independence and spawned a vast amount of research on that topic. They don't claim credit for the independence of the new European Central Bank, but its constitution and the movement toward greater independence of central banks around the world were aided by their pioneering work. Their joint textbooks include *Macroeconomics* (Prentice-Hall), *Modern Macroeconomics* (Pearson Education Canada), and *Economics: Canada in the Global Environment*, the Canadian adaptation of Parkin, *Economics* (Addison-Wesley). They are dedicated to the challenge of explaining economics ever more clearly to a growing body of students.

Music, the theater, art, walking on the beach, and five grandchildren provides their relaxation and fun.

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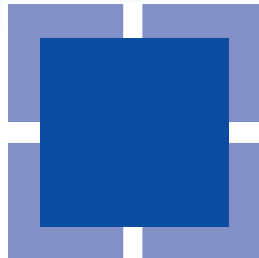
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Preface



Students know that throughout their lives they will make economic decisions and be influenced by economic forces. They want to understand the economic principles that can help them navigate these forces and guide their decisions. *Essential Foundations of Economics* is our attempt to satisfy this want.

The response to our earlier editions from hundreds of colleagues across the United States and throughout the world tells us that most of you agree with our view that the principles course must do four things well. It must

- Motivate with compelling issues and questions
- Focus on core ideas
- Steer a path between an overload of detail and too much left unsaid
- Encourage and aid learning by doing

The Foundations icon with its four blocks (on the cover and throughout the book) symbolizes this four-point approach that has guided all our choices in writing this text and creating its comprehensive teaching and learning supplements.

WHAT'S NEW IN THE SEVENTH EDITION

Two big stories dominate this Seventh Edition revision: A careful fine-tuning of the heavily revised and successful Sixth Edition content, and a massive investment in enhanced electronic features to bring the text to life and provide an exciting interactive experience for the student on all platforms and devices.

■ Fine-Tuning the Content

The content of this revision is driven by the drama of the extraordinary period of economic history in which we are living and its rich display of events and forces through which students can be motivated to discover the economic way of thinking. Persistent unemployment and slow growth; headwinds from Europe's unresolved debt crisis; ongoing tensions arising from offshore outsourcing; a slowing pace of China's expansion; enhanced concern about climate change; falling U.S. energy imports as fracking boosts domestic production; relentless pressure on the federal budget from the demands of an aging population and a sometimes dysfunctional Congress; the dilemma posed by slow recovery and rising government debt; the question of when and how fast to exit an era of extreme monetary stimulus; and a fluctuating dollar are just a few of these interest-arousing events. All of them feature at the appropriate points in our new edition.

Every chapter contains many small changes, all designed to enhance clarity and currency, and the text and examples are all thoroughly updated to reflect the most recently available data and events. We have also made a few carefully selected larger changes that we describe below.

■ Notable Content Changes

Because the previous edition revision was so extensive and well-received, we have limited our interventions and changes in this Seventh Edition to addressing the small number of issues raised by our reviewers and users, to ensuring that we are thoroughly up-to-date, and to focusing on the new electronic tools that we've just described. Nonetheless, some changes that we now summarize are worth noting.

We have reorganized the section in Chapter 1 on "The Economic Way of Thinking" to provide a clearer sequencing of the key ideas.

In Chapter 2, The U.S. and Global Economies, we use the new example of the complex production of the Dreamliner to motivate and illustrate what, how, and

for whom in the U.S. and global economies. A new *Eye on the Past* looks at the dramatic changes in manufacturing in the U.S. economy through the example of the domestic production of shoes. Also a new photo essay highlights global differences in how goods and services are produced and the section on government has been compressed and simplified.

In Chapter 3, The Economic Problem, we illustrate economic growth and the expansion of production possibilities with the dramatic example of hydraulic fracturing—fracking—in the United States and its effects on the production and opportunity cost of energy.

Chapter 4, Demand and Supply, has a new motivating issue: “Why does tuition keep rising?” Not only is the question a deeply personal one for students but it is also a good example of how the demand-supply model enables us to isolate increasing demand as the source of a rising price. Events in the increasingly important market for solar panels provide a contrasting example of the effects of an increase in supply. We have revised the section on changes in both demand and supply to better explain the unambiguous and ambiguous cases and leave the student to pull all possible cases together.

In Chapter 10, Externalities: Pollution, Education, and Health Care we have reorganized our discussion of ideas for achieving efficiency in the face of external costs. We now explain these ideas in four categories: establish property rights, mandate clean technology, tax pollution, and cap-and-trade pollution permits. The discussion of mandates is new.

In Chapter 13, Monopolistic Competition and Oligopoly, we have updated our description of how the HHI is used to evaluate the effects of proposed mergers.

In Chapter 17, Potential GDP and Economic Growth, we have simplified the explanation of the contributions of capital accumulation and technological change to the fluctuating pace of productivity growth.

Topical policy issues pervade the macro chapters. These include the persistence of high unemployment in the United States, Eurozone’s extreme unemployment problem, and the falling U.S. labor force participation rate in Chapter 15; the ever-widening Lucas wedge, now greater than \$400,000 per person, and the persistence of U.S./E.U. productivity differences in Chapter 17; QE3 and the explosion of monetary base, the rise in bank reserves, and the collapse of the money multiplier in Chapter 18; the persistent recessionary gap in Chapter 19; the persistent federal budget deficit and rising debt to GDP ratio, the ongoing structural deficit, the ongoing near-zero federal funds rate, and an update of the contrast between monetary policy today and during the Great Depression, in Chapter 20.

THE FOUNDATIONS VISION

■ Focus on Core Concepts

Each chapter of *Foundations* concentrates on a manageable number of main ideas (most commonly three or four) and reinforces each idea several times throughout the chapter. This patient, confidence-building approach guides students through unfamiliar terrain and helps them to focus their efforts on the most important tools and concepts of our discipline.

■ Many Learning Tools for Many Learning Styles

Foundations' integrated print and electronic package builds on the basic fact that students have a variety of learning styles. Students have powerful tools at their fingertips: With links from eText, they can get an immediate sense of the content of a chapter by playing the Big Picture video; learn the key ideas by playing the Snapshot videos, and get a quick walkthrough of the Checkpoint Practice Problems and In the News exercises with the Solutions videos.

■ Diagrams That Tell the Whole Story

We developed the style of our diagrams with extensive feedback from faculty focus-group participants and student reviewers. All of our figures make consistent use of color to show the direction of shifts and contain detailed, numbered captions designed to direct students' attention step-by-step through the action.

Because beginning students of economics are often apprehensive about working with graphs, we have made a special effort to present material in as many as three ways—with graphs, words, and tables—in the same figure. In an innovation that seems necessary, but is to our knowledge unmatched, nearly all of the information supporting a figure appears on the same page as the figure itself. No more flipping pages back and forth!

■ Real-World Connections That Bring Theory to Life

Students learn best when they can see the purpose of what they are studying, apply it to illuminate the world around them, and use it in their lives.

Eye on boxes offer fresh new examples to help students see that economics is everywhere. Current and recent events appear in *Eye on the U.S. Economy* boxes; we place current U.S. economic events in global and historical perspectives in our *Eye on the Global Economy* and *Eye on the Past* boxes; and we show how students can use economics in day-to-day decisions in *Eye on Your Life* boxes.

The *Eye On* boxes that build off of the chapter-opening question help students see the economics behind key issues facing our world and highlight a major aspect of the chapter's story.

ORGANIZATION

We have organized the sequence of material and chapters in what we think is the most natural order in which to cover the material. But we recognize that there are alternative views on the best order. We have kept this fact and the need for flexibility firmly in mind throughout the text. Many alternative sequences work, and the Flexibility Chart on p. 31 explains the alternative pathways through the chapters. In using the flexibility information, keep in mind that the best sequence is the one in which we present the material. And even chapters that the flexibility chart identifies as strictly optional are better covered than omitted.

SUPPORT MATERIALS FOR INSTRUCTORS AND STUDENTS

Essential Foundations of Economics is accompanied by the most comprehensive set of teaching and learning tools ever assembled. Each component of our package is organized by Checkpoint topic for a tight, seamless integration with both the textbook and the other components. In addition to authoring the PowerPoint content, we have helped in the reviewing and revising of the Study Guide, Solutions Manual, Instructor's Manual, and Test Item Files to ensure that every element of the package achieves the consistency that students and teachers need.

■ PowerPoint Resources

We have created the PowerPoint resources based on our 20 years of experience using this tool in our own classrooms. We have created four sets of PowerPoint presentations for instructors.

They are:

- Lecture notes with full-color, animated figures, and tables from the textbook
- Figures and tables from the textbook, animated with step-by-step walk-through for instructors to use in their own personal slides
- *Eye On* features
- Checkpoint Practice Problems and solutions

■ Instructor's Manual

The Instructor's Manual, written by Luke Armstrong and reviewed by Mark Rush, contains chapter outlines and road maps, additional exercises with solutions, a comprehensive Chapter Lecture resource, and a virtual encyclopedia of suggestions on how to enrich class presentation and use class time efficiently. Both the micro and macro portions have been updated to reflect changes in the main text as well as infused with a fresh and intuitive approach to teaching this course. The Instructor's Manual is available for download in Word and PDF formats.

■ Solutions Manual

The Solutions Manual, written by Mark Rush and checked for accuracy by Jeannie Gillmore, contains the solutions to all Checkpoint Practice Problems, In the News exercises, and Chapter Checkpoint Problems and Applications. The Solutions Manual is available for download in Word and PDF formats.

■ Three Test Item Files and TestGen

More than 6,000 multiple-choice, numerical, fill-in-the-blank, short answer, essay, and integrative questions make up the three Test Item Files that support *Essential Foundations of Economics*. Mark Rush reviewed and edited questions from six dedicated principles instructors to form one of the most comprehensive testing systems on the market. Our microeconomics authors are Gregory E. Givens (University of Alabama); Lee Hoke (University of Tampa); Homer Guevara, Jr. (Northwest Vista College); and Carol Dole (Jacksonville University). Our macroeconomics questions were written by Gregory Givens, Buffie Schmidt (Augusta State University), and Rolando Sanchez (Northwest Vista College). The entire set of questions is available for download in Word, PDF, and TestGen formats.

All three Test Item Files are available in test generator software (TestGen with QuizMaster). TestGen's graphical interface enables instructors to view, edit, and add questions; transfer questions to tests; and print different forms of tests. Instructors also have the option to reformat tests with varying fonts and styles, margins, and headers and footers, as in any word-processing document. Search and sort features let the instructor quickly locate questions and arrange them in a preferred order. QuizMaster, working with your school's computer network, automatically grades the exams, stores the results on disk, and allows the instructor to view and print a variety of reports.

■ Study Guide for Students

Mark Rush of the University of Florida has prepared the Study Guide. It provides an expanded Chapter Checklist that enables the student to break the learning tasks down into smaller, bite-sized pieces; self-test materials; and additional practice problems. The Study Guide has been carefully coordinated with the text and the Test Item Files.

ACKNOWLEDGMENTS

Working on a project such as this one generates many debts that can never be repaid. But they can be acknowledged, and it is a special pleasure to be able to do so here and to express our heartfelt thanks to each and every one of the following long list, without whose contributions we could not have produced *Foundations*.

Mark Rush again coordinated, managed, and contributed to our Study Guide, Solutions Manual, Instructor's Manual, and Test Item Files. He assembled, polished, wrote, and rewrote these materials to ensure their close consistency with the text. He and we were in constant contact as all the elements of our text and package came together. Mark also made many valuable suggestions for improving the text and the Checkpoint Problems. His contribution went well beyond that of a reviewer, and his effervescent sense of humor kept us all in good spirits along the way.

Working closely with Mark, Luke Armstrong wrote content for the Instructor's Manual. Carol Dole, Buffie Schmidt, Lee Hoke, Greg Givens, Rolando Sanchez, and Homer Guevara, Jr. authored new questions for the Test Item Files.

Michelle Sheran (University of North Carolina, Greensboro) and Carol Dole recorded the narrations that accompany the Big Picture, Snapshot, and Solutions videos in the eText. The engaging style and clarity of these outstanding teachers makes these videos a powerful learning tool. Fred Bounds (Georgia Perimeter College), Carol Dole, Trevor Collier (University of Dayton), and Paul Lande (Loyola University Maryland) provided outstanding reviews of the Study Plan and Assessment problems and helped us to make these exercises and their feedback messages as effective as possible.

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Finally, our reviewers, whose names appear on the following pages, have made an enormous contribution to this text and its resources. Once again we find ourselves using superlatives, but they are called for. In the many texts that we've written, we've not seen reviewing of the quality that we enjoyed on this revision. It has been a pleasure (if at times a challenge) to respond constructively to their many excellent suggestions.

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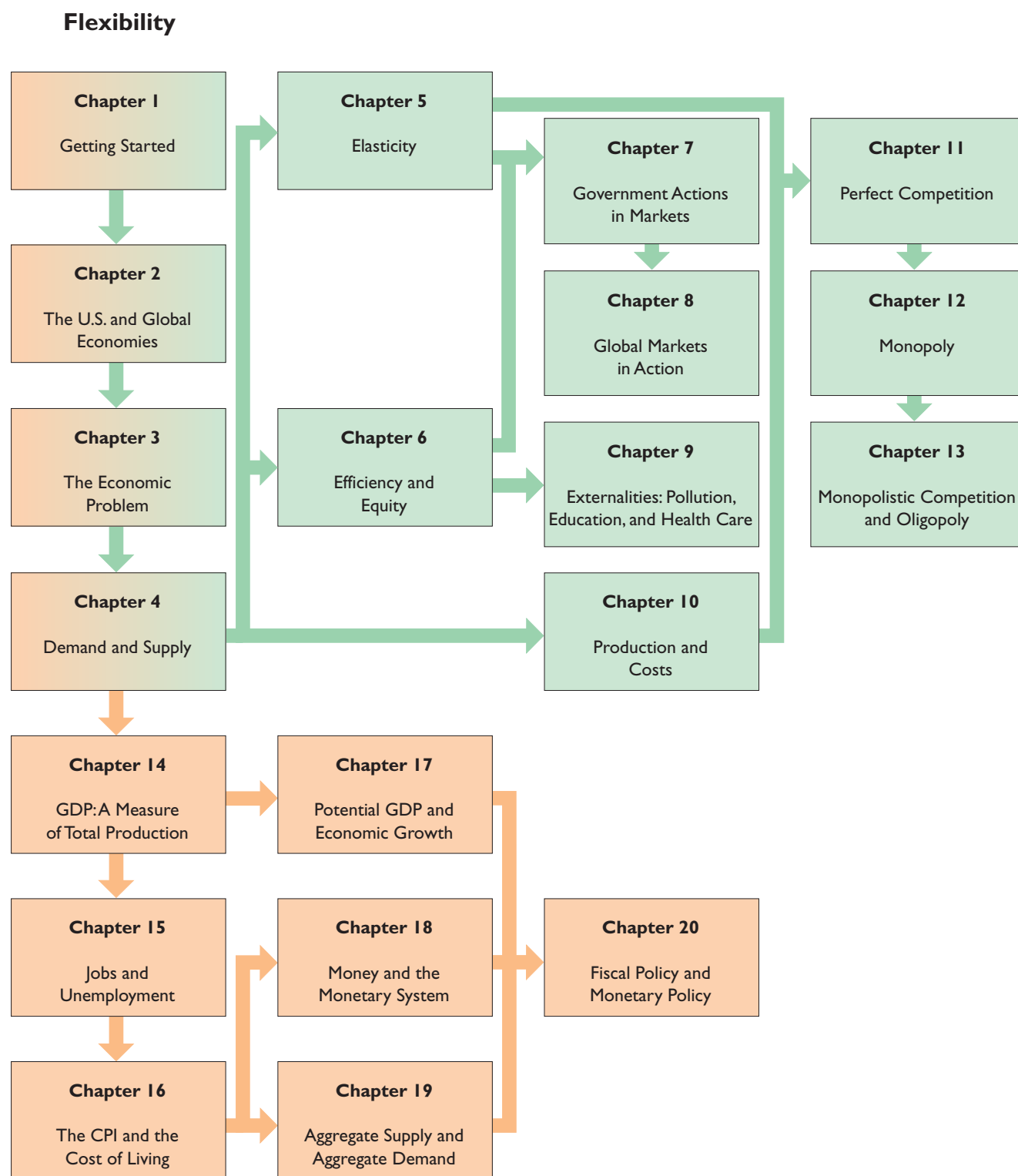
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ESSENTIAL FOUNDATIONS OF ECONOMICS: FLEXIBILITY CHART



Start here ...

... then jump to
any of these ...

... and jump to any of these after
doing the prerequisites indicated

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 James Thorson, Southern Connecticut
 State University
 Marc Tomljanovich, Colgate University
 Cynthia Royal Tori, Valdosta State
 University
 Ngoc-Bich Tran, San Jacinto College South
 Nora Underwood, University of
 California, Davis
 Jogindar S. Uppal, State University of New
 York
 Va Nee L. Van Vleck, California State
 University, Fresno
 Victoria Vernon, Empire State College /
 SUNY
 Christian Weber, Seattle University
 Ethel Weeks, Nassau Community College
 Jack Wegman, Santa Rosa Junior College
 Jason White, Northwest Missouri State
 University
 Benjamin Widner, Colorado State
 University
 Barbara Wiens-Tuers, Pennsylvania State
 University, Altoona
 Katherine Wolfe, University of Pittsburgh
 Kristen Wolfe, St. Johns River State
 College



You're in school!
Did you make the right decision?

Getting Started

When you have completed your study of this chapter, you will be able to

- 1 Define economics and explain the kinds of questions that economists try to answer.
- 2 Explain the ideas that define the economic way of thinking.



CHAPTER CHECKLIST

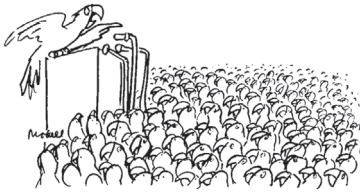
1.1 DEFINITION AND QUESTIONS

We want more than we can get. We want good health and long lives. We want spacious and comfortable homes. We want sports shoes and jet skis. We want the time to enjoy our favorite sports, video games, novels, music, and movies; to travel to exotic places; and just to hang out with friends. Wants exceed the resources available to satisfy them, and this fundamental fact is the source of all economic questions and problems.

■ Scarcity

Scarcity

The condition that arises because wants exceed the ability of resources to satisfy them.



Not only do I want a cracker—we all want a cracker!

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Our inability to satisfy all our wants is called **scarcity**. The ability of each of us to satisfy our wants is limited by the time we have, the incomes we earn, and the prices we pay for the things we buy. These limits mean that everyone has unsatisfied wants. The ability of all of us as a society to satisfy our wants is limited by the productive resources that exist. These resources include the gifts of nature, our labor and ingenuity, and the tools and equipment that we have made.

Everyone, poor and rich alike, faces scarcity. A student wants Beyoncé's latest album and a paperback but has only \$10.00 in his pocket. He faces scarcity. Brad Pitt wants to spend a week in New Orleans discussing plans for his new eco-friendly housing and he also wants to spend the week promoting his new movie. He faces scarcity. The U.S. government wants to increase spending on homeland security and cut taxes. It faces scarcity. An entire society wants improved health care, an Internet connection in every classroom, clean lakes and rivers, and so on. Society faces scarcity. Scarcity is everywhere: Even parrots face scarcity!

Faced with scarcity, we must make choices. We must choose among the available alternatives. The student must choose the album or the paperback. Brad Pitt must choose New Orleans or promoting his new movie. The government must choose greater security or tax cuts. And society must choose among health care, computers, the environment, and so on.

■ Economics Defined

Economics is the social science that studies the choices that individuals, businesses, governments, and entire societies make as they cope with *scarcity*, the influences on those choices, and the arrangements that coordinate them.

The subject has two broad parts:

- Microeconomics, and
- Macroeconomics

Microeconomics

Microeconomics is the study of the choices that individuals and businesses make and the way these choices interact and are influenced by governments. Some examples of microeconomic questions are: Will you buy a 3-D TV or a standard one? Will Nintendo sell more units of Wii if it cuts the price? Will a cut in the income tax rate encourage people to work longer hours? Will a hike in the gas tax encourage more people to drive hybrid or smaller automobiles? Are song downloads killing CDs?

Economics

The social science that studies the choices that individuals, businesses, governments, and entire societies make as they cope with *scarcity*, the influences on those choices, and the arrangements that coordinate them.

Microeconomics

The study of the choices that individuals and businesses make and the way these choices interact and are influenced by governments.

Macroeconomics

Macroeconomics is the study of the aggregate (or total) effects on the national economy and the global economy of the choices that individuals, businesses, and governments make. Some examples of macroeconomic questions are: Why did production and jobs expand slowly in the United States during 2012 and 2013? Why are incomes growing much faster in China and India than in the United States? Why is unemployment in Europe so high? Why are Americans borrowing more than \$1 billion a day from the rest of the world?

Two big questions define the scope of economics:

- How do choices end up determining *what*, *how*, and *for whom* goods and services get produced?
- When do choices made in the pursuit of *self-interest* also promote the *social interest*?

■ What, How, and For Whom?

Goods and services are the objects and actions that people value and produce to satisfy human wants. Goods are *objects* that satisfy wants. Sports shoes and ketchup are examples. Services are *actions* that satisfy wants. Haircuts and rock concerts are examples. We produce a dazzling array of goods and services that range from necessities such as food, houses, and health care to leisure items such as Blu-ray players and roller coaster rides.

What?

What determines the quantities of corn we grow, homes we build, and health-care services we produce? Sixty years ago, farm output was 5 percent of total U.S. production. Today, it is 1 percent. Over the same period, the output of mines, construction, and utilities slipped from 9 percent to 7 percent of total production and manufacturing fell from 28 percent to 12 percent. These decreases in output are matched by increases in the production of a wide range of services, up from 58 percent of total production 60 years ago to 80 percent today. How will these quantities change in the future as ongoing changes in technology make an ever-wider array of goods and services available to us?

How?

How are goods and services produced? In a vineyard in France, a hundred basket-carrying workers pick the annual grape crop by hand. In a vineyard in California, a huge machine and a few workers do the same job. Look around and you will see many examples of this phenomenon—the same job being done in different ways. In some stores, checkout clerks key in prices. In others, they use a laser scanner. One farmer keeps track of his livestock feeding schedules and inventories by using paper-and-pencil records, while another uses a computer. In some plants, GM hires workers to weld auto bodies and in others it uses robots to do the job.

Why do we use machines in some cases and people in others? Do mechanization and technological change destroy more jobs than they create? Do they make us better off or worse off?

Macroeconomics

The study of the aggregate (or total) effects on the national economy and the global economy of the choices that individuals, businesses, and governments make.

Goods and services

The objects (goods) and the actions (services) that people value and produce to satisfy human wants.



In a California vineyard a machine and a few workers do the same job as a hundred grape pickers in France.



A doctor gets more of the goods and services produced than a nurse or a medical assistant gets.

For Whom?

For whom are goods and services produced? The answer to this question depends on the incomes that people earn and the prices they pay for the goods and services they buy. At given prices, a person who has a high income is able to buy more goods and services than a person who has a low income. Doctors earn much higher incomes than do nurses and medical assistants, so doctors get more of the goods and services produced than nurses and medical assistants get.

You probably know about many other persistent differences in incomes. Men, on average, earn more than women. Whites, on average, earn more than minorities. College graduates, on average, earn more than high school graduates. Americans, on average, earn more than Europeans, who in turn earn more, on average, than Asians and Africans. But there are some significant exceptions. The people of Japan and Hong Kong now earn an average income similar to that of Americans. And there is a lot of income inequality throughout the world.

What determines the incomes we earn? Why do doctors earn larger incomes than nurses? Why do men earn more, on average, than women? Why do college graduates earn more, on average, than high school graduates? Why do Americans earn more, on average, than Africans?

Economics explains how the choices that individuals, businesses, and governments make and the interactions of those choices end up determining *what*, *how*, and *for whom* goods and services are produced. In answering these questions, we have a deeper agenda in mind. We're not interested in just knowing how many Blu-ray players are produced, how they are produced, and who gets to enjoy them. We ultimately want to know the answer to the second big economic question that we'll now explore.

■ Can the Pursuit of Self-Interest Be in the Social Interest?

Every day, you and 316 million other Americans, along with 7.1 billion people in the rest of the world, make economic choices that result in "*what*," "*how*," and "*for whom*" goods and services are produced.

Are the goods and services produced, and the quantities in which they are produced, the right ones? Do the scarce resources get used in the best possible way? Do the goods and services that we produce go to the people who benefit most from them?

Self-Interest and the Social Interest

Choices that are the best for the individual who makes them are choices made in the pursuit of **self-interest**. Choices that are the best for society as a whole are said to be in the **social interest**. The social interest has two dimensions: *efficiency* and *equity*. We'll explore these concepts in later chapters. For now, think of efficiency as being achieved by baking the biggest possible pie, and think of equity as being achieved by sharing the pie in the fairest possible way.

You know that your own choices are the best ones for you—or at least you *think* they're the best at the time that you make them. You use your time and other resources in the way that you think is best. You might consider how your choices affect other people, but you order a home delivery pizza because you're hungry and want to eat, not because you're concerned that the delivery person or the cook needs an income. You make choices that are in your self-interest—choices that you think are best for you.

Self-interest

The choices that are best for the individual who makes them.

Social interest

The choices that are best for society as a whole.

When you act on your economic decisions, you come into contact with thousands of other people who produce and deliver the goods and services that you decide to buy or who buy the things that you sell. These people have made their own decisions—what to produce and how to produce it, whom to hire or whom to work for, and so on. Like you, all these people make choices that they think are best for them. When the pizza delivery person shows up at your home, he’s not doing you a favor. He’s earning his income and hoping for a good tip.

Can it be possible that when each one of us makes choices that are in our own best interest—in our self-interest—it turns out that these choices are also the best choices for society as a whole—in the social interest?

Adam Smith, regarded as the founder of economic science, (see *Eye on the Past* on p. 51) said the answer is *yes*. He believed that when we pursue our self-interest, we are led by an *invisible hand* to promote the social interest.

Is Adam Smith correct? Can it really be possible that the pursuit of self-interest promotes the social interest? Much of the rest of this book helps you to learn what economists know about this question and its answer. To help you start thinking about the question, we’re going to illustrate it with four topics that generate heated discussion in today’s world. You’re already at least a little bit familiar with each one of them. They are

- Globalization
- The “Information Age”
- Climate change
- Government budget deficit and debt

Globalization

Globalization—the expansion of international trade and the production of components and services by firms in other countries—has been going on for centuries. But in recent years, its pace has accelerated. Microchips, satellites, and fiber-optic cables have lowered the cost of communication and globalized production decisions. When Nike produces more sports shoes, people in Malaysia get more work. When Steven Spielberg makes a new movie, programmers in New Zealand write the code that makes magical animations. And when China Airlines wants a new airplane, Americans who work for Boeing build it.

Globalization is bringing rapid income growth, especially in Asia. But globalization is leaving some people behind. Jobs in manufacturing and routine services are shrinking in the United States, and some nations of Africa and South America are not sharing in the prosperity enjoyed in other parts of the world.

The owners of multinational firms benefit from lower production costs and consumers benefit from low-cost imported goods. But don’t displaced American workers lose? And doesn’t even the worker in Malaysia, who sews your new shoes for a few cents an hour, also lose? Is globalization in the social interest, or does globalization benefit just some at the expense of others?

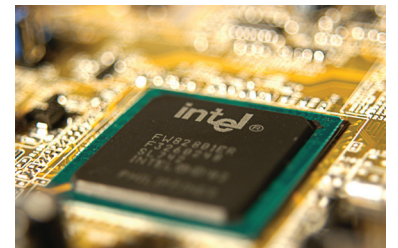
The “Information Age”

We are living at a time of extraordinary economic change that has been called the *Information Revolution*. This name suggests a parallel with the *Industrial Revolution* that occurred around 1800 and the *Agricultural Revolution* of 12,000 years ago.

The changes that occurred during the last 30 years were based on one major technology: the microprocessor or computer chip. The spin-offs from faster and



Workers in Asia make our shoes.



The computer chip has transformed our lives.

cheaper computing have been widespread in telecommunications, music, and movie recording, and the automation of millions of routine tasks that previously required human decision and action. You encounter these automated tasks every day when you check out at the grocery store, use an ATM, or call a government department or large business. All the new products and processes and the low-cost computing power that made them possible resulted from people pursuing their self-interest. They did not result from any grand design or government plan.

When Gordon Moore set up Intel and started making chips, and Bill Gates quit Harvard to set up Microsoft, they weren't thinking how much easier it would be for you to turn in your essay on time if you had a better computer. Moore and Gates and thousands of other entrepreneurs were in hot pursuit of the big payoffs that many of them achieved. Yet their actions made many other people better off. They advanced the social interest.

But were resources used in the best possible way? Or did Intel and Microsoft set their prices too high and put their products out of reach for too many people? And did they really need to be rewarded with billions of dollars?

Climate Change



Human activity is raising the Earth's temperature.

The Earth is getting hotter and the ice at the two poles is melting. Since the late nineteenth century, the Earth's surface temperature has increased about 1 degree Fahrenheit, and close to a half of that increase occurred over the past 25 years.

Most climate scientists believe that the current warming has come at least in part from human economic activity—from self-interested choices—and that, if left unchecked, the warming will bring large future economic costs.

Are the choices that each of us makes to use energy damaging the social interest? What needs to be done to make our choices serve the social interest? Would the United States joining with other nations to limit carbon emissions serve the social interest? What other measures might be introduced?

Government Budget Deficit and Debt



A government budget time bomb is ticking as spending grows faster than tax revenues.

Every year since 2001, the U.S. government has run a budget deficit. On average, the government has spent \$1.6 billion a day more than it has received in taxes. The government's debt has increased each day by that amount. Over the 12 year period from 2002 to 2013, government debt increased by \$6.85 trillion. Your personal share of this debt is \$22,000.

This large deficit and debt is just the beginning of an even bigger problem. From about 2020 onwards, the retirement and health-care benefits to which older Americans are entitled are going to cost increasingly more than current taxes can cover. With no changes in tax or benefit rates, the budget deficit will increase and the debt will swell ever higher.

Deficits and the debts they create cannot persist indefinitely, and debts must somehow be repaid. They will most likely be repaid by you, not by your parents. When we make our voter choices, we pursue our self-interest. Do our choices serve the social interest? Do the choices made by politicians and bureaucrats in Washington and the state capitals promote the social interest, or do they only serve their self-interests?

The four issues we've just reviewed raise questions that are hard to answer. We'll return to each of them at various points throughout this text and explain when the social interest is served and when there remain problems to be solved.

CHECKPOINT 1.1

Define economics and explain the kinds of questions that economists try to answer.

Practice Problems

1. Economics studies choices that arise from one fact. What is that fact?
2. Provide three examples of wants in the United States today that are especially pressing but not satisfied.
3. In the following three news items, find examples of the *what*, *how*, and *for whom* questions: “With more research, we will cure cancer”; “A good education is the right of every child”; “Congress raises taxes to curb the deficit.”
4. How does a new Starbucks in Beijing, China, influence self-interest and the social interest?
5. How does Facebook influence self-interest and the social interest?

In the News

1. According to the Bureau of Labor Statistics (BLS), high-paying jobs in health care and jobs in leisure, hospitality, and education will expand quickly over the next five years. How does the BLS expect *what* and *for whom* goods and services are produced to change in the next five years?
2. In May 2011, businesses cut hiring because the higher price of gas pushed up costs and higher food prices forced consumers to cut spending.

Source: CNNMoney, June 4, 2011

Did businesses and consumers act in their self-interest or the social interest?

Solutions to Practice Problems

1. The fact is scarcity—human wants exceed the resources available.
2. Examples would include security from terrorism, cleaner air in our cities, better public schools, and better public infrastructure. (Think of others.)
3. More research is a *how* question, and a cure for cancer is a *what* question. Good education is a *what* question, and every child is a *for whom* question. Raising taxes is a *for whom* question.
4. Decisions made by Starbucks are in Starbucks’ self-interest but they also serve the self-interest of its customers and so contribute to the social interest.
5. Facebook serves the self-interest of its investors, users, and advertisers. It also serves the social interest by enabling people to share information.

Solutions to In the News

1. The BLS expects the quantities of goods and services produced by workers in health care, leisure, hospitality, and education to increase. For whom they are produced depends on how people’s incomes and the prices of goods and services will change in the next five years. The BLS expects workers in these high-paying jobs and expanding industries will get more of them.
2. Businesses made their decisions on the basis of their costs, so they acted in their self-interest. Consumers’ decisions to cut spending were made on the basis of the prices they face, so they acted in their self-interest.

1.2 THE ECONOMIC WAY OF THINKING

The definition of economics and the kinds of questions that economists try to answer give you a flavor of the scope of economics. But they don't tell you how economists *think* about these questions and how they go about seeking answers to them. You're now going to see how economists approach their work.

We'll break this task into two parts. First, we'll explain the ideas that economists use to frame their view of the world. These ideas will soon have you thinking like an economist. Second, we'll look at economics both as a social science and as a policy tool that governments, businesses, and *you* can use.

■ Economic Ideas

Six ideas define the *economic way of thinking*:

- A choice is a *tradeoff*.
- *Cost* is what you *must give up* to get something.
- *Benefit* is what you gain from something.
- People make *rational choices* by comparing benefits and costs.
- Most choices are “*how much*” choices made at the *margin*.
- Choices respond to *incentives*.

■ A Choice Is a Tradeoff

A **tradeoff** is an exchange—giving up one thing to get something else. Because we face scarcity, we must make choices. And when we make a choice, we select from the available alternatives. You can think about choices as tradeoffs. When you choose one thing, you give up something else that you could have chosen.

Think about what you will do on Saturday night. You can spend the night studying for your next economics test or having fun with your friends, but you can't do both of these activities at the same time. You must choose how much time to devote to each. Whatever choice you make, you could have chosen something else. When you choose how to spend your Saturday night, you face a tradeoff between studying and hanging out with your friends. To get more study time, you must give up some time with your friends.

■ Cost: What You *Must* Give Up

The **opportunity cost** of something is the best thing you must give up to get it. You most likely think about the cost of something as the money you must spend to get it. But dig a bit deeper. If you spend \$10 on a movie ticket, you can't spend it on a sandwich. The movie ticket really costs a sandwich. The *cost* of something is what must be given up to get it, not the money spent on it. Economists use the term *opportunity cost* to emphasize this view of cost.

The biggest opportunity cost you face is that of being in school. This opportunity cost has two components: things you can't afford to buy and things you can't do with your time.

Start with the things you can't afford to buy. You've spent all your income on tuition, residence fees, books, and a laptop. If you weren't in school, you would have spent this money on tickets to ball games and movies and all the other things that you enjoy. But that's only the start of the things you can't afford to buy

Tradeoff

An exchange—giving up one thing to get something else.

Opportunity cost

The opportunity cost of something is the best thing you must give up to get it.



The opportunity cost of being in school: things you can't buy and do.

because you're in school. You've also given up the opportunity to get a job and buy the things that you could afford with your higher income. Suppose that the best job you could get if you weren't in school is working at Citibank as a teller earning \$24,000 a year. Another part of your opportunity cost of being in school is all the things that you would buy with that extra \$24,000.

Now think about the time that being a student eats up. You spend many hours each week in class, doing homework assignments, preparing for tests, and so on. To do all these school activities, you must give up what would otherwise be leisure time spent with your friends.

The opportunity cost of being in school is the best alternative things that you can't afford and that you don't have the time to enjoy. You might put a dollar value on this cost but the cost is the things you give up, not dollars.

■ Benefit: What You Gain

The **benefit** from something is the gain or pleasure that it brings, measured by what you are *willing to give up* to get it. Benefit is determined by personal *preferences*—by what a person likes and dislikes and the intensity of those feelings. If you get a huge kick out of *Madden Football* that video game brings you a large benefit. And if you have little interest in listening to Yo Yo Ma playing a Vivaldi cello concerto, that activity brings you a small benefit.

Some benefits are large and easy to identify, such as the benefit that you get from being in school. A big piece of that benefit is the goods and services that you will be able to enjoy with the boost to your earning power when you graduate. Some benefits are small, such as the benefit you receive from a slice of pizza.

Economists measure benefit as the most that a person is *willing to give up* to get something. You are willing to give up a lot for something that brings a large benefit. For example, because being in school brings a large benefit, you're *willing to give up* a lot of time and goods and services to get that benefit. But you're willing to give up very little for something that brings a small benefit. For example, you might be willing to give up one iTunes download to get a slice of pizza.

■ Rational Choice

A basic idea of economics is that in making choices, people act rationally. A **rational choice** is one that uses the available resources to best achieve the objective of the person making the choice.

But how do people choose rationally? The answer is by comparing the *benefits* and *costs* of the alternative choices and choosing the alternative that makes *net benefit*—benefit minus cost—as large as possible.

You have chosen to be a student. If that choice is rational, as economists assume, your benefit from being in school exceeds the cost, so your net benefit is maximized by being in school. For an outstanding baseball player, a high earning potential makes the opportunity cost of school higher than the benefit from school, so for that person, net benefit is maximized by choosing full-time sport. (*Eye on the Benefit and Cost of School* on p. 53 explores these examples more closely.)

The preferences of the person making a choice determine its benefit, so two people can make different rational choices even if they face the same cost. For example, you might like chocolate ice cream more than vanilla ice cream, but your friend prefers vanilla. So it is rational for you to choose chocolate and for your friend to choose vanilla.



The opportunity cost of being in school includes forgone earnings.

Benefit

The benefit from something is the gain or pleasure that it brings, measured by what you are *willing to give up* to get it.

Rational choice

A choice that uses the available resources to best achieve the objective of the person making the choice.

A rational choice might turn out not to have been the best choice after the event. For example, a farmer might decide to plant wheat rather than soybeans. Then, when the crop comes to market, the price of soybeans might be much higher than the price of wheat. The farmer's choice was rational when it was made, but subsequent events made it less profitable than the alternative choice.

All the rational choices we've just considered (school or not, chocolate or vanilla ice cream, soybeans or wheat) involve choosing between two things. One or the other is chosen. We call such choices *all-or-nothing* choices. Many choices are of this type, but most choices involve *how much* of an activity to do.

■ How Much? Choosing at the Margin

You can allocate the next hour between studying and instant messaging your friends, but the choice is not all or nothing. You must decide how many minutes to allocate to each activity. To make this decision, you compare the benefit of a little bit more study time with its cost—you make your choice *at the margin*.

Other words for “margin” are “border” or “edge.” You can think of a choice at the margin as one that adjusts the border or edge of a plan to determine the best course of action. Making a choice at the **margin** means comparing the relevant alternatives systematically and incrementally.

Margin

A choice on the margin is a choice that is made by comparing *all* the relevant alternatives systematically and incrementally.

Marginal cost

The opportunity cost that arises from a one-unit increase in an activity. The marginal cost of something is what you *must* give up to get *one additional* unit of it.

Marginal Cost

The opportunity cost of a one-unit increase in an activity is called **marginal cost**. The marginal cost of something is what you *must* give up to get *one additional* unit of it. Think about your marginal cost of going to the movies for a third time in a week. Your marginal cost of seeing the movie is what you must give up to see that one additional movie. It is *not* what you give up to see all three movies. The reason is that you've already given up something for two movies, so you don't count that cost as resulting from the decision to see the third movie.

The marginal cost of any activity increases as you do more of it. You know that going to the movies decreases your study time and lowers your grade. Suppose that seeing a second movie in a week lowers your grade by five percentage points. Seeing a third movie will lower your grade by more than five percentage points. Your marginal cost of moviegoing is increasing as you see more movies.

Marginal Benefit

The benefit of a one-unit increase in an activity is called **marginal benefit**. Marginal benefit is what you gain from having *one more* unit of something. But the marginal benefit from something is *measured* by what you *are willing* to give up to get that *one additional* unit of it.

A fundamental feature of marginal benefit is that it diminishes. Think about your marginal benefit from movies. If you've been studying hard and haven't seen a movie this week, your marginal benefit from seeing your next movie is large. But if you've been on a movie binge this week, you now want a break and your marginal benefit from seeing your next movie is small.

Because the marginal benefit from a movie decreases as you see more movies, you are willing to give up less to see one additional movie. For example, you know that going to the movies decreases your study time and lowers your grade. You pay for seeing a movie with a lower grade. You might be willing to give up ten percentage points to see your first movie in a week, but you won't be willing to take such a big hit on your grade to see a second movie in a week. Your willingness to pay to see a movie decreases as the number of movies increases.

Marginal benefit

The benefit that arises from a one-unit increase in an activity. The marginal benefit of something is *measured* by what you *are willing* to give up to get *one additional* unit of it.

Making a Rational Choice

So, will you go to the movies for that third time in a week? The answer is found by comparing marginal benefit and marginal cost.

If the marginal cost of the movie is less than the marginal benefit from it, seeing the third movie adds more to benefit than to cost. Your net benefit increases, so your rational choice is to see the third movie.

If the marginal cost of the movie exceeds the marginal benefit from it, seeing the third movie adds more to cost than to benefit. Your net benefit decreases, so your rational choice is to spend the evening studying.

When the marginal benefit from something equals its marginal cost, the choice is rational and it is not possible to make a better choice. Scarce resources are being used in the best possible way.

■ Choices Respond to Incentives

The choices we make depend on the incentives we face. An **incentive** is a reward or a penalty—a “carrot” or a “stick”—that encourages or discourages an action. We respond positively to “carrots” and negatively to “sticks.” The carrots are marginal benefits; the sticks are marginal costs. A change in marginal benefit or a change in marginal cost changes the incentives that we face and leads us to change our actions.

Most students believe that the payoff from studying just before a test is greater than the payoff from studying a month before a test. In other words, as a test date approaches, the marginal benefit from studying increases and the incentive to study becomes stronger. For this reason, we observe an increase in study time and a decrease in leisure pursuits during the last few days before a test. And the more important the test, the greater is this effect.

A change in marginal cost also changes incentives. For example, suppose that last week, you found your course work easy and you scored 100 percent on your practice quizzes. You figured that the marginal cost of taking an evening off to enjoy a movie was low and that your grade on the next test would not suffer, so you had a movie feast. But this week the going has gotten tough. You’re just not getting it, and your practice test scores are low. If you take off even one evening this week, your grade on the next test will suffer. The marginal cost of seeing a movie is now high, so you decide to give the movies a miss.

A central idea of economics is that by observing *changes in incentives*, we can predict how *choices change*.

Incentive

A reward or a penalty—a “carrot” or a “stick”—that encourages or discourages an action.



Changes in marginal benefit and marginal cost change the incentive to study or to enjoy a movie.

■ Economics as Social Science

Economists try to understand and predict the effects of economic forces by using the *scientific method* first developed by physicists. The scientific method is a commonsense way of systematically checking what works and what doesn't work.

A scientist begins with a question or a puzzle about cause and effect arising from some observed facts. An economist might wonder why computers are getting cheaper and more computers are being used. Are computers getting cheaper because more people are buying them? Or are more people buying computers because they are getting cheaper? Or is some third factor causing both the price of a computer to fall and the quantity of computers bought to increase?

Economic Models

A scientist's second step is to build a model that provides a possible answer to the question of interest. All sciences use models. An **economic model** is a description of the economy or a part of the economy that includes only those features assumed necessary to explain the observed facts.

A model is analogous to a map. If you want to know about valleys and mountains, you use a physical map; if you're studying nations, you use a political map; if you want to drive from *A* to *B* in an unfamiliar city, you use a street map; and if you're a telephone engineer who is wanting to fix a broken connection, you use a map of the cables and conduit under the streets.

Sometimes, in the natural sciences, models are physical objects such as a plastic model of an atom or DNA. But models are also mathematical and often can be visualized in graphs. You can imagine a Lego model of an economy, but you can also see that such a model wouldn't be very revealing. So in economics we use mathematical and graph-based models.

The questions we posed about the price and quantity of computers bought are answered by an economic model called the "demand and supply model" that you will study in Chapter 4.

Check Models Against Facts

A scientist's third step is to check the proposed model against the facts. Physicists can check whether their models correspond to the facts by doing experiments. For example, with a particle accelerator, a physicist can test a model of the structure of an atom.

Economists have a harder time than physicists, but they still approach the task in a scientific manner. To check an economic model against the facts, economists use natural experiments, statistical investigations, and laboratory experiments.

A natural experiment is a situation that arises in the ordinary course of economic life in which the one factor of interest is different and other things are equal (or similar). For example, Canada has higher unemployment benefits than the United States, but the people in the two nations are similar. So to study the effect of unemployment benefits on the unemployment rate, economists might compare the United States with Canada.

A statistical investigation looks for a *correlation*—a tendency for the values of two variables to move together (either in the same direction or in opposite directions) in a predictable and related way. For example, cigarette smoking and lung cancer are correlated. Sometimes a correlation shows a causal influence of one variable on the other. Smoking does cause lung cancer. But sometimes the direction of causation is hard to determine.

Economic model

A description of the economy or a part of the economy that includes only those features assumed necessary to explain the observed facts.



EYE on the PAST

Adam Smith and the Birth of Economics as a Social Science

Many people had written about economics before Adam Smith did, but he made economics a social science.

Born in 1723 in Kirkcaldy, a small fishing town near Edinburgh, Scotland, Smith was the only child of the town's customs officer. Lured from his professorship (he was a full professor at 28) by a wealthy Scottish duke who gave him a pension of £300 a year—ten times the average income at that time—Smith devoted ten years to writing his masterpiece, *An Inquiry into the Nature and Causes of the Wealth of Nations*, published in 1776.

Why, Adam Smith asked in that book, are some nations wealthy while others are poor? He was pondering these questions at the height of the Industrial Revolution. During these years, new technologies were applied to the manufacture of textiles, iron, transportation, and agriculture.

Adam Smith answered his questions by emphasizing the role of the division of labor and free markets. To illustrate his argument, he used the example of a pin factory. He guessed that one person, using the hand tools available in the 1770s, might make 20 pins a day. Yet, he observed, by using those same hand tools but breaking the process into a number of individually small operations in which people specialize—by the division of labor—ten people could make a staggering 48,000 pins a day.

But a large market is needed to support the division of labor: One factory employing ten workers would need to sell more than 15 million pins a year to stay in business!

Smith saw free competitive markets as another source of wealth. The self-interested pursuit of profit, led by an invisible hand, resulted in resources

being used in ways that created the greatest possible value and wealth.



A laboratory experiment puts people in a decision-making situation and varies the influence of one factor at a time to discover how they respond.

Disagreement: Normative versus Positive

Economists sometimes disagree about assumptions and models. They also sometimes disagree about what policy should be followed. Some disagreements can be settled by appealing to further facts, but others cannot.

Disagreements that can't be settled by facts are *normative statements*—statements about what *ought to be*. These statements depend on values and cannot be tested. The statement “We *ought to* cut back on our use of coal” is a normative statement. You may agree or disagree with it, but you can't test it. It doesn't assert a fact that can be checked. Economists as social scientists try to steer clear of normative statements.

Disagreements that *can* be settled by facts are *positive statements*—statements about *what is*. A positive statement might be right or wrong and we can discover which by careful observation of facts. “Our planet is warming because of the quantity of coal that we're burning” is a positive statement. It could be right or wrong, and it can be tested.

■ Economics as Policy Tool

Economics is useful, and you don't have to be an economist to think like one and to use the insights of economics as a policy tool. The subject provides a way of approaching problems in all aspects of our lives:

- Personal
- Business
- Government

Personal Economic Policy

Should you take out a student loan? Should you get a weekend job? Should you buy a used car or a new one? Should you rent an apartment or take out a loan and buy a condominium? Should you pay off your credit card balance or make just the minimum payment? How should you allocate your time between study, working for a wage, caring for family members, and having fun? How should you allocate your time between studying economics and your other subjects? Should you leave school after getting a bachelor's degree or should you go for a master's or a professional qualification?

All these questions involve a marginal benefit and a marginal cost. Although some of the numbers might be hard to pin down, you will make more solid decisions if you approach these questions with the tools of economics.

Business Economic Policy

Should Sony make only flat panel televisions and stop making conventional ones? Should Texaco get more oil and gas from the Gulf of Mexico or from Alaska? Should Palm outsource its online customer services to India or run the operation from California? Should Marvel Studios produce *Spider-Man 4*, a sequel to *Spider-Man 3*? Can Microsoft compete with Google in the search engine business? Can eBay compete with the surge of new Internet auction services? Is Alex Rodriguez really worth \$32,000,000 to the New York Yankees?

Like personal economic questions, these business questions involve the evaluation of a marginal benefit and a marginal cost. Some of the questions require a broader investigation of the interactions of individuals and businesses. But again, by approaching these questions with the tools of economics and by hiring economists as advisers, businesses can make better decisions.

Government Economic Policy

How can California balance its budget? Should the federal government cut taxes or raise them? How can the tax system be simplified? Should people be permitted to invest their Social Security money in stocks that they pick themselves? Should Medicaid and Medicare be extended to the entire population? Should there be a special tax to penalize corporations that send jobs overseas? Should cheap foreign imports of furniture and textiles be limited? Should the farms that grow tomatoes and sugar beets receive a subsidy? Should water be transported from Washington and Oregon to California?

These government policy questions call for decisions that involve the evaluation of a marginal benefit and a marginal cost and an investigation of the interactions of individuals and businesses. Yet again, by approaching these questions with the tools of economics, governments can make better decisions.

Notice that all the policy questions we've just posed involve a blend of the positive and the normative. Economics can't help with the normative part—the objective. But for a given objective, economics provides a method of evaluating alternative solutions. That method is to evaluate the marginal benefits and marginal costs and to find the solution that brings the greatest available gain.



EYE on the BENEFIT AND COST OF SCHOOL

Did You Make the Right Decision?

Did you make the right decision when you chose school over looking for a full-time job? Or, if you have a full-time job and you're studying in what would be your leisure time, did you make the right choice? Does school provide a big enough benefit to justify its cost?

The Benefits of School

Being in school has many benefits for which people are willing to pay. They fall into two broad categories: present enjoyment and a higher future income.

You can easily make a list of all the fun things you do with your friends in school that would be harder to do if you didn't have these friends and opportunities for social interaction that school provides.

Putting a dollar value on the items in your list would be hard but it is possible to put a dollar value, or rather an expected dollar value, on the other benefit—a higher future income.

On average, a high-school graduate earns \$40,000 a year. A graduate with a bachelor's degree earns, on average, \$76,000 a year.

So by being in school, you can expect (on average) to increase your annual earnings by \$36,000 a year.

This number is likely to grow as the economy becomes more productive and prices and earnings rise.

The Costs of School

The opportunity cost of being in school for a full-time student includes:

- Tuition
- Books
- Other study costs
- Forgone earnings

For a student attending a state university in her or his home state, tuition is around \$10,000 per year.

Books and other study aids cost around \$1,000 per year.

Forgone earnings are the wage of a high-school graduate in a starter job, which is around \$24,000 a year.

So the total annual cost is about \$35,000 or \$105,000 for a 3-year degree and \$140,000 for a 4-year degree.

Net Benefit

The benefit of extra earnings alone brings in \$36,000 a year or \$360,000 in 10 years and \$1,440,000 in a working life of 40 years.

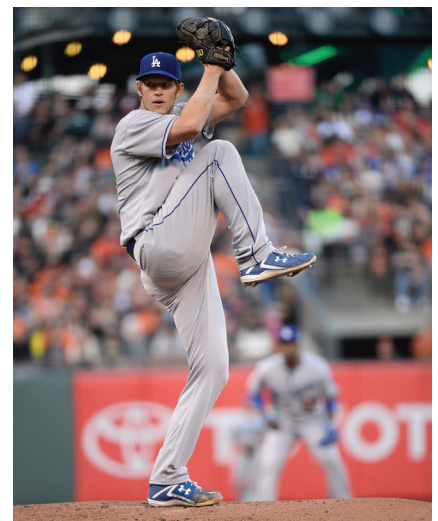
The costs are incurred in the present and the benefits accrue in the future, so we need to lower the benefits to be able to compare them properly with the costs. You'll learn how to do that later in your economics course. But even allowing for the fact that the costs are now and the benefits in the future, net benefit is big!

Is School Always Best?

At the age of 18, Clayton Kershaw was considered the top high-schooler available entering the 2006 MLB Draft. He signed with the Los Angeles Dodgers with a bonus said to be \$2.3 million, and turned down a baseball scholarship at Texas A & M.

As the Dodgers starting pitcher, Clayton's value to the team is high and earned him a salary of \$11 million in 2013.

Clayton Kershaw's opportunity cost of a college education vastly exceeded the benefit he could expect to get from it. So Clayton, like you, maximized his net benefit and made the right decision.



CHECKPOINT 1.2

Explain the ideas that define the economic way of thinking.

Practice Problems

Every week, Kate plays tennis for two hours, and her grade on each math test is 70 percent. Last week, after playing for two hours, Kate considered playing for another hour. She decided to play for another hour and cut her study time by one hour. But last week, her math grade fell to 60 percent. Use this information to work Problems 1 to 4.

1. What was Kate's opportunity cost of the third hour of tennis?
2. Given that Kate played the third hour, what can you conclude about her marginal benefit and marginal cost of the second hour of tennis?
3. Was Kate's decision to play the third hour of tennis rational?
4. Did Kate make her decision on the margin?

In the News

The *New York Times* reports that cruise lines have been slashing prices and cruise sales are up. It says this surge of interest tells us that despite the uncertain economic climate, people clearly need more fun in their lives and view their vacations as a valuable and necessary part of it.

1. In deciding whether to take a cruise, would you face a tradeoff?
2. How would you make a rational choice about taking a cruise?
3. What would be the marginal benefit from a cruise? What would be the marginal cost of a cruise?
4. Why would you expect a lower price to increase the number of people who decide to take a cruise?

Solutions to Practice Problems

1. Kate's opportunity cost of the third hour of tennis was the drop in her grade of ten percentage points.
2. The marginal benefit from the second hour of tennis must have exceeded the marginal cost of the second hour because Kate chose to play the third hour.
3. If marginal benefit exceeded marginal cost, Kate's decision was rational.
4. Kate made her decision on the margin because she compared the benefit and cost of one more hour (marginal benefit and marginal cost).

Solutions to In the News

1. You would face a tradeoff because you would have to forgo something else that you might otherwise do with your resources (time and budget).
2. You would make a rational choice by comparing the marginal benefit from a cruise and the marginal cost of taking one.
3. The marginal benefit from a cruise is the most you are willing to pay for one. The marginal cost is what you would have to pay to take a cruise.
4. With a lower price, more people will have a marginal benefit that exceeds the price and they will choose to take a cruise.

CHAPTER SUMMARY

Key Points

1. Define economics and explain the kinds of questions that economists try to answer.

- Economics is the social science that studies the choices that we make as we cope with scarcity and the incentives that influence and reconcile our choices.
- Microeconomics is the study of individual choices and interactions, and macroeconomics is the study of the national economy and global economy.
- The first big question of economics is: How do the choices that people make end up determining *what*, *how*, and *for whom* goods and services are produced?
- The second big question is: When do choices made in the pursuit of *self-interest* also promote the *social interest*?

2. Explain the ideas that define the economic way of thinking.

- Six ideas define the economic way of thinking:
 1. A choice is a *tradeoff*.
 2. *Cost* is what you *must* give up to get something.
 3. *Benefit* is what you gain when you get something (measured by what you *are willing to* give up to get it).
 4. People make *rational* choices by comparing benefits and costs.
 5. A “how much” choice is made on the *margin* by comparing *marginal benefit* and *marginal cost*.
 6. Choices respond to *incentives*.
- Economists use the *scientific method* to try to understand how the economic world works. They create economic models and test them using natural experiments, statistical investigations, and laboratory experiments.
- Economics is a tool for personal, business, and government decisions.

Key Terms

Benefit, 47
 Economic model, 50
 Economics, 40
 Goods and services, 41
 Incentive, 49
 Macroeconomics, 41

Margin, 48
 Marginal benefit, 48
 Marginal cost, 48
 Microeconomics, 40
 Opportunity cost, 46
 Rational choice, 47

Scarcity, 40
 Self-interest, 42
 Social interest, 42
 Tradeoff, 46

CHAPTER CHECKPOINT

Study Plan Problems and Applications

LIST 1

- Motor vehicles production in China is growing by 10 percent a year.
- Coffee prices rocket.
- Globalization has reduced African poverty.
- The government must cut its budget deficit.
- Apple sells 3 million iPhones a month.

LIST 2

- Low-income people pay too much for housing.
- The number of U.S. farms has decreased over the past 50 years.
- Toyota expands parts production in the United States.
- Imports from China are swamping U.S. department stores.
- The population of rural United States is declining.

1. Provide three examples of scarcity that illustrate why even the 1,210 billionaires in the world face scarcity.
2. Label each entry in List 1 as dealing with a microeconomic topic or a macroeconomic topic. Explain your answer.

Use the following information to work Problems 3 to 6.

The Social Network had world-wide box office receipts of \$225 million. The movie had a production budget of about \$70 million and additional marketing costs of about \$50 million. Creating a successful movie brings pleasure to millions, generates work for thousands, and makes a few people rich.

3. What contribution does a movie like *The Social Network* make to coping with scarcity? When you buy a movie ticket, are you buying a good or a service?
4. Who decides whether a movie is going to be a blockbuster? How do you think the creation of a blockbuster movie influences *what, how, and for whom* goods and services are produced?
5. What are some of the components of marginal cost and marginal benefit that the producer of a movie faces?
6. Suppose that Jesse Eisenberg had been offered a bigger and better part in another movie and that to hire him for *The Social Network*, the producer had to double Jesse's pay. What incentives would have changed? How might the changed incentives have changed the choices that people made?
7. What is the social interest? Distinguish it from self-interest. In your answer give an example of self-interest and an example of social interest.
8. Pam, Pru, and Pat are deciding how they will celebrate the New Year. Pam prefers to take a cruise, is happy to go to Hawaii, but does not want to go skiing. Pru prefers to go skiing, is happy to go to Hawaii, but does not want to take a cruise. Pat prefers to go to Hawaii or to take a cruise but does not want to go skiing. Their decision is to go to Hawaii. Is this decision rational? What is the opportunity cost of the trip to Hawaii for each of them? What is the benefit that each gets?
9. Label each of the entries in List 2 as a positive or a normative statement.

Use the following information to work Problems 10 to 12.

Hundreds line up for 5 p.m. Eminem ticket giveaway

Eminem fans lined up all day to get a free ticket to his secret concert at which he will release his new album *Relapse* (his first in 5 years).

Source: *Detroit Free Press*, May 18, 2009

10. With tickets free and the show to be held in a 1,500-seat Detroit theater, what is free and what is scarce? Explain your answer.
11. What do you think Eminem's incentive is to give a free show? Was his decision made in self-interest or in the social interest? Explain your answer.
12. Is the marginal benefit from the concert zero? Explain your answer.
13. Read *Eye on the Benefit and Cost of School* on p. 53 and explain why both you and Alex Rodriguez made the right decision.



Instructor Assignable Problems and Applications

1. Which of the following are components of the opportunity cost of being a full-time student? The cost of
 - Tuition and books
 - Residence and a meal plan
 - A subscription to the *New Yorker* magazine
 - The income a student will earn after graduating
2. Think about the following news items and label each as involving a *what*, *how*, or *for whom* question:
 - Today, most stores use computers to keep their inventory records, whereas 20 years ago most stores used paper records.
 - Health-care professionals and drug companies recommend that Medicaid drug rebates be made available to everyone in need.
 - A doubling of the gas tax might lead to a better public transit system.
3. On May 3, 2013, the headlines in List 1 appeared in *The Wall Street Journal*. Classify each headline as a signal that the news article is about a microeconomic topic or a macroeconomic topic. Explain your answers.
4. Your school decides to increase the intake of new students next year. To make its decision, what economic concepts would it have considered? Would the school have used the “economic way of thinking” in reaching its decision? Would the school have made its decision on the margin?
5. Provide two examples of a monetary incentive and two examples of a non-monetary incentive, a carrot and a stick of each, that government policies use to influence behavior.
6. Think about each of the items in List 2 and explain how they affect incentives and might change the choices that people make.
7. Does the decision to make a blockbuster movie mean that some other more desirable activities get fewer resources than they deserve? Is your answer positive or normative? Explain your answer.
8. Provide two examples of economics being used as a tool by each of a student, a business, and a government. Classify your examples as dealing with microeconomic topics and macroeconomic topics.

Use the following news clip to work Problems 9 to 12.

Obama will drive up miles-per-gallon requirements

Obama’s revision of auto-emission and fuel-economy standards will require automakers to boost fuel economy to 35.5 miles per gallon by 2016, notching up 5% each year from 2012, to limit the amount of carbon dioxide cars can emit.

Source: *USA Today*, May 18, 2009

9. What are two benefits of the new miles-per-gallon requirements? Are these benefits in someone’s self-interest or in the social interest?
10. What are two benefits of the new auto-emission standards?
11. What costs associated with the new miles-per-gallon requirements arise from decisions made in self-interest and in the social interest?
12. What costs associated with the new auto-emission standards arise from decisions made in self-interest and in the social interest?

LIST 1

- Job Gains Calm Slump Worries
- Washington Post’s Profit Falls
- Overcapacity, Fuel Costs Hit Shipping
- Green Shoots in Greece?

LIST 2

- A hurricane hits Central Florida.
- The World Series begins tonight but a storm warning is in effect for the area around the stadium.
- The price of a personal computer falls to \$50.
- Unrest in the Middle East sends the price of gas to \$5 a gallon.

Critical Thinking Discussion Questions

1. Cardiff City FC gets more cash

Vincent Tan, the owner of Cardiff City FC, says a further £35m cash injection will be made, which will include £10m to pay off the historical debt and a substantial amount for signing new players.

Source: *Wales Online*, June 14, 2012

- With a substantial cash injection, would Cardiff City FC still face a scarcity problem? Explain your answer.
- In whose self-interest is this cash injection: Vincent Tan, a Malaysian billionaire, or some other person? Is this cash injection in the social interest? Explain your answer.
- Did Mr. Tan make a rational decision? Explain your answer.

2. From brewer to bio-tech entrepreneur

Kiran Mazumdar-Shaw trained as a master brewer and then used her skills to create a pharmaceuticals business. She employed uneducated workers and paid good wages. When the trade unions revolted, Kiran fired the workers, mechanized, and hired only highly skilled workers. She became a billionaire and opened a cancer treatment center to help thousands of poor patients.

Source: *The New Yorker*, January 2, 2012

- Identify the economic decision-makers and the decisions made in self-interest.
- Did any decisions also serve the social interest?
- Did any decisions harm the social interest?

3. Amir is accepted to do a bachelor's degree at university but he can't afford the tuition fee, so he decides to take a full-time job. What economic concept did Amir use to make this decision?

4. Tanaka: best Japanese pitcher ever?

Major League Baseball (MLB) teams in desperate need of an ace starting pitcher are lining up to make offers to Japanese superstar Masahiro Tanaka—and for good reason. His performance in Japan suggests he will be the best import ever.

Source: *The Wall Street Journal*, January 3, 2014

- Is the above statement positive or normative? Explain your answer.
- Would a decision to sign Tanaka be made at the margin?
- What is the opportunity cost to Tanaka if he accepted an MLB offer?
- What is the opportunity cost to Tanaka if he rejected an MLB offer?

APPENDIX: MAKING AND USING GRAPHS

When you have completed your study of this appendix, you will be able to

- 1** Interpret graphs that display data.
- 2** Interpret the graphs used in economic models.
- 3** Define and calculate slope.
- 4** Graph relationships among more than two variables.

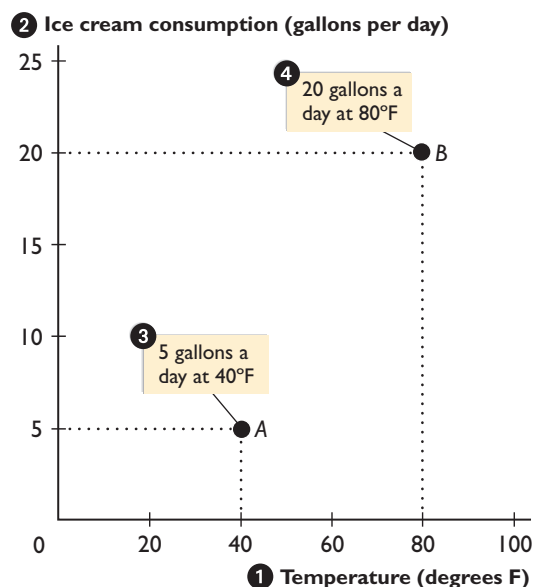
Basic Idea

A graph represents a quantity as a distance and enables us to visualize the relationship between two variables. To make a graph, we set two lines called *axes* perpendicular to each other, like those in Figure A1.1. The vertical line is called the *y*-axis, and the horizontal line is called the *x*-axis. The common zero point is called the *origin*. In Figure A1.1, the *x*-axis measures temperature in degrees Fahrenheit. A movement to the right shows an increase in temperature, and a movement to the left shows a decrease in temperature. The *y*-axis represents ice cream consumption, measured in gallons per day.

To make a graph, we need a value of the variable on the *x*-axis and a corresponding value of the variable on the *y*-axis. For example, if the temperature is 40°F, ice cream consumption is 5 gallons a day at point A in Figure A1.1. If the temperature is 80°F, ice cream consumption is 20 gallons a day at point B in Figure A1.1. Graphs like that in Figure A1.1 can be used to show any type of quantitative data on two variables.

FIGURE A1.1

Making a Graph



All graphs have axes that measure quantities as distances.

- 1** The horizontal axis (*x*-axis) measures temperature in degrees Fahrenheit. A movement to the right shows an increase in temperature.
- 2** The vertical axis (*y*-axis) measures ice cream consumption in gallons per day. A movement upward shows an increase in ice cream consumption.
- 3** Point A shows that 5 gallons of ice cream are consumed on a day when the temperature is 40°F.
- 4** Point B shows that 20 gallons of ice cream are consumed on a day when the temperature is 80°F.

Scatter diagram

A graph of the value of one variable against the value of another variable.

Time-series graph

A graph that measures time on the x -axis and the variable or variables in which we are interested on the y -axis.

Trend

A general tendency for the value of a variable to rise or fall over time.

Cross-section graph

A graph that shows the values of an economic variable for different groups in a population at a point in time.

■ Interpreting Data Graphs

A **scatter diagram** is a graph of the value of one variable against the value of another variable. It is used to reveal whether a relationship exists between two variables and to describe the relationship. Figure A1.2 shows two examples.

Figure A1.2(a) shows the relationship between expenditure and income. Each point shows expenditure per person and income per person in the United States in a given year from 2000 to 2012. The points are “scattered” within the graph. The label on each point shows its year. The point marked 10 shows that in 2010, income per person was \$32,335 and expenditure per person was \$29,686. This scatter diagram reveals that as income increases, expenditure also increases.

Figure A1.2(b) shows the relationship during the 1990s between the percentage of Americans who own a cell phone and the average monthly cell-phone bill. This scatter diagram reveals that as the cost of using a cell phone falls, the number of cell-phone subscribers increases.

A **time-series graph** measures time (for example, months or years) on the x -axis and the variable or variables in which we are interested on the y -axis. Figure A1.2(c) shows an example. In this graph, time (on the x -axis) is measured in years, which run from 1980 to 2012. The variable that we are interested in is the price of coffee, and it is measured on the y -axis.

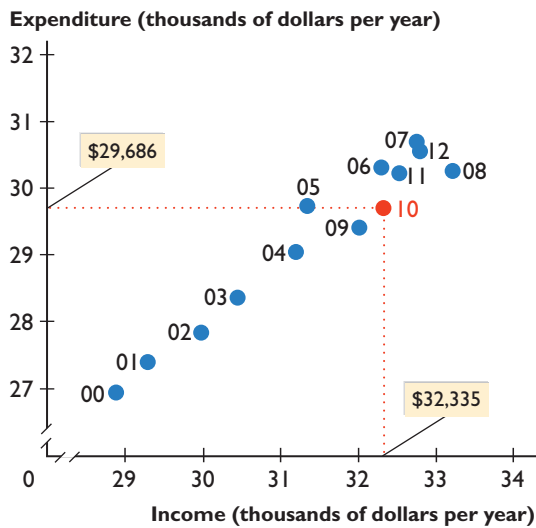
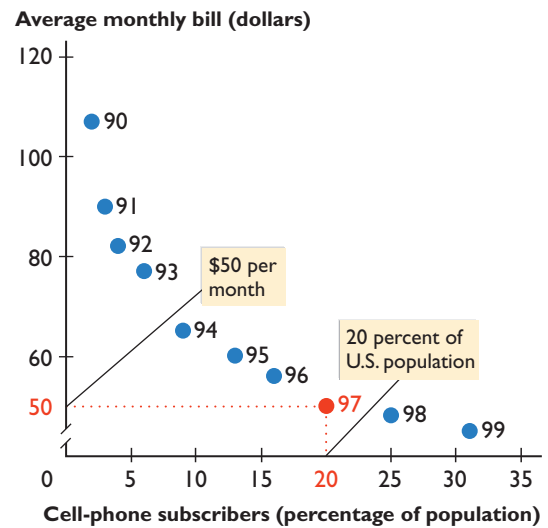
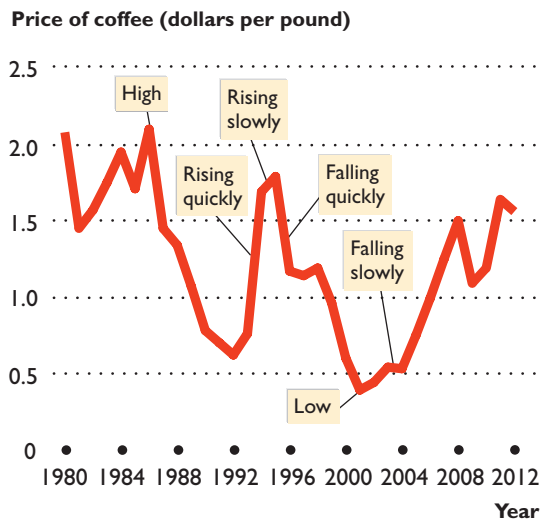
A time-series graph conveys an enormous amount of information quickly and easily, as this example illustrates. It shows when the value is

1. High or low. When the line is a long way from the x -axis, the price is high, as it was in 1986. When the line is close to the x -axis, the price is low, as it was in 2001.
2. Rising or falling. When the line slopes upward, as in 1994, the price is rising. When the line slopes downward, as in 1996, the price is falling.
3. Rising or falling quickly or slowly. If the line is steep, then the price is rising or falling quickly. If the line is not steep, the price is rising or falling slowly. For example, the price rose quickly in 1994 and slowly in 1995. The price fell quickly in 1996 and slowly in 2003.

A time-series graph also reveals whether the variable has a trend. A **trend** is a general tendency for the value of a variable to rise or fall over time. You can see that the price of coffee had a general tendency to fall from 1980 to late in 2000. That is, although the price rose and fell, it had a general tendency to fall.

With a time-series graph, we can compare different periods quickly. Figure A1.2(c) shows that the 2000s were different from the 1990s, which in turn were different from the 1980s. The price of coffee started the 1980s high and then fell for a number of years. During the 1990s, the price was on a roller coaster. And during the 2000s, the price rose steadily. This graph conveys a wealth of information about the price of coffee, and it does so in much less space than we have used to describe only some of its features.

A **cross-section graph** shows the values of an economic variable for different groups in a population at a point in time. Figure A1.2(d) is an example of a cross-section graph. It shows the percentage of people who participate in selected sports activities in the United States. This graph uses bars rather than dots and lines, and the length of each bar indicates the participation rate. Figure A1.2(d) enables you to compare the participation rates in these ten sporting activities. And you can do so much more quickly and clearly than by looking at a list of numbers.

FIGURE A1.2**Data Graphs****(a) Scatter Diagram: Expenditure and income****(b) Scatter Diagram: Subscribers and cost****(c) Time Series: The price of coffee****(d) Cross Section: Participation in selected sports activities**

A scatter diagram reveals the relationship between two variables. In part (a), as income increases, expenditure almost always increases. In part (b), as the monthly cell-phone bill falls, the percentage of people who own a cell phone increases.

A time-series graph plots the value of a variable on the y-axis against time on the x-axis. Part (c) plots the price of coffee each

year from 1980 to 2012. The graph shows when the price of coffee was high and low, when it increased and decreased, and when it changed quickly and changed slowly.

A cross-section graph shows the value of a variable across the members of a population. Part (d) shows the participation rate in the United States in each of ten sporting activities.

■ Interpreting Graphs Used in Economic Models

We use graphs to show the relationships among the variables in an economic model. An *economic model* is a simplified description of the economy or of a component of the economy such as a business or a household. It consists of statements about economic behavior that can be expressed as equations or as curves in a graph. Economists use models to explore the effects of different policies or other influences on the economy in ways similar to those used to test model airplanes in wind tunnels and models of the climate.

Figure A1.3 shows graphs of the relationships between two variables that move in the same direction. Such a relationship is called a **positive relationship** or **direct relationship**.

Part (a) shows a straight-line relationship, which is called a **linear relationship**. The distance traveled in 5 hours increases as the speed increases. For example, point A shows that 200 miles are traveled in 5 hours at a speed of 40 miles an hour. And point B shows that the distance traveled in 5 hours increases to 300 miles if the speed increases to 60 miles an hour.

Part (b) shows the relationship between distance sprinted and recovery time (the time it takes the heart rate to return to its normal resting rate). An upward-sloping curved line that starts out quite flat but then becomes steeper as we move along the curve away from the origin describes this relationship. The curve slopes upward and becomes steeper because the extra recovery time needed from sprinting another 100 yards increases. It takes 5 minutes to recover from sprinting 100 yards but 15 minutes to recover from sprinting 200 yards.

Part (c) shows the relationship between the number of problems worked by a student and the amount of study time. An upward-sloping curved line that starts out quite steep and becomes flatter as we move away from the origin shows this

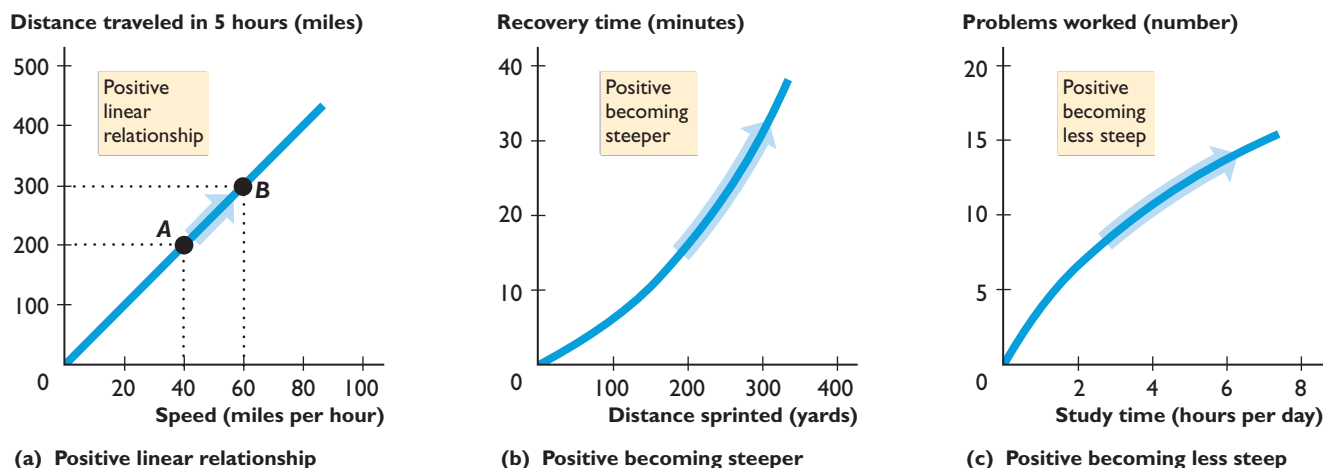
Positive relationship or direct relationship

A relationship between two variables that move in the same direction.

Linear relationship

A relationship that graphs as a straight line.

FIGURE A1.3
Positive (Direct) Relationships



Part (a) shows that as speed increases, the distance traveled in a given number of hours increases along a straight line.

Part (b) shows that as the distance sprinted increases, recovery time increases along a curve that becomes steeper.

Part (c) shows that as study time increases, the number of problems worked increases along a curve that becomes less steep.