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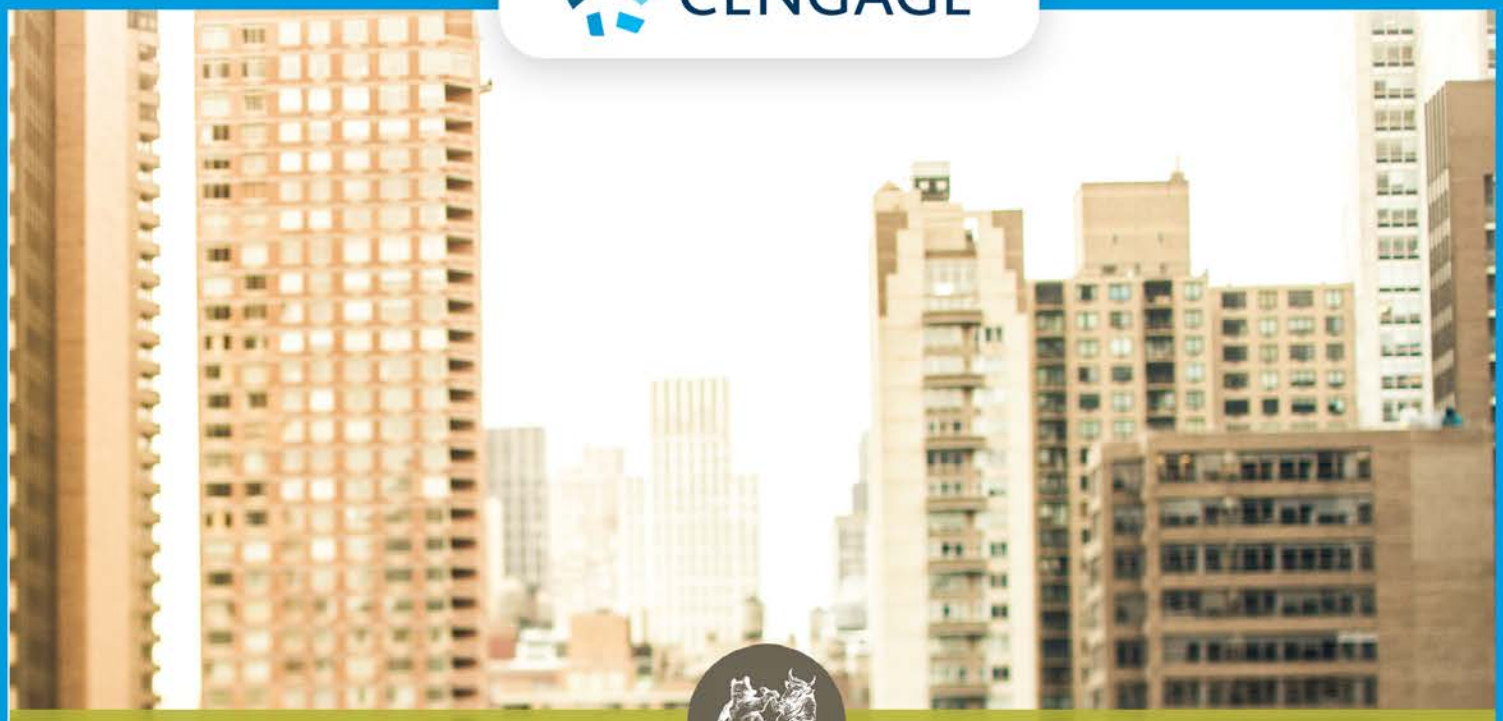
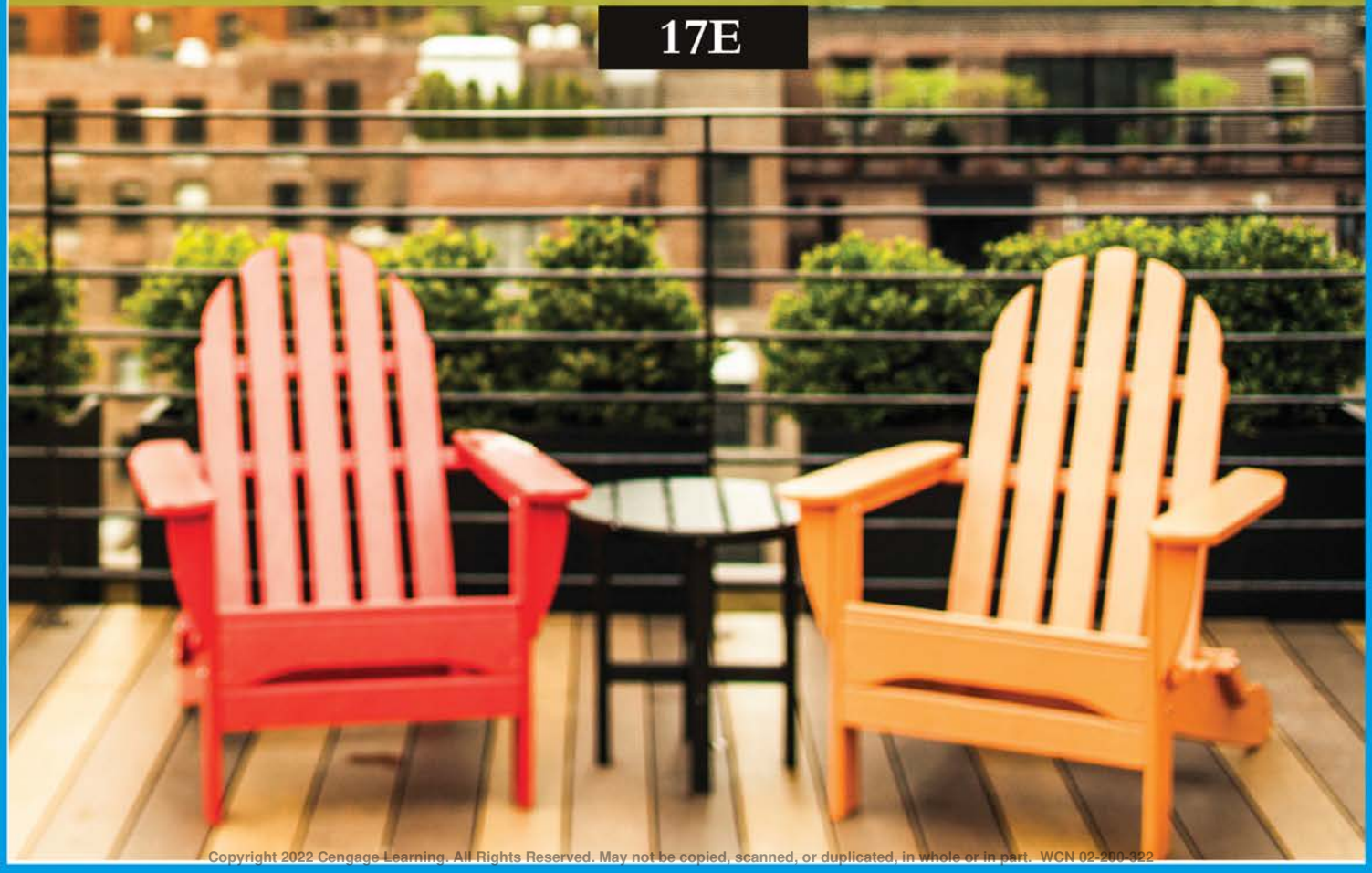


GWARTNEY • STROUP • SOBEL • MACPHERSON

MICROECONOMICS

PRIVATE AND PUBLIC CHOICE

17E



The Eight Guideposts to Economic Thinking

These eight guideposts provide the foundation for the economic way of thinking (they are discussed in Chapter 1). To do well in this course you will need to understand and be able to apply these ideas to a wide range of issues.

1. The use of scarce resources is costly; trade-offs must always be made.
2. Individuals choose purposefully — they try to get the most from their limited resources.
3. Incentives matter — choice is influenced in a predictable way by changes in incentives.
4. Individuals make decisions at the margin.
5. Although information can help us make better choices, its acquisition is costly.
6. Beware of the secondary effects: Economic actions often generate indirect as well as direct effects.
7. The value of a good or service is subjective.
8. The test of a theory is its ability to predict.

Special Topics

These Special Topics covered in the "Applying the Basics" section use the basic concepts to analyze important current-day topics.

1. Government Spending and Taxation
2. The Economics of Social Security
3. The Stock Market: Its Function, Performance, and Potential as an Investment Opportunity
4. Keynes and Hayek: Contrasting Views on Sound Economics and the Role of Government
5. The 2020 COVID-19 Recession: Cause, Response, and Implications for the Future
6. The Great Recession of 2008-2009: Causes and Response
7. Lessons from the Great Depression
8. The Economics of Health Care
9. Earnings Differences between Men and Women
10. Do Labor Unions Increase the Wages of Workers?
11. The Question of Resource Exhaustion
12. Difficult Environmental Cases and the Role of Government

Keys to Economic Prosperity

These keys to the economic prosperity of a nation are highlighted throughout the text.

1. **Human Ingenuity.** Economic goods are the result of human ingenuity and action; thus, the size of the economic pie is variable, not fixed. [Chapter 2]
2. **Private Ownership.** Private ownership provides people with a strong incentive to take care of things and develop resources in ways that are highly valued by others. [Chapter 2]
3. **Gains from Trade.** Trade makes it possible for individuals to generate more output through specialization and division of labor, large-scale production processes, and the dissemination of improved products and production methods. [Chapter 2]
4. **Invisible Hand Principle.** Market prices coordinate the actions of self-interested individuals and direct them toward activities that promote the general welfare. [Chapter 3]
5. **Profits and Losses.** Profits direct producers toward activities that increase the value of resources; losses impose a penalty on those who reduce the value of resources. [Chapter 3]
6. **Competition.** Competition motivates businesses to produce efficiently, cater to the views of consumers, and search for innovative improvements. [Chapter 9]
7. **Entrepreneurship.** The entrepreneurial discovery and development of improved products and production processes is a central element of economic progress. [Chapter 10]
8. **Productivity and Earnings.** In a market economy, productivity and earnings are closely linked. In order to earn a large income, one must provide large benefits to others. [Chapter 13]
9. **Innovation and the Capital Market.** If the potential gains from innovative ideas and human ingenuity are going to be fully realized, it must be relatively easy for individuals to try their innovative and potentially ingenious ideas, but difficult to continue if the idea is a bad one. [Chapter 14]
10. **International Trade.** When people are permitted to engage freely in international trade, they are able to achieve higher income levels and living standards than would otherwise be possible. [Chapter 16]

MICROECONOMICS

PRIVATE AND PUBLIC CHOICE

17E

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CENGAGE Learning™

Microeconomics: Private and Public Choice, 17e

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BRIEF CONTENTS

CONTENTS

RELATIONSHIP BETWEEN MAIN EDITION AND THE MACRO/MICRO EDITIONS

In addition to the full length text, Microeconomic and Macroeconomic splits of this text are also available. The chapters and special topics covered by the micro and macro split versions are indicated in this table.

Chapters

Economics	Microeconomics	Macroeconomics	
1	1	1	The Economic Approach
2	2	2	Some Tools of the Economist
3	3	3	Demand, Supply, and the Market Process
4	4	4	Demand and Supply: Applications and Extensions
5	5	5	Difficult Cases for the Market, and the Role of Government
6	6	6	The Economics of Political Action
7		7	Taking the Nation's Economic Pulse
8		8	Economic Fluctuations, Unemployment, and Inflation
9		9	An Introduction to Basic Macroeconomic Markets
10		10	Dynamic Change, Economic Fluctuations, and the *AD–AS* Model
11		11	Fiscal Policy: The Keynesian View and the Historical Development of Macroeconomics
12		12	Fiscal Policy, Incentives, and Secondary Effects
13		13	Money and the Banking System
14		14	Modern Macroeconomics and Monetary Policy
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16		16	Creating an Environment for Growth and Prosperity
17		17	The Economics of Development
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20	7		Consumer Choice and Elasticity
21	8		Costs and the Supply of Goods
22	9		Price Takers and the Competitive Process
23	10		Price-Searcher Markets with Low Entry Barriers
24	11		Price-Searcher Markets with High Entry Barriers
25	12		The Supply of and Demand for Productive Resources
26	13		Earnings, Productivity, and the Job Market
27	14		Investment, the Capital Market, and the Wealth of Nations
28	15		Income Inequality and Poverty

SPECIAL TOPICS

Economics	Microeconomics	Macroeconomics	Topic Title
1	1	1	Government Spending and Taxation
2	2	2	The Economics of Social Security
3	3	3	The Stock Market: Its Function, Performance, and Potential as an Investment Opportunity
4	4	4	Keynes and Hayek: Contrasting Views on Sound Economics and the Role of Government
5	5	5	The 2020 COVID-19 Recession: Cause, Response, and Implications for the Future
6	6	6	The Great Recession of 2008–2009: Causes and Response
7	7	7	Lessons from the Great Depression
8	8		The Economics of Health Care
9	9		Earnings Differences between Men and Women
10	10		Do Labor Unions Increase the Wages of Workers?
11	11		The Question of Resource Exhaustion
12	12		Difficult Environmental Cases and the Role of Government

PREFACE

These are interesting times. Our lives have been shaken by a once-in-a-century worldwide pandemic, unemployment rates not seen since the Great Depression, racial unrest, and political uncertainty. Moreover, technology is altering how we communicate, learn, and interact with each other. Students are struggling to understand recent changes and their impact on their lives. Beginning with the first edition 45 years ago, our goal has been to use the tools of economics to explain how the real world works and to do so in a clear and understandable manner. This goal was at the forefront of our minds as we worked on this edition.

We have always used the tools of economics to analyze the operation of both the market and political processes. Both are central to the understanding of today's rapidly changing world. More than any other principles text, we highlight the roles of entrepreneurship, dynamic competition, and public choice analysis. Entrepreneurship is the key to understanding how markets work and the vast improvement in our living standards. Public choice is the key to understanding the structure of incentives confronted by voters, politicians, and bureaucrats and how this impacts political outcomes. This text examines both markets and political decision-making and indicates conditions under which each works well and alternative conditions that cause each to work poorly.

The micro chapters provide extensive coverage of entrepreneurship, innovation, and dynamic competition in the operation of markets. The macro chapters analyze the major alternative theories of both fiscal and monetary policy and provide up-to-date coverage of recent changes in Federal Reserve policy, government debt, and other factors impacting the macroeconomy. The "Beyond the Basics" Special Topics section includes features on micro topics such as the stock market, health care, and environmental economics as well as macro topics like the Great Depression, the Great Recession of 2008-2009, and the 2020 COVID-19 Recession.

ORGANIZATION AND INSTRUCTOR FLEXIBILITY

The organization of *Economics: Private and Public Choice* is designed to provide instructors with maximum flexibility. Those using the full-length text for a two-semester course can cover either microeconomics or macroeconomics first. As in recent editions, the text is divided into core chapters and a concluding special topics section. The 28 core chapters cover all of the material taught in most principles courses, and they are presented in the usual manner. Examples and data from the real world are used to reinforce the analysis. In addition, the "Beyond the Basics" Special Topics section includes 12 relatively short special topic applications covering both micro and macro topics. Features in this section address questions such as these: "How will the 2020 COVID-19 Recession impact our future?," "What caused the Great Depression?," "Is discrimination responsible for the earnings differences between men and women?," and "Are we running out of resources?" These features will grab the interest of students and are short enough to cover during a single class period. If you have not integrated the special topic materials into your course, please consider doing so. They will enrich your course and help students better understand the political economy debates that dominate the daily news of our world.

Instructors integrating public choice throughout their course will probably want to cover Chapters 5 and 6 before moving to the core micro or macro material. Others teaching a microeconomics course may want to jump from Chapter 4 directly to the core micro chapters. Correspondingly, some macroeconomics instructors will want to move directly

from Chapter 3 or 4 to the core macro material. The chapters have been written so that any of these options will work.

NEW MATERIAL IN THIS EDITION

New material designed to enliven economics and illustrate its relevance has been integrated into just about every chapter. The following are several of these additions:

The coverage of entrepreneurship and its importance as a source of new goods, services, and production methods that enrich our lives has been expanded in several chapters, including 2, 3, 9, 10, and 11. In addition, a new series, "Entrepreneurs Who Have Changed Our Lives," is integrated into about 10 chapters. This series highlights both the contributions and interesting personal attributes of key entrepreneurs. While students will recognize several of the entrepreneurs in the series, others are relatively unknown. Jeff Bezos, Kendra Scott, Fred Smith, and Oprah Winfrey, are among the entrepreneurs featured in the series. This feature will enhance the knowledge of students about how their lives are impacted by entrepreneurs.

Chapter 2 includes a new feature on "Are Scandinavian Countries Socialist?" The empirical evidence on this question is examined.

In Chapter 4, the analysis of the minimum wage, including the effect of recent increases in city and state minimums, has been updated and expanded.

Chapter 10 contains new material that examines how technological advances that have reduced search and transaction costs, including the growth of the 'sharing economy,' have altered the nature of markets and enabled entrepreneurs to break down traditional barriers to entry and expand competition.

Chapter 11 contains new material on dynamic competition in the digital age, including the impact of network effects and platform businesses. These two concepts help students understand the changing nature of markets and the growing presence of larger online firms. The impact of the sharing economy and the platform business model based on crowd-sourced resources on the competitiveness of markets and choices available to consumers are examined. Improvements in technology, communications, and transportation have lowered transaction and monitoring costs, weakening the forces leading to diseconomies of scale. Marketing, advertising, and information costs have also changed in ways that make it easier to reach a larger customer base more rapidly and cost-effectively.

The new Special Topic 5 on the 2020 COVID-19 Recession examines the factors underlying the huge increase in unemployment and the severe economic downturn. The causes of the economic crisis, the policy response, and examination of how this recession differs from earlier ones are all discussed. This feature provides the foundation for future analysis of an economic event that is sure to attract student interest in the years immediately ahead.

ADDITIONAL TEXT FEATURES

Economics: Private and Public Choice retains several features that make the presentation of economics both more interesting and understandable.

- Keys to Economic Prosperity. Students often fail to appreciate the organizational and institutional factors that are the foundation for economic progress. To help remedy this situation, we have incorporated a "Keys to Economic Prosperity" feature that highlights the importance of factors like gains from trade, secure property rights, competition, and free trade as sources of economic prosperity. In all, 12 key factors that underlie modern economic prosperity are highlighted at appropriate places throughout the text; they also are listed inside the front cover.
- Applications in Economics. "Applications in Economics" boxes apply economic theory to real-world issues and controversies. These features illustrate the importance and power of the principles covered in the text.

- Outstanding Economists. Boxes throughout the text highlight the lives of major economists and focus on how their work has contributed to the development of economics.
- Entrepreneurs Who Have Changed Our Lives. This new series highlights both the economic contribution and personal attributes of key entrepreneurs. It will help students better understand the role of entrepreneurs and how their actions have contributed to the development of various goods and services that are often taken for granted.
- Key Point Summaries. At the end of each chapter, the Key Points section provides students with a concise statement of the material covered in the chapter (the chapter learning objectives).
- Critical Analysis Questions. Each chapter concludes with a set of analysis and discussion questions designed to test students' ability to analyze economic issues and to apply economic theory to real-world events. Appendix B at the end of the text contains suggested answers for approximately a third of these questions.

SUPPLEMENTARY MATERIALS

The text is accompanied by a robust set of online learning tools designed to support your classroom work. MindTap includes real-time, interactive tutorials; online experiments; Graph Builder; A+ Test Prep; Graphing at a Glance; ConceptClips; Audio Cases with assessments; Concept & Application Videos; automatically graded quizzes; and automatically graded problem sets. Likewise, the book's dynamic PowerPoint presentation has been further enhanced to facilitate your teaching.

FOR THE STUDENT

MindTap MindTap is a fully online, highly personalized learning experience built via Cengage Learning content that combines student learning tools—readings, multimedia, activities, and assessments—into a singular Learning Path that guides students through their course.

FOR THE INSTRUCTOR

We are sure that many of the features incorporated with this textbook will help you become a better teacher and make your classes more interesting to students. Personally, we have incorporated the Keys to Economic Prosperity series, economics video clips, homework assignments, and online quiz questions into our own classes with great success. The full set of supplements that can accompany the book include the following:

MindTap MindTap is a fully online, highly personalized learning experience built via Cengage Learning content that combines student learning tools—readings, multimedia, activities, and assessments—into a singular Learning Path that guides students through their course. Instructors personalize the experience by customizing authoritative Cengage Learning content and learning tools, including the ability to add their own content in the Learning Path via apps that integrate into the MindTap framework seamlessly with Learning Management Systems.

Interactive eBook In addition to interactive teaching and learning tools, Economic MindTap includes an interactive eBook. Students can take notes, highlight, search, and interact with embedded media specific to their book. Use it as a supplement to the printed text or as a substitute—with MindTap, the choice is up to your students.

Test Banks The test banks for the 17th edition were prepared by the author team with the assistance of Shannon Aucoin and other members of Cengage's excellent team of subject matter experts. The authors have worked hard to update and improve the test banks for this edition. Joe Calhoun of Florida State University, was the primary author of the test bank for the last edition and the current version is reflective of this excellent work. The test bank contains approximately 6,000 questions—multiple choice and short answer. Within each chapter, the questions are tied to the major heads and specific topics within the chapter. Instructors who want to motivate their students to study will find online practice quizzes on MindTap that can easily be incorporated into their quizzes and exams. The cloud-based test banks for this edition have been enhanced significantly. Cognero contains all of the questions in the test bank so that you can create and customize tests in minutes. You can easily edit and import your own questions and graphics and edit and maneuver existing questions.

PowerPoint We believe our PowerPoint presentation, prepared by Joseph Connors of Florida Southern University, is the best you will find in the principles market. The presentation includes chapter-by-chapter lecture notes and hyperlinked slides of the exhibits included in the text. To facilitate classroom discussion and interaction, questions are strategically interspersed throughout the PowerPoint slides to help students develop the economic way of thinking. Instructions explaining how professors can easily add, delete, and modify slides in order to tailor the presentation to their liking are included. If instructors want to make the PowerPoint presentation available to students, they can place it on their website (or the site for their course).

Instructor's Manual Information on how to use and modify the PowerPoint material is contained in the front of the Instructor's Manual. The manual is divided by chapters, and each chapter begins with a detailed chapter outline in lecture-note form. It is designed to help instructors organize their notes to match the 17th edition of the book. Then there are focus questions which cover all the concepts in the chapter. Then the context of each chapter is given followed by important points and teaching suggestions. Each chapter also provides in-class economic games and experiments. Contributed in part by Professor Charles Stull of Kalamazoo College, the games are popular with many instructors. We hope you will try them.

The book companion Web site contains the key supplements designed to aid instructors, including the content from the Instructor's Manual, test banks, and PowerPoint lecture and exhibit slides

A NOTE TO INSTRUCTORS

As we try to improve the book from one edition to the next, we rely heavily on our experiences as teachers. But our experience using the book is minuscule compared to that of the hundreds of instructors who use it nationwide. If you encounter problems or have suggestions for improving the book, we urge you to let us know by writing to us in care of Cengage Learning, 5191 Natorp Blvd., Mason, OH 45040.

A NOTE TO STUDENTS

This textbook contains several features we think will help you maximize (a good economic term) the returns of your study efforts. Here are some of the things that will help you and a few tips for making the most of them.

- Each chapter begins with an opening page that indicates the central issues of the chapter. Before you read the chapter, briefly think about the questions the chapter will examine and how they relate to the material of prior chapters.

- The textbook is organized in the form of an outline. The headings within the text (in red) are the major points of the outline. Minor headings are subpoints under the major headings. In addition, important subpoints within sections are often set off and numbered. ***Bold italicized*** type is used to highlight material that is particularly important. Sometimes "thumbnail sketches" are included to recap material and help you keep the important points mentally organized.
- A "Key Points" summary appears at the end of each chapter. Use the summary as a checklist to determine whether you understand the major points of the chapter.
- A review of the exhibits and illustrative pictures will also provide you with a summary of the key points of each chapter. The accompanying captions briefly describe the economic phenomena illustrated by the exhibits.
- The key terms introduced in each chapter are defined in the margins. As you study the chapter, review the marginal definition of each key term as it is introduced. Later, you also may find it useful to review the marginal definitions. If you have forgotten the meaning of a term introduced earlier, consult the glossary at the end of the book.
- The critical analysis questions at the end of each chapter are intended to test your understanding of the economic way of thinking. Answering these questions and solving the problems will greatly enhance your knowledge of the material. Answers to approximately a third of these questions are provided in Appendix B.

If you need more practice, ask your professor about MindTap.

ACKNOWLEDGMENTS

A project of this magnitude is a team effort. Through the years, numerous people have assisted us in various ways. Jane Shaw Stroup deserves special recognition for her contribution to this edition. She researched and prepared the initial draft of the material on the "Entrepreneurs Who Have Changed Our Lives" series and assisted the author team with research and proofing. As a result, we listed her name on the title page. Reagan Sobel provided valuable assistance in updating examples, data, and content in many chapters. Signè Thomas, Joe Connors, Robert Lawson, Joe Calhoun, Hugo Moises Montesinos Yufa and Amy Gwartney assisted us with preparation of exhibits and proofing of the manuscript. The text still bears an imprint of the contributions of Woody Studenmund of Occidental College and Gary Galles of Pepperdine University, who assisted us in numerous ways with past editions.

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We have often revised material in light of suggestions made by reviewers, users, friends, and even a few competitors. In this regard, we would like to express our appreciation to the following people for their reviews and helpful suggestions for recent editions:

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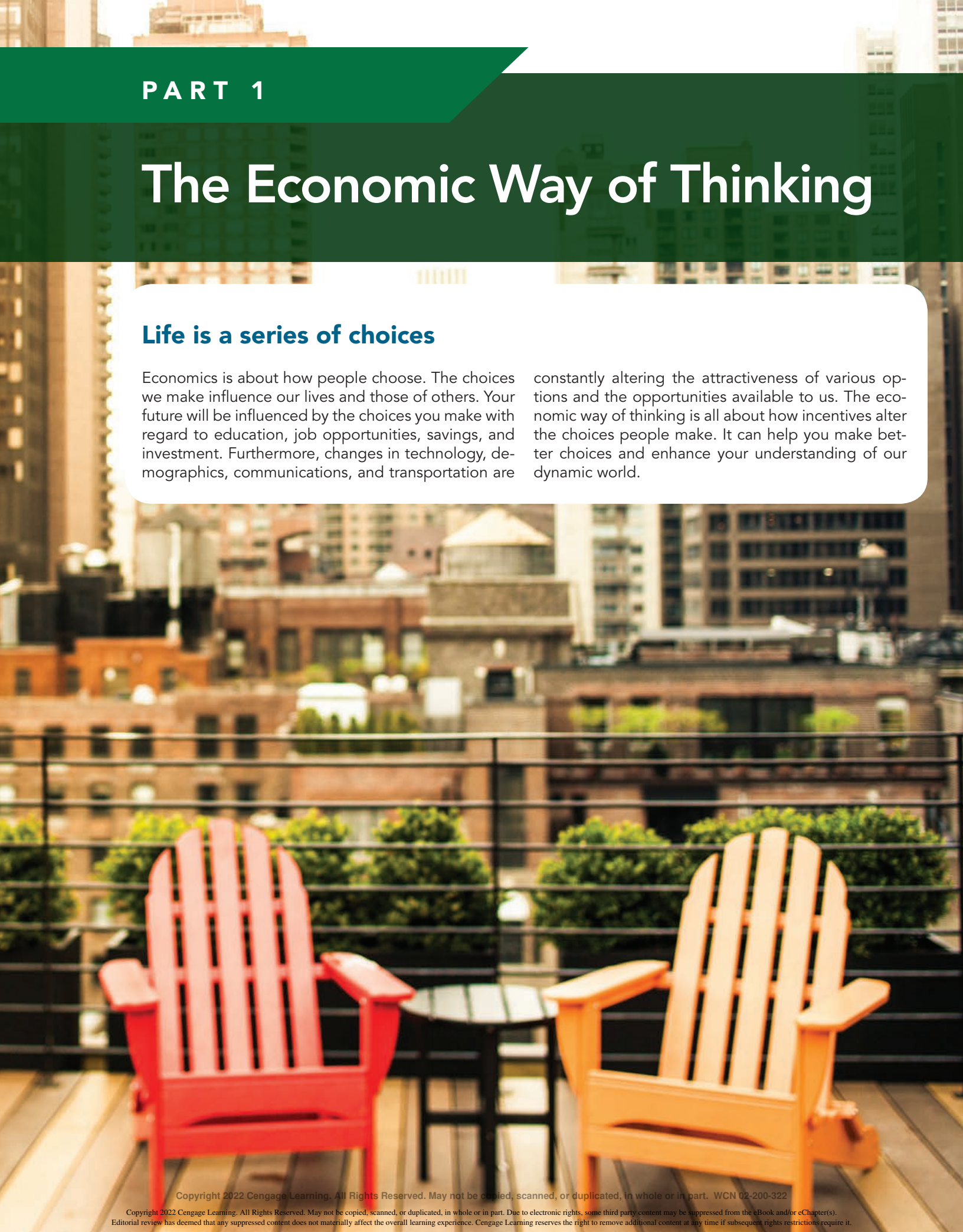
Journal of Real Estate Economics and Finance. His research has been funded by a variety of entities including the National Science Foundation, Florida Legislature, and the National Association of Realtors. He is co-author of the undergraduate labor economics text, *Contemporary Labor Economics, 12e*. He is included in *Who's Who in Economics, 4e*, which includes the 1,200 most frequently cited economists. Dr. Macpherson received his undergraduate degree and Ph.D. from Pennsylvania State University.

PART 1

The Economic Way of Thinking

Life is a series of choices

Economics is about how people choose. The choices we make influence our lives and those of others. Your future will be influenced by the choices you make with regard to education, job opportunities, savings, and investment. Furthermore, changes in technology, demographics, communications, and transportation are constantly altering the attractiveness of various options and the opportunities available to us. The economic way of thinking is all about how incentives alter the choices people make. It can help you make better choices and enhance your understanding of our dynamic world.



CHAPTER 1

The Economic Approach

Economist, n.–A scoundrel whose faulty vision sees things as they really are, not as they ought to be. **—Daniel K. Benjamin, after Ambrose Bierce**

Welcome to the world of economics. In recent years, economics has often been front-page news, and it affects all of our lives. Soaring unemployment as the result of the stay-at-home orders accompanying the 2020 COVID-19 pandemic, the rise of online work and school, the growth of the sharing economy, concern about robots eliminating jobs, tariffs on international trade, the rising cost of a college education, income inequality, and climate change—all of these have been in the news and have exerted a major impact on the lives of almost everyone around the world. Economics will enhance your understanding of all of these topics and many more. You will soon see that economics is about much more than just financial markets and economic policy. In fact, a field trip to the fruits and vegetables section at your local grocery store could well be filled with more economics lessons than a trip to the New York Stock Exchange.

In a nutshell, economics is the study of human behavior, with a particular focus on human decision-making. It will introduce you to a new and powerful way of thinking that will both help you make better decisions and enhance your understanding of how the world works.

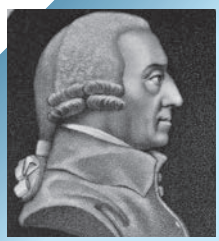
You may have heard some of the following statements: The soaring federal debt is mortgaging the future of our children, and it will bankrupt the country if we do not get it under control. Foreign immigrants are stealing our jobs and paralyzing our economy. A move toward socialism would improve outcomes in the United States. A higher minimum wage will help the poor. Making college tuition free for all will promote economic growth and lead to higher earnings. Are these statements true? This course will provide you with knowledge that will enhance your understanding of issues like these and numerous others. It may even alter the way you think about them.

The origins of economics date back to Adam Smith, a Scottish moral philosopher, who expressed the first economic ideas in his breakthrough book, *An Inquiry into the Nature and Causes of the Wealth of Nations,* published in 1776. As the title of his book suggests, Smith sought to explain why people in some nations were wealthier than those in others. This very question is still a central issue in economics. It is so important that throughout this book we will use a special "Keys to Economic Prosperity" symbol in the margin to highlight sections that focus on this topic.

A listing of the major keys to prosperity is presented inside the front cover of the book. These keys and accompanying discussions will help you understand what factors enable economies, and their citizens, to grow wealthier and prosper.

As you read this chapter, look for answers to the following questions:

- What is scarcity? Why does scarcity necessitate rationing and cause competition?
- What is the economic way of thinking? What is the basic postulate of economics, and why is it so important?
- What is the difference between positive and normative economics?



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Outstanding Economist: The Importance of Adam Smith, the Father of Economic Science

Economics is a relatively young science. The foundation of economics was laid in 1776, when Adam Smith (1723–1790) published *An Inquiry into the Nature and Causes of the Wealth of Nations.*

Smith was a lecturer at the University of Glasgow, in his native Scotland. Before economics, morals and ethics were actually his concern. His first book was *The Theory of Moral Sentiments.* For Smith, self-interest and sympathy for others were complementary. However, he did not believe that charity alone would provide the essentials for a good life.

Smith stressed that free exchange and competitive markets would harness self-interest as a creative force. He believed that individuals *pursuing their own interests* would be directed by the "invisible hand" of market prices toward the production of those goods that were most advantageous to society. He argued that the wealth of a nation does not lie in gold and silver, but rather in the goods and services produced and consumed by people. According to Smith, competitive markets would lead to coordination, order, and efficiency without the direction of a central authority.

These were revolutionary ideas at the time, but they had consequences. Smith's ideas greatly influenced not only Europeans but also those who developed the political economy structure of the United States. Further, Smith's notion of the "invisible hand" of the market continues to enhance our understanding of why some nations prosper while others stagnate.[1]

[1]For an excellent biographical sketch of Adam Smith, see David Henderson, ed., *The Fortune Encyclopedia of Economics* (New York: Warner Books, 1993), 836–38. The entire text of this useful encyclopedia is now available online, free of charge, at https://oll.libertyfund.org/titles/1064.

1-1 WHAT IS ECONOMICS ABOUT?

Economics is about scarcity and the choices we have to make because our desire for goods and services is far greater than their availability from nature. Would you like some new clothes, a nicer car, and a larger apartment? How about better grades and more time to watch television, go skiing, and travel? Do you dream of driving your brand-new Porsche into the driveway of your oceanfront house? As individuals, we have a desire for goods that is virtually unlimited. We may want all of these things. Unfortunately, both as individuals and as a society we face a constraint called **scarcity** that prevents us from being able to completely fulfill our desires.

Scarcity
Fundamental concept of economics that indicates that there is less of a good freely available than people would like.

Scarcity is present whenever there is less of a good or resource freely available than people would like. There are some things that are not scarce—seawater comes to mind; nature has provided as much of it as people want. But almost everything else you can think of—even your time—is scarce. In economics, the word *scarce* has a very specific meaning that differs slightly from the way it is commonly used. Even if large amounts of a good have been produced, it is still scarce as long as there is not as much of it *freely available* as we would all like. For example, even though goods like apples and automobiles are

relatively abundant in the United States, they are still scarce because we would like to have more of them than nature has freely provided. In economics, we generally wish to determine only if a good is scarce or not, and refrain from using the term to refer to the relative availability or abundance of a good or resource.

Because of scarcity, we have to make choices. Should I spend the next hour studying or watching TV? Should I spend my last $20 on a new cell phone case or on a shirt? Should this factory be used to produce clothing or furniture? **Choice**, the act of selecting among alternatives, is the logical consequence of scarcity. When we make choices, we constantly face trade-offs between meeting one desire or another. To meet one need, we must let another go unmet. The basic ideas of *scarcity* and *choice*, along with the *trade-offs* we face, provide the foundation for economic analysis.

Choice
The act of selecting among alternatives.

Resources are the ingredients, or inputs, that people use to produce goods and services. Our ability to produce goods and services is limited precisely because of the limited nature of our resources.

Resource
An input used to produce economic goods. Land, labor, skills, natural resources, and human-made tools and equipment provide examples. Throughout history, people have struggled to transform available, but limited, resources into things they would like to have—economic goods.

Exhibit 1 lists a number of scarce goods and the limited resources that might be used to produce them. There are three general categories of resources. First, there are *human resources*—the productive knowledge, skill, and strength of human beings. Second, there are *physical resources*—things like tools, machines, and buildings that enhance our ability to produce goods. Economists often use the term **capital** when referring to these human-made resources. Third, there are *natural resources*—things like land, mineral deposits, oceans, and rivers. The ingenuity of humans is often required to make these natural resources useful in production. For example, until recently, the yew tree was considered a "trash tree," having no economic value. Then, scientists discovered that the tree produces taxol, a substance that could be used to fight cancer. Human knowledge and ingenuity made yew trees a valuable resource. As you can see, natural resources are important, but knowing how to use them productively is just as important. This knowledge is something that is discovered as a result of the competitive market process.

Capital
Human-made resources (such as tools, equipment, and structures) used to produce other goods and services. They enhance our ability to produce in the future.

As economist Thomas Sowell points out, cavemen had the same natural resources at their disposal that we do today. The huge difference between their standard of living and ours reflects the difference in the knowledge they could bring to bear on those resources versus what we can.[1] Over time, human ingenuity, discovery, improved knowledge, and better technology have enabled us to produce more goods and services from the available resources. Nonetheless, our desire for goods and services is still far greater than our ability to produce them. Thus, scarcity is a fact of life today, and in the foreseeable future. As a result, we confront trade-offs and have to make choices. This is what economics is about.

EXHIBIT 1

A General Listing of Scarce Goods and Limited Resources

History is a record of our struggle to transform available, but limited, resources into goods that we would like to have.

Scarce Goods	Limited Resources
Food (bread, milk, meat, eggs, vegetables, coffee, etc.)	Land (various degrees of fertility)
Clothing (shirts, pants, blouses, shoes, socks, coats, sweaters, etc.)	Natural resources (rivers, trees, minerals, oceans, etc.)
Household goods (tables, chairs, rugs, beds, dressers, televisions, etc.)	Machines and other human-made physical resources
Education	Nonhuman animal resources
National defense	Technology (physical and scientific "recipes" of history)
Leisure time	Human resources (the knowledge, skill, and talent of individual human beings)
Entertainment	
Clean air	
Pleasant environment (trees, lakes, rivers, open spaces, etc.)	
Pleasant working conditions	

[1]Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), 47.

1-1a SCARCITY AND POVERTY ARE NOT THE SAME

Think for a moment about what life was like in 1750. People all over the world struggled 50, 60, and 70 hours a week to obtain the basic necessities of life—food, clothing, and shelter. Manual labor was the major source of income. Animals provided the means of transportation. Tools and machines were primitive by today's standards. As the English philosopher Thomas Hobbes stated in the seventeenth century, life was "solitary, poor, nasty, brutish, and short."[2]

Throughout much of South America, Africa, and Asia, economic conditions today continue to make life difficult. In North America, Western Europe, Oceania, and some parts of Asia, however, economic progress has substantially reduced physical hardship and human drudgery. In these regions, the typical family is more likely to worry about financing its summer vacation than about obtaining food and shelter. As anyone who has watched the TV reality show *Survivor* knows, we take for granted many of the items that modern technological advances have allowed us to produce at unbelievably low prices. Contestants on *Survivor* struggle with even basic things like starting a fire, finding shelter, and catching fish. They are thrilled when they win ordinary items like shampoo, rice, and toilet paper. During one episode, a contestant eagerly paid over $125 for a small chocolate bar and spoonful of peanut butter at an auction—and she considered it a great bargain!

It is important to note that scarcity and poverty are not the same thing. Scarcity is an **objective** concept that describes a factual situation in which the limited nature of our resources keeps us from being able to completely fulfill our desires for goods and services. In contrast, poverty is a **subjective** concept that refers to a personal opinion of whether someone meets an arbitrarily defined level of income. This distinction is made even clearer when you realize that different people have vastly different ideas of what it means to be poor. The average family in the United States that meets the federal government's definition of being "in poverty" would be considered wealthy in most any country in Africa. A family in the United States in the 1950s would have been considered fairly wealthy if it had air conditioning, an automatic dishwasher or clothes dryer, or a television. Today, the majority of U.S. families officially classified as poor have many items that would have been viewed as symbols of great wealth just 70 years ago.

People always want more and better goods for themselves and others about whom they care. Scarcity is the constraint that prevents us from having as much of *all* goods as we would like, but it is not the same as poverty. Even if every individual were rich, scarcity would still be present.

Objective
A fact based on observable phenomena that is not influenced by differences in personal opinion.

Subjective
An opinion based on personal preferences and value judgments.

Monty Brinton/CBS Photo Archive/Getty Images

The degree to which modern technology and knowledge allow us to fulfill our desires and ease the grip of scarcity is often taken for granted—as the castaways on the CBS reality series Survivor quickly find out when they have to struggle to meet even basic needs, such as food, shelter, and cleaning their bodies and clothes.

[2]Thomas Hobbes, *Leviathan* (1651), Part I, Chapter 13.

1-1b SCARCITY NECESSITATES RATIONING

Rationing
Allocating a limited supply of a good or resource among people who would like to have more of it. When price performs the rationing function, the good or resource is allocated to those willing to give up the most "other things" in order to get it.

Scarcity makes **rationing** a necessity. When a good or resource is scarce, some criterion must be used to determine who will receive it and who will go without. The choice of which method is used will, however, have an influence on human behavior. When rationing is done through the government sector, a person's political status and ability to manipulate the political process are the key factors. Powerful interest groups and those in good favor with influential politicians will be the ones who obtain goods and resources. When this method of rationing is used, people will devote time and resources to lobbying and favor seeking with those who have political power, rather than to productive activities.

When the criterion is first-come, first-served, goods are allocated to those who are fastest at getting in line or willing to spend the longest time waiting in line or searching at many different sellers or locations. Many colleges use this method to ration tickets to sporting events, and the result is students waiting in long lines. Sometimes, as at Duke University during basketball season, they even camp out for multiple nights to get good tickets! Imagine how the behavior of students would change if tickets were instead given out to the students with the highest grade point average.

In a market economy, price is generally used to ration goods and resources only to those who are willing and able to pay the prevailing market price. Because only those goods that are scarce require rationing, in a market economy one easy way to determine whether a good or resource is scarce is to ask if it sells for a price. If you have to pay for something, it is scarce.

1-1c THE METHOD OF RATIONING INFLUENCES THE NATURE OF COMPETITION

Competition is a natural outgrowth of scarcity and the desire of human beings to improve their conditions. Competition exists in every economy and every society. But the criteria used to ration scarce goods and resources will influence the competitive techniques employed. When the rationing criterion is price, individuals will engage in income-generating activities that enhance their ability to pay the price needed to buy the goods and services they want. Thus, one benefit of using price as a rationing mechanism is that it encourages individuals to engage in the production of goods and services to generate income. In contrast, rationing on the basis of first-come, first-served encourages individuals to waste a substantial amount of time waiting in line or searching, while rationing through the political process encourages individuals to waste time and other resources in competing with others to influence the political process.

Within a market setting, the competition that results from scarcity is an important ingredient in economic progress. Competition among business firms for customers results in newer, better, and less expensive goods and services. Competition between employers for workers results in higher wages, benefits, and better working conditions. Further, competition encourages discovery and innovation, two important sources of growth and higher living standards.

1-2 THE ECONOMIC WAY OF THINKING

It [economics] is a method rather than a doctrine, an apparatus of the mind, a technique of thinking which helps its possessor to draw correct conclusions.

—John Maynard Keynes[3]

One does not have to spend much time around economists to recognize that there is an "economic way of thinking." Admittedly, economists, like others, differ widely in their ideological views. A news commentator once remarked that "any half-dozen economists will normally come up with about six different policy prescriptions." Yet, in spite of their philosophical differences, the approaches of economists reflect common ground.

[3]John Maynard Keynes (1883–1946) was an English economist whose writings during the 1920s and 1930s exerted an enormous impact on both economic theory and policy. Keynes established the terminology and the economic framework that are still widely used when economists study problems of unemployment and inflation.

That common ground is **economic theory**, developed from basic principles of human behavior. Economic researchers are constantly involved in testing and seeking to verify their theories. When the evidence from the testing is consistent with a theory, eventually that theory will become widely accepted among economists. Economic theory, like a road map or a guidebook, establishes reference points indicating what to look for and how economic issues are interrelated. To a large degree, the basic economic principles are merely common sense. When applied consistently, however, these commonsense concepts can provide powerful and sometimes surprising insights.

Economic theory
A set of definitions, postulates, and principles assembled in a manner that makes clear the "cause-and-effect" relationships.

1-2a EIGHT GUIDEPOSTS TO ECONOMIC THINKING

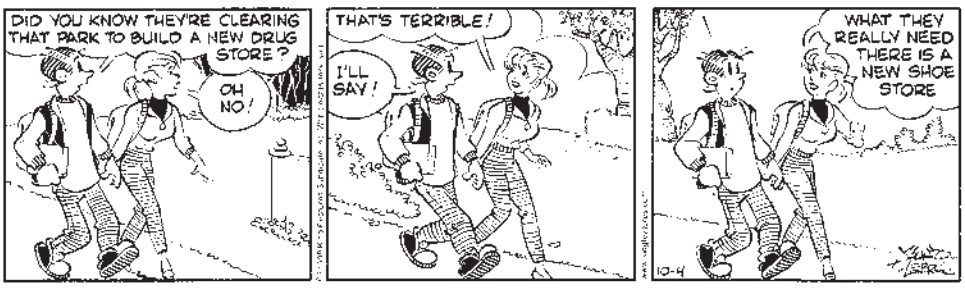
The economic way of thinking requires incorporating certain guidelines—some would say the building blocks of basic economic theory—into your own thought process. Once you incorporate these guidelines, economics can be a relatively easy subject to master. Students who have difficulty with economics have almost always failed to assimilate one or more of these principles. The following are eight principles that characterize the economic way of thinking. We will discuss each of these principles in more depth throughout the book so that you will be sure to understand how and when to apply them.

1. The use of scarce resources is costly, so decision-makers must make trade-offs. Economists sometimes refer to this as the "there is no such thing as a free lunch" principle. Because resources are scarce, the use of resources to produce one good diverts those resources from the production of other goods. A parcel of undeveloped land could be used for a new hospital or a parking lot, or it could simply be left undeveloped. No option is free of cost—there is always a trade-off. A decision to pursue any one of these options means that the decision-maker must sacrifice the others. The highest valued alternative that is sacrificed is the **opportunity cost** of the option chosen. For example, if you use one hour of your scarce time to study economics, you will have one hour less time to watch television, spend on social media, sleep, work at a job, or study other subjects. Whichever one of these options you would have chosen had you *not* spent the hour studying economics is your highest valued option forgone. If you would have slept, then the opportunity cost of this hour spent studying economics is a forgone hour of sleep. In economics, the opportunity cost of an action is the highest valued option given up when a choice is made.

Opportunity cost
The highest valued alternative that must be sacrificed as a result of choosing an option.

It is important to recognize that the use of scarce resources to produce a good is always costly, regardless of who pays for the good or service produced. In many countries, various kinds of schooling are provided free of charge *to students*. However, provision of the schooling is not free *to the community as a whole*. The scarce resources used to produce the schooling—to construct the building, hire teachers, buy equipment, and so on—could have been used instead to produce more recreation, entertainment, housing, medical care, or other goods. The opportunity cost of the schooling is the highest valued option that must now be given up because the required resources were used to produce the schooling.

By now, the central point should be obvious. As we make choices, we always face trade-offs. Using resources to do one thing leaves fewer resources to do another.



When a scarce resource is used to meet one need, other competing needs must be sacrificed. The forgone shoe store is an example of the opportunity cost of building the new drugstore.

Consider one final example. Mandatory air bags in automobiles save an estimated 400 lives each year. Economic thinking, however, forces us to ask ourselves if the $50 billion spent on air bags could have been used in a better way—perhaps say, for cancer research that could have saved *more* than 400 lives per year. Most people don't like to think of air bags and cancer research as an "either/or" proposition. It's more convenient to ignore these trade-offs. But if we want to get the most out of our resources, we have to consider all of our alternatives. In this case, the appropriate analysis is not simply the lives saved with air bags versus dollars spent on them, but also the number of lives that could have been saved (or other things that could have been accomplished) if the $50 billion had been used differently. A candid consideration of hard trade-offs like this is essential to using our resources wisely.

2. Individuals choose purposefully—they try to get the most from their limited resources. People try not to squander their valuable resources deliberately. Instead, they try to choose the options that best advance their personal desires and goals at the least possible cost. This is called **economizing behavior**. Economizing behavior is the result of purposeful, or rational, decision-making. When choosing among things of equal benefit, an economizer will select the cheapest option. For example, if a pizza, a lobster dinner, and a sirloin steak are expected to yield identical benefits for Mary (including the enjoyment of eating them), economizing behavior implies that Mary will select the cheapest of the three alternatives, probably the pizza. Similarly, when choosing among alternatives of equal cost, economizing decision-makers will select the option that yields the greatest benefit. If the prices of several dinner specials are equal, for example, economizers will choose the one they like the best. Because of economizing behavior, the desires or preferences of individuals are revealed by the choices they make.

Economizing behavior
Choosing the option that offers the greatest benefit at the least possible cost.

Purposeful choosing implies that decision-makers have some basis for their evaluation of alternatives. Economists refer to this evaluation as **utility**—the benefit or satisfaction that an individual expects from the choice of a specific alternative. Utility is highly subjective, often differing widely from person to person. The steak dinner that delights one person may be repulsive to another (a vegetarian, for example).

Utility
The subjective benefit or satisfaction a person expects from a choice or course of action.

The idea that people behave rationally to get the greatest benefit at the least possible cost is a powerful tool. It can help us understand their choices. However, we need to realize that a rational choice is not the same thing as a "right" choice. If we want to understand people's choices, we need to understand their own subjective evaluations of their options *as they see them*. As we have said, different people have different preferences. If Joan prefers $10 worth of chocolate to $10 worth of vegetables, buying the chocolate would be the rational choice for her, even though some outside observer might say that Joan is making a "bad" decision. Similarly, some motorcycle riders choose to ride without a helmet because they believe the enjoyment they get from riding without one is greater than the cost (the risk of injury). When people weigh the benefits they receive from an activity against its cost, they are making a rational choice—even though it might not be the choice you or I would make in the same situation.

Because consumers respond to incentives, store owners know they can sell off excess inventory by reducing prices.

3. Incentives matter—changes in incentives influence human choices in a predictable way. Both monetary and nonmonetary incentives matter. If the personal cost of an option increases, people will be less likely to choose it. Correspondingly, when an option becomes more attractive, people will be more likely to choose it. This vitally important guidepost, sometimes called the basic postulate of economics, is a powerful tool because it applies to almost everything that we do.

Think about the implications of this proposition. When late for an appointment, a person will be less likely to take time to stop and visit with a friend. Fewer people will go picnicking on a cold and rainy day. Higher prices will reduce the number of units consumers will want to purchase. Attendance in college classes will be below normal the day before spring break. During the 2020 COVID-19 pandemic, persons over the age of 70 were far less likely than the young to go out to grocery stores and practiced greater social distancing,

because they were at significantly higher risk of contracting and dying from the virus than those under age 30. In each case, the explanation is the same: As the option becomes more costly, less is chosen.

Similarly, when the payoff derived from a choice increases, people will be more likely to choose it. A person will be more likely to bend over and pick up a quarter than a penny. Students will attend and pay more attention in class when the material is covered extensively on exams. Customers will buy more from stores that offer low prices, high-quality service, and a convenient location. Senior voters will be more likely to support candidates who favor higher Social Security benefits. All of these outcomes are highly predictable, and they merely reflect the "incentives matter" postulate of economics.

Noneconomists sometimes argue that people respond to incentives only because they are selfish and greedy. This view is false. People are motivated by a variety of goals, some humanitarian and some selfish, and incentives matter equally in both. Even an unselfish individual would be more likely to attempt to rescue a drowning child from a three-foot swimming pool than the rapid currents approaching Niagara Falls. Similarly, people are more likely to give a needy person their hand-me-downs rather than their favorite new clothes.

Just how far can we push the idea that incentives matter? If asked what would happen to the number of funerals performed in your town if the price of funerals rose, how would you respond? The "incentives matter" postulate predicts that the higher cost would reduce the number of funerals. While the same number of people will still die each year, the number of funerals performed will still fall as more people choose to be cremated or buried in cemeteries in other towns. Substitutes are everywhere—even for funerals. Individuals also respond to incentives when committing crimes—precisely the reason why people put signs in their yard saying "This house protected by XYZ Security."

4. Individuals make decisions at the margin. When making a choice between two alternatives, individuals generally focus on the *difference* in the costs and benefits between alternatives. Economists describe this process as **marginal** decision-making, or "thinking at the margin." The last time you went to eat fast food, you probably faced a decision that highlights this type of thinking. Will you get the $3.50 cheeseburger and the $1.50 medium drink, or instead get the $6.00 value meal that has the cheeseburger and drink and also comes with a medium order of fries? Naturally, individual decision-making focuses on the difference between the alternatives. The value meal costs $1.00 more (its marginal cost) but will give you one extra food item—the fries (its marginal benefit). Your marginal decision is whether it is worth the extra $1.00 to have the fries. If you pay attention, you'll notice yourself frequently thinking at the margin. Next time you find yourself asking a salesclerk, "How much *more* is this one?" when you are choosing between two items, you are doing a marginal analysis.

Marginal
Term used to describe the effects of a change in the current situation. For example, a producer's marginal cost is the cost of producing an additional unit of a product, given the producer's current facility and production rate.

Marginal choices always involve the effects of net additions to or subtractions from current conditions. In fact, the word *additional* is often used as a substitute for *marginal*. For example, a business decision-maker might ask, "What is the additional (or marginal) cost of producing one more unit?" Marginal decisions may involve large or small changes. The "one more unit" could be a new factory or a new stapler. It is marginal because it involves additional costs and additional benefits. Given the current situation, what marginal benefits (additional sales revenues, for example) can be expected from the new factory, and what will be the marginal cost of constructing it? What is the marginal benefit versus marginal cost of purchasing a new stapler? The answers to these questions will determine whether building the new factory or buying the new stapler is a good decision.

It is important to distinguish between *average* and *marginal*. A manufacturer's average cost of producing automobiles (which would be the total cost of production divided by the total number of cars the manufacturer produces) may be $25,000, but the marginal cost of producing an additional automobile (or an additional 1,000 automobiles) might be much lower, say, $10,000 per car. Costs associated with research, testing, design, molds, heavy equipment, and similar factors of production must be incurred whether the manufacturer is

going to produce 1,000 units, 10,000 units, or 100,000 units. Such costs will clearly contribute to the average cost of an automobile, but they will change very little as additional units are produced. Thus, the marginal cost of additional units may be substantially less than the average cost. Should production be expanded or reduced? That choice should be based on marginal costs, which indicate the *change* in total cost due to the decision.

People commonly ignore the implications of marginal thinking in their comments, but seldom in their actions. Thus, the concept is far better at explaining how people act than what they say. Students are often overheard telling other students that they shouldn't skip class because they have paid to enroll in it. Of course, the tuition is not a factor relevant at the margin—it will be the same whether or not the student attends class on that particular day. The only real marginal considerations are what the student will miss that day (a quiz, information for the exam, etc.) versus what he or she could do with the extra time by skipping class. This explains why even students who tell others not to skip class because they paid too much for it will ignore the tuition costs when they themselves decide to skip class.

Decisions are made at the margin. That means that they almost always involve additions to, or subtractions from, current conditions. If we are going to get the most out of our resources, activities that generate more benefits than costs should be undertaken, while those that are more costly than they are worth should not be undertaken. This principle of sound decision-making applies to individuals, businesses, governments, and for society as a whole.

5. Although information can help us make better choices, its acquisition is costly. Information that helps us make better choices is valuable. However, the time needed to gather it is scarce, making information costly to acquire. As a result, people economize on their search for information just like they do anything else. For example, when you purchase a pair of jeans, you might evaluate the quality and prices of jeans at several different stores. At some point, though, you will decide that additional comparison-shopping is simply not worth the trouble. You will make a choice based on the limited information you already have.

The process is similar when individuals search for a restaurant, a new car, or a roommate. They will seek to acquire some information, but at some point, they will decide that the expected benefit derived from gathering still more information is simply not worth the cost. When differences among the alternatives are important to decision-makers, they will spend more time and effort gathering information. People are much more likely to read reviews before purchasing a new automobile than they are before purchasing a new can opener. Because information is costly for people to acquire, limited knowledge and uncertainty about the outcome generally characterize the decision-making process.

6. Beware of the secondary effects: Economic actions often generate indirect as well as direct effects. In addition to direct effects that are quickly visible, people's decisions often generate indirect, or "secondary," effects that may be observable only with time. Failure to consider secondary effects is one of the most common economic errors because these effects are often quite different from initial, or direct, effects. Frédéric Bastiat, a nineteenth-century French economist, stated that the difference between a good and a bad economist is that the bad economist considers only the immediate, visible effects, whereas the good economist is also aware of the **secondary effects**. The true cause of these secondary effects might not be seen, even later, except by those using the logic of good economics.

Secondary effects
The indirect impact of an event or policy that may not be easily and immediately observable. In the area of policy, these effects are often both unintended and overlooked.

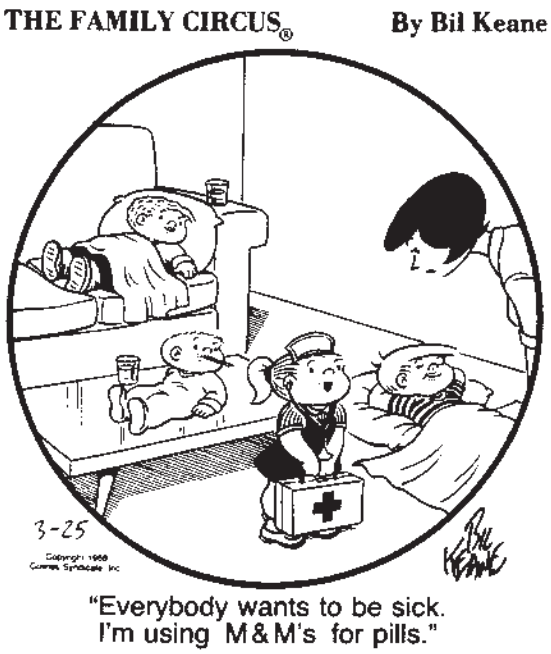
Perhaps a few simple examples that involve both immediate (direct) and secondary (indirect) effects will help illustrate the point. The immediate effect of an aspirin is a bitter taste in one's mouth. The secondary effect, which is not immediately observable, is relief from a headache. The short-term direct effect of drinking twelve cans of beer might be a warm, jolly feeling. In contrast, the secondary effect is likely to be a sluggish feeling the next morning, and perhaps a pounding headache.

Sometimes, as in the case of the aspirin, the secondary effect—headache relief—is actually an intended consequence of the action. In other cases, however, the secondary

effects are unintended. Changes in government policy often alter incentives, indirectly affecting how much people work, earn, invest, consume, and conserve for the future. When a change alters incentives, *unintended consequences* that are quite different from the intended consequences may occur.

Let's consider a couple of examples that illustrate the potential importance of unintended consequences. In an effort to help the environment, many jurisdictions, including San Francisco County, have banned plastic grocery bags. However, reusable grocery bags tend to gather harmful bacteria, such as E. coli, with repeated use. A study published by the University of Pennsylvania found that emergency room visits and deaths related to these bacteria have risen by 25 percent in areas banning plastic bags. Once you consider the harmful secondary effects on human health, these regulations are significantly less beneficial than they might first appear.

Trade restrictions between nations have important secondary effects as well. The proponents of tariffs and quotas on foreign goods almost always ignore the secondary effects of their policies. Import quotas restricting the sale of foreign-produced sugar in the U.S. market, for example, have resulted in domestic sugar prices that have often been two or three times the price in the rest of the world. The proponents of this policy—primarily sugar producers—argue that the quotas "save jobs" and increase employment. No doubt, the employment of sugar growers in the United States is higher than it otherwise would be. But what about the secondary effects? The higher sugar prices mean it's more expensive for U.S. firms to produce candy and other products that use a lot of sugar. As a result, many candy producers, including the makers of Life Savers, Jaw Breakers, Red Hots, and most candy canes, have moved to countries like Canada and Mexico, where sugar can be purchased at its true market price. Thus, employment among sugar-using firms in the United States is reduced. Further, because foreigners sell less sugar in the United States, they have less purchasing power with which to buy products we export to them. This, too, reduces U.S. employment.



Bil Keane, Inc. King Features Syndicate

Sometimes actions change the incentives people face and they respond accordingly, creating secondary effects that were not intended.

Once the secondary effects of trade restrictions like tariffs on imported goods are taken into consideration, we have no reason to expect that U.S. employment will increase as a result. There may be more jobs in favored industries, but there will be less employment in others. Trade restrictions reshuffle employment rather than increase it. But those who unwittingly fail to consider the secondary effects will miss this point. Clearly, consideration of the secondary effects is an important ingredient of the economic way of thinking.

7. The value of a good or service is subjective. Preferences differ, sometimes dramatically, between individuals. How much is a ticket to see a performance of the Bolshoi Ballet worth? Some people would be willing to pay a very high price, while others might prefer to stay home, even if tickets were free! Circumstances can change from day to day, even for a given individual. Alice, a ballet fan who usually would value the ticket at more than its price of $100, is invited to a party and suddenly becomes uninterested in attending the ballet. Now what is the ticket worth? If she knows a friend who would give her $40 for the ticket, it is worth at least that much. If she advertises the ticket on StubHub and gets $60 for it, a higher value is created. But if someone who doesn't know of the ticket would have been willing to pay even more, then a potential trade creating even more value is missed. If that particular performance is sold out, perhaps someone in town would be willing to pay $120. One thing is certain: The value of the ticket depends on several things, including who uses it and under what circumstances.

Economics recognizes that people can and do value goods differently. Mike may prefer to have a grass field rather than a parking lot next to his workplace and be willing to bear the cost of walking farther from his car each day. Kim, on the other hand, may prefer the parking lot and the shorter walk. As a science, economics does not place any inherent

moral judgment or value on one person's preferences over another's—in economics, all individuals' preferences are counted equally. Because the subjective preferences of individuals differ, it is difficult for one person to know how much another will value an item.

Think about how hard it is to know what would make a good gift for even a close friend or family member. Thus, arranging trades, or otherwise moving items to higher valued users and uses, is not a simple task. The entrepreneurial individual, who knows how to locate the right buyers and arranges for goods to flow to their highest valued use, can sometimes create huge increases in value from existing resources. In fact, moving goods toward those who value them most and combining resources into goods that individuals value more highly are primary sources of economic progress.

8. The test of a theory is its ability to predict. Economic thinking is **scientific thinking**. The proof of the pudding is in the eating. How useful an economic theory is depends on how well it predicts the future consequences of economic action. Economists develop economic theories using scientific thinking based on basic principles. The idea is to predict how incentives will affect decision makers and compare the predictions against real-world events. If the events in the real world are consistent with a theory, we say that the theory has *predictive value* and is therefore valid.

Scientific thinking
Developing a theory from basic principles and testing it against events in the real world. Good theories are consistent with and help explain real-world events. Theories that are inconsistent with the real world are invalid and must be rejected.

If it is impossible to test the theoretical relationships of a discipline, the discipline does not qualify as a science. Because economics deals with human beings who can think and respond in a variety of ways, can economic theories really be tested? The answer to this question is yes, if, on average, human beings respond in predictable and consistent ways to changes in economic conditions. The economist believes that this is the case, even though not all individuals will respond in the specified manner. Economists usually do not try to predict the behavior of a specific individual; instead, they focus on the general behavior of a large number of individuals.

In the 1950s, economists began to do laboratory experiments to test economic theories. Individuals were brought into laboratories to see how they would act in buying and selling situations, under differing rules. For example, cash rewards were given to individuals who, when an auction was conducted, were able to sell at high prices and buy at low prices, thus approximating real-world market incentives. These experiments have verified many of the important propositions of economic theory.

Laboratory experiments, however, cannot duplicate all real economic interactions. How can we test economic theory when controlled experiments are not feasible? This is a problem, but economics is no different from astronomy in this respect. Astronomers can use theories tested in physics laboratories, but they must also deal with the world as it is. They cannot change the course of the stars or planets to see what impact the change would have on the gravitational pull of Earth. Similarly, economists cannot arbitrarily change the prices of cars or unskilled-labor services in real markets just to observe the effects on quantities purchased or levels of employment. However, economic conditions (for example, prices, production costs, technology, and transportation costs), like the location of the planets, do change from time to time. As actual conditions change, an economic theory can be tested by comparing its predictions with real-world outcomes. Just as the universe is the main laboratory of the astronomer, the real-world economy is the primary laboratory of the economist.

1-3 POSITIVE AND NORMATIVE ECONOMICS

As a social science, economics is concerned with predicting or determining the impact of changes in economic variables on the actions of human beings. Scientific economics, commonly referred to as **positive economics**, attempts to determine "what is." Positive economic statements involve potentially verifiable or refutable propositions. For example, "If the price of gasoline rises, people will buy less gasoline." We can statistically investigate (and estimate) the relationship between gasoline prices and gallons sold. We can analyze the facts to determine the correctness of a positive economic statement. Remember, a positive economic statement need not be correct; it simply must be testable.

Positive economics
The scientific study of "what is" among economic relationships.

In contrast, **normative economics** is about "what ought to be," given the preferences and philosophical views of the advocate. Value judgments often result in disagreement about normative economic matters. Two people may differ on a policy matter because one is from one political party and the other is from another, or because one wants cheaper food while the other favors organic farming (which is more expensive), and so on. They may even agree about the expected outcome of altering an economic variable (that is, the positive economics of an issue), but disagree as to whether that outcome is desirable.

Normative economics
Judgments about "what ought to be" in economic matters. Normative economic views cannot be proved false because they are based on value judgments.

Unlike positive economic statements, normative economic statements can neither be confirmed nor proven false by scientific testing. "Business firms should not be concerned with profits." "We should have fewer parking lots and more green space on campus." "The price of gasoline is too high." These normative statements cannot be scientifically tested because their validity rests on value judgments.

Normative economic views can sometimes influence our attitude toward positive economic analysis, however. When we agree with the objectives of a policy, it's easy to overlook the warnings of positive economics. Although positive economics does not tell us which policy is best, it can provide evidence about the likely effects of a policy. Sometimes proponents unknowingly support policies that are actually in conflict with their own goals and objectives. Positive economics, based on sound economic logic, can help overcome this potential problem.

Economics can expand our knowledge of how the real world operates, in both the private and the public (government) sectors. However, it is not always easy to isolate the impact of economic changes. Let's now consider some pitfalls to avoid in economic thinking.

1-4 PITFALLS TO AVOID IN ECONOMIC THINKING

1-4a VIOLATION OF THE *CETERIS PARIBUS* CONDITION CAN LEAD ONE TO DRAW THE WRONG CONCLUSION

Economists often qualify their statements with the words ***ceteris paribus***. *Ceteris paribus* is a Latin term meaning "other things constant." An example of a *ceteris paribus* statement would be the following: "*Ceteris paribus*, an increase in the price of housing will cause buyers to reduce their purchases of housing." However, we live in a dynamic world, so things seldom remain constant. For example, as the price of housing rises, the income of consumers might also increase for unrelated reasons. Each of these factors—higher housing prices and increasing consumer income—will have an impact on housing purchases. In fact, we would generally expect them to have opposite effects: Higher prices are likely to reduce housing purchases, whereas higher consumer incomes are likely to increase them. We point out this pitfall because sometimes statistical data (or casual observations) appear inconsistent with economic theories. In most of these cases, the apparent contradictions reflect the effects of changes in other factors (violations of the *ceteris paribus* conditions). The observed effects are the result of the combination of the changes.

Ceteris paribus
A Latin term meaning "other things constant" that is used when the effect of one change is being described, recognizing that if other things changed, they also could affect the result. Economists often describe the effects of one change, knowing that in the real world, other things might change and also exert an effect.

The task of sorting out the effects of two or more variables that change at the same time is difficult. However, with a strong grip on economic theory, some ingenuity, and enough data, it can usually be done. This is, in fact, precisely the day-to-day work of many professional economists.

1-4b GOOD INTENTIONS DO NOT GUARANTEE DESIRABLE OUTCOMES

There is a tendency to believe that if the proponents of a policy have good intentions, their proposals must be sound. This is not necessarily the case. Proponents may be unaware of some of the adverse secondary effects of their proposals, particularly when they are indirect and observable only over time. Even if their policies would be largely ineffective,

politicians may still find it advantageous to call attention to the severity of a problem and propose a program to deal with it. In other cases, proponents of a policy may actually be seeking a goal other than the one they espouse. They may tie their arguments to objectives that are widely supported by the general populace. Thus, the fact that an advocate says a program will help the economy, expand employment, help the poor, increase wages, improve health care, or achieve some other highly desirable objective does not necessarily make it so.

Let's begin with a couple of straightforward examples. Federal legislation has been introduced that would require all children, including those under age two, to be fastened in a child safety seat when traveling by air. Proponents argue the legislation will increase the survival rate of children in the case of an airline crash and thereby save lives. Certainly, saving lives is a highly desirable objective, but will this really be the case? *Some* lives will probably be saved. But what about the secondary effects? The legislation would mean that a parent traveling with a small child would have to purchase an additional ticket, which will make it more expensive to fly. As a result, many families will choose to travel by auto rather than by air. Because the likelihood of a serious accident per mile traveled in an automobile is several times higher than for air travel, more automobile travel will result in more injuries and fatalities. In fact, studies indicate that the increase in injuries and fatalities from additional auto travel will exceed the number of lives saved by airline safety seats.[4] Thus, even though the intentions of the proponents may well be lofty, there is reason to believe that the net impact of their proposal will be more fatalities and injuries than would be the case in the absence of the legislation.

The stated objective of the Endangered Species Act is to protect various species that are on the verge of extinction. Certainly, this is an admirable objective, but there is nonetheless reason to question the effectiveness of the act itself. The Endangered Species Act allows the government to regulate the use of individual private property if an endangered species is found present on *or* near an individual's land. To avoid losing control of their property, many landowners have taken steps to make their land less attractive as a natural habitat for these endangered species. For example, the endangered red-cockaded woodpecker nests primarily in old trees within southern pine ecosystems. Landowners have responded by cutting down trees the woodpeckers like to nest in to avoid having one nest on their land, which would result in the owner losing control of this part of their property. The end result is that the habitat for these birds has actually been disappearing more rapidly.

As you can see, good intentions are not enough. An unsound proposal will lead to undesirable outcomes, even if it is supported by proponents with good intentions. Sound economic reasoning can help us better anticipate the secondary effects of policy changes and avoid the pitfall of thinking that good intentions are enough.

1-4c ASSOCIATION IS NOT CAUSATION

In economics, identifying cause-and-effect relationships is very important. But statistical association alone cannot establish this causation. Perhaps an extreme example will illustrate the point. Suppose that each November, a witch doctor performs a voodoo dance designed to summon the gods of winter, and that soon after the dance is performed, the weather in fact begins to turn cold. The witch doctor's dance is associated with the arrival of winter, meaning that the two events appear to have happened in conjunction with one another. But is this really evidence that the witch doctor's dance actually caused the arrival of winter? Most of us would answer no, even though the two events seemed to happen in conjunction with one another.

Those who argue that a causal relationship exists simply because of the presence of statistical association are committing a logical fallacy known as the *post hoc propter ergo hoc* fallacy. Sound economics warns against this potential source of error.

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[4]For a detailed analysis of this subject, see Thomas B. Newman, Brian D. Johnston, and David C. Grossman, "Effects and Costs of Requiring Child-Restraint Systems for Young Children Traveling on Commercial Airplanes," *Archives of Pediatrics and Adolescent Medicine* 157 (October 2003): 969–74.

1-4d THE FALLACY OF COMPOSITION: WHAT'S TRUE FOR ONE MIGHT NOT BE TRUE FOR ALL

What is true for the individual (or subcomponent) may not be true for the group (or the whole). If you stand up for an exciting play during a football game, you will be better able to see. But what happens if everyone stands up at the same time? Will everyone be better able to see? The answer is, of course, no. Thus, what is true for a single individual does not necessarily apply to the group as a whole. When everyone stands up, the view for individual spectators fails to improve; in fact, it may even become worse.

People who mistakenly argue that what is true for the part is also true for the whole are said to be committing the **fallacy of composition**. What is true for the individual can be misleading and is often fallacious when applied to the entire economy. The fallacy of composition highlights the importance of considering both a micro view and a macro view in the study of economics. **Microeconomics** focuses on the decision-making of consumers, producers, and resource suppliers operating in a narrowly defined market, such as that for a specific good or resource. Because individual decision-makers are the moving force behind all economic action, the foundations of economics are clearly rooted in a micro view.

As we have seen, however, what is true for a small unit may not be true in the aggregate. **Macroeconomics** focuses on how the aggregation of individual micro-units affects our analysis. Like microeconomics, it is concerned with incentives, prices, and output. Macroeconomics, however, aggregates markets, lumping together all 128 million households in this country. Macroeconomics involves topics like total consumption spending, saving, and employment, in the economy as a whole. Similarly, the nation's 32 million business firms are lumped together in "the business sector." What factors determine the level of aggregate output, the rate of inflation, the amount of unemployment, and interest rates? These are macroeconomic questions. In short, macroeconomics examines the forest rather than the individual trees. As we move from the microcomponents to a macro view of the whole, it is important that we beware of the fallacy of composition.

Fallacy of composition
Erroneous view that what is true for the individual (or the part) will also be true for the group (or the whole).

Microeconomics
The branch of economics that focuses on how human behavior affects the conduct of affairs within narrowly defined units, such as individual households or business firms.

Macroeconomics
The branch of economics that focuses on how human behavior affects outcomes in highly aggregated markets, such as the markets for labor or consumer products.

KEY POINTS

- Scarcity and choice are the two essential ingredients of economic analysis. A good is scarce when the human desire for it exceeds the amount freely available. As a result of scarcity, both individuals and societies must choose among the available alternatives. Every choice entails a trade-off.
- Every society will have to devise some method of rationing scarce resources among competing uses. Markets generally use price as the rationing device. Competition is a natural outgrowth of the need to ration scarce goods.
- Scarcity and poverty are not the same thing. Absence of poverty implies that some basic level of need has been met. An absence of scarcity implies that our desires for goods are fully satisfied. We may someday eliminate poverty, but scarcity will always be with us.
- Economics is a way of thinking that emphasizes eight points:
  1. The use of scarce resources to produce a good always has an opportunity cost.
  2. Individuals make decisions purposefully, always seeking to choose the option they expect to be most consistent with their personal goals.
  3. Incentives matter. The likelihood of people choosing an option increases as personal benefits rise and personal costs decline.
  4. Economic reasoning focuses on the impact of marginal changes because it is the marginal benefits and marginal costs that influence choices.
  5. Because information is scarce, uncertainty is a fact of life.
  6. In addition to their direct impact, economic changes often generate secondary effects.
  7. The value of a good or service is subjective and varies with individual preferences and circumstances.
  8. The test of an economic theory is its ability to predict and explain events in the real world.
- Economic science is positive; it attempts to explain the actual consequences of economic actions or "what is." Normative economics goes further, applying value judgments to make suggestions about what "ought to be."
- Microeconomics focuses on narrowly defined units, while macroeconomics is concerned with highly aggregated units. When shifting focus from micro to macro, one must beware of the fallacy of composition: What's good for the individual may not be good for the group as a whole.
- The origin of economics as a science dates to the publication of *An Inquiry into the Nature and Causes of the Wealth of Nations* by Adam Smith in 1776. Smith believed a market economy would generally bring individual self-interest and the public interest into harmony.

CRITICAL ANALYSIS QUESTIONS

1. Indicate how each of the following changes would influence the incentive of a decision-maker to undertake the action described.
   a. A reduction in the temperature from 80° to 50° on one's decision to go swimming
   b. A change in the meeting time of the introductory economics course from 11:00 A.M. to 7:30 A.M. on one's decision to attend the lectures
   c. A reduction in the number of exam questions that relate directly to the text on the student's decision to read the text
   d. An increase in the price of beef on one's decision to buy steak
   e. An increase in the rental rates of apartments on one's decision to build additional rental housing units
2. "The government should provide such goods as health care, education, and highways because it can provide them for free." Is this statement true or false? Explain your answer.
3. a. What method is used to ration goods in a market economy? How does this rationing method influence the incentive of individuals to supply goods, services, and resources to others?
   b. How are grades rationed in your economics class? How does this rationing method influence student behavior? Suppose the highest grades were rationed to those whom the teacher liked best. How would this method of rationing influence student behavior?
4. *In recent years, the child tax credit has been increased in the United States. According to the basic principles of economics, how will the birthrate be affected by policies that reduce the taxes imposed on those with children?
5. *"The economic way of thinking stresses that good intentions lead to sound policy." Is this statement true or false? Explain your answer.
6. Self-interest is a powerful motivator. Does this necessarily imply that people are selfish and greedy? Do self-interest and selfishness mean the same thing?
7. A restaurant offers an "all you can eat" lunch buffet for $10. Shawn has already eaten three servings, and is trying to decide whether to go back for a fourth. Describe how Shawn can use marginal analysis to make his decision.
8. *"Individuals who economize are missing the point of life. Money is not so important that it should rule the way we live." Evaluate this statement.
9. *"Positive economics cannot tell us which agricultural policy is better, so it is useless to policy makers." Evaluate this statement.
10. *"I examined the statistics for our basketball team's wins last year and found that, when the third team played more, the winning margin increased. If the coach played the third team more, we would win by a bigger margin." Evaluate this statement.
11. Which of the following are positive economic statements and which are normative?
    a. The speed limit should be lowered to 55 miles per hour on interstate highways.
    b. Higher gasoline prices cause the quantity of gasoline that consumers buy to decrease.
    c. A comparison of costs and benefits should not be used to assess environmental regulations.
    d. Higher taxes on alcohol result in less drinking and driving.
12. Why can't we consume as much of each good or service as we would like? If we become richer in the future, do you think we will eventually be able to consume as much of everything as we would like? Why or why not?
13. Suppose that in an effort to help low-skill workers the government raises the legal minimum wage to $25 per hour. Can you think of any unintended secondary effects that will result from this action? Will all low-skill workers be helped by the minimum wage law?
14. Should the United States attempt to reduce air and water pollution to zero? Why or why not?

*Asterisk denotes questions for which answers are given in Appendix B.

CHAPTER 2

Some Tools of the Economist

The key insight of Adam Smith's Wealth of Nations *is misleadingly simple: if an exchange between two parties is voluntary, it will not take place unless both believe they will benefit from it. Most economic fallacies derive from the neglect of this simple insight, from the tendency to assume that there is a fixed pie, that one party can gain only at the expense of another.* **—Milton and Rose Friedman**[1]

In the preceding chapter, you were introduced to the economic way of thinking. We will now begin to apply that approach. This chapter focuses on five topics: opportunity cost, trade, property rights, the potential output level of an economy, and the creation of wealth. These seemingly diverse topics are in fact highly interrelated. For example, the opportunity cost of goods determines which ones an individual or a nation should produce and which should be acquired through trade. In turn, the ways in which trade and property rights are structured influence the amount of output and wealth an economy can create. These tools of economics are important for answering the basic economic questions: what to produce, how to produce it, and for whom it will be produced.

As you read this chapter, look for answers to the following questions:

- What is opportunity cost? Why do economists place so much emphasis on it?
- How does private ownership affect the use of resources? Will private owners pay any attention to the desires of others?
- What does a production possibilities curve demonstrate?
- What are the sources of gains from trade? How does trade influence our modern living standards?
- What are the two major methods of economic organization? How do they differ?

[1]Milton Friedman and Rose Friedman, *Free to Choose* (Harcourt Brace, 1990), 13.

2-1 WHAT SHALL WE GIVE UP?

Because of scarcity, we can't have everything we want. As a result, we constantly face choices that involve trade-offs between our competing desires. Most of us would like to have more time for leisure, recreation, vacations, hobbies, education, and skill development. We would also like to have more wealth, a larger savings account, and more consumable goods. However, all these things are scarce, in the sense that they are limited. Our efforts to get more of one will conflict with our efforts to get more of others.

2-1a OPPORTUNITY COST

The choice to do one thing is, at the same time, a choice *not* to do something else. Your choice to spend time reading this book is a choice not to spend the time watching Netflix, posting on social media, or hanging out with friends. These things must be given up because you decided to read this book instead. As we indicated in Chapter 1, the highest valued alternative sacrificed in order to choose an option is called the *opportunity cost* of that choice.

Opportunity costs are subjective; they depend on the value the decision-maker places on alternative options. Because of this, opportunity cost can never be directly measured by someone other than the decision-maker. Only the person choosing can know the value of what is given up.[2] This makes it difficult for someone other than the decision-maker—including experts and elected officials—to make choices on that person's behalf. Moreover, not only do people differ in the trade-offs they prefer to make, but their preferences also change with time and circumstances. Thus, the decision-maker is the only person who can properly evaluate the options and decide which is the best, given his or her preferences and current circumstances.

LeBron James understands opportunity cost. As a high school player, James was already one of the best basketball players in the nation. He had received numerous scholarship offers. However, after high school graduation, LeBron decided to go directly into the NBA because the opportunity cost of college was simply too high. He was selected as the first pick in the 2003 NBA draft, signing a three-year contract worth almost $13 million, with an option for a fourth year at $5.8 million. Would you have skipped college if your opportunity cost was $19 million?

Joe Camporeale/Cal Sport Media/Alamy

Monetary costs reflect opportunities foregone, and they can be measured objectively in terms of dollars and cents. If you spend $20 on a new cell phone case, you must now forgo the other items you could have purchased with the $20—a new shirt, for example. However, it is important to recognize that monetary costs do not represent the total opportunity cost of an option. The total cost of attending a football game, for example, is the highest valued opportunity lost as a result of both the time you spend at the game and the amount of money you pay for your ticket. In cases like buying and downloading a game from an app store, for which there is minimal outlay of time, effort, and other resources to make the purchase, the monetary cost will approximate the total cost. Contrast this with a decision to sit on your sofa and play your new game on your cell phone, which involves little or no monetary cost, but has a clear opportunity cost of your time. In this second case, the monetary cost is a poor measure of the total cost.

2-1b OPPORTUNITY COST AND THE REAL WORLD

Is real-world decision making influenced by opportunity costs? Consider your own decision to attend college. Your opportunity cost of going to college is the value of the next best alternative, which could be measured as the salary you would earn if you had chosen to go directly into full-time work instead. Every year you stay in college, you give up what you could have earned by

[2]See James M. Buchanan, *Cost and Choice* (Chicago: Markham, 1969), for a classic work on the relationship between cost and choice.

CHUCK KENNEDY/KRT/Newscom

Outstanding Economist: Thomas Sowell (1930–)

Thomas Sowell, a long-time senior fellow at the Hoover Institution at Stanford University, recognizes the critical importance of the institutions—the "rules of the game"—that shape human interactions. His book *Knowledge and Decisions* stresses the role of knowledge in the economy and how different institutional arrangements compare at using scarce information. Sowell is the author of many books and journal articles and for 25 years wrote a nationally syndicated column that appeared in more than 150 newspapers. His writings address subjects ranging from race preferences and cultural differences to the origins and ideology of political conflict.

working that year. Typically, students incur opportunity costs of $100,000 or more in forgone income during their stay in college.

But what if the opportunity cost of attending college changes? How will it affect your decision? Suppose, for example, that you received a job offer today for $250,000 per year as an athlete or an entertainer, but the job would require so much travel that school would be impossible. Would this change in the opportunity cost of going to college affect your choice as to whether to continue in school? It likely would. Going to college would mean you would have to say good-bye to the huge salary you've been offered. (See the accompanying illustration on LeBron James for a good example.) You can clearly tell from this example that the monetary cost of college (tuition, books, and so forth) isn't the only factor influencing your decision. Your opportunity cost plays a part, too.

Consider another decision made by college students—whether to attend a particular class lecture. The monetary cost of attending class (bus fare, parking, gasoline costs, and so on) remains fairly constant from day to day. Why then do students choose to attend class on some days and not on others? Even though the monetary cost of attending class is fairly constant, a student's opportunity cost can change dramatically from day to day. Some days, the next best alternative to attending class may be sleeping in or streaming a movie. Other days, the opportunity cost may be substantially larger, perhaps the value of attending a big football game, getting an early start on spring break, or having additional study time for a crucial exam in another class. As options like these increase the cost of attending class, more students will decide not to attend.

Failure to consider opportunity cost often leads to unwise decision-making. Suppose that your community builds a beautiful new civic center. The mayor, speaking at the dedication ceremony, tells the world that the center will improve the quality of life in your community. People who understand the concept of opportunity cost may question this view. If the center had not been built, the resources might have funded construction of a new hospital, improvements to the educational system, or housing for low-income families. Will the civic center contribute more to the well-being of people in your community than would these other facilities? If so, it was a wise investment. If not, your community will be worse off than it would have been if decision-makers had chosen a higher valued project.

2-2 TRADE CREATES VALUE

Why do individuals trade with each other, and what is the significance of this exchange? We have learned that value is subjective. It is wrong to assume that a particular good or service has a fixed objective value just because it exists.[3] The value of goods and services generally depends on who uses them, and on circumstances, such as when and where they are used, as well as on the physical characteristics. Some people love onions, whereas others dislike them. Thus, when we speak of the "value of an onion," this makes sense only within the context of its value to a specific person. Similarly, to most people an umbrella is more valuable on a rainy day than on a sunny one.

[3]An illuminating discussion of this subject, termed the "physical fallacy," is found in Thomas Sowell, *Knowledge and Decisions* (New York: Basic Books, 1980), 67–72.

Consider the case of Janet, who loves tomatoes but hates onions, and Brad, who loves onions but hates tomatoes. They go out to dinner together and the waiter brings their salads. Brad turns to Janet and says, "I'll trade you the tomatoes on my salad for the onions on yours." Janet gladly agrees to the exchange. This simple example will help us illustrate two important aspects of voluntary exchange.

1. When individuals engage in a voluntary exchange, both parties are made better off. In the previous example, Janet has the option of accepting or declining Brad's offer of a trade. If she accepts his offer, she does so *voluntarily*. Janet would agree to this exchange only if she expects to be better off as a result. Because she likes tomatoes better than onions, Janet's enjoyment of her salad will be greater with this trade than without it. On the other side, Brad has voluntarily made this offer of an exchange to Janet because Brad believes he will also be better off as a result of the exchange.

People tend to think of making, building, and creating things as productive activities. Agriculture, software development, and manufacturing are like this. On the one hand, they create something genuinely new, something that was not there before. On the other hand, trade—the mere exchange of one thing for another—does not create new material items. It is tempting to think that if nothing new is created, the action cannot generate gain. But this is a fallacy, and the motivation for trade illustrates why. An exchange will not occur unless both parties agree to it and they will not do so unless the exchange makes them better off. As the chapter-opening quotation of Milton and Rose Friedman illustrates, many errors in economic reasoning happen when we forget that voluntary trades, like the one between Janet and Brad, make both parties better off.

2. By channeling goods and resources to those who value them most, trade creates value and increases the wealth created by a society's resources. Because preferences differ among individuals, the value of an item can vary greatly from one person to another. Therefore, trade can create value by moving goods from those who value them less to those who value them more. The simple exchange between Janet and Brad also illustrates this point. Imagine for a moment that Brad and Janet had never met and instead were both eating their salads alone. Without the ability to engage in this exchange, both would have eaten their salads but would not have had as much enjoyment from them. When goods are moved to individuals who value them more, the total value created by a society's limited resources is increased. The same two salads create more value when the trade occurs than when it doesn't.

It is easy to think of material things as wealth, but material things are not wealth until they are in the hands of someone who values them. A highly technical medical reference book that is of no value to an art collector may be worth several hundred dollars to a doctor. Similarly, a painting that is unappreciated by a doctor may be of great value to an art collector. Therefore, a voluntary exchange that moves the medical reference book to the doctor and the painting to the art collector will increase the value of both goods. By channeling goods and resources toward those who value them most, trade creates wealth for both the trading partners and for the nation.

2-2a TRANSACTION COSTS—A BARRIER TO TRADE

Transaction costs
The time, effort, and other resources needed to search out, negotiate, and complete an exchange.

Have you ever been sitting at home late at night, hungry, wishing you could have some food from your favorite restaurant, but felt it wasn't worth the time and effort to get dressed and make the drive? Have you ever seen an item you wanted on a great Black Friday sale but didn't feel like dealing with the lines and crowds just to get the lower price? The costs of the time, effort, and other resources necessary to search out, negotiate, and conclude an exchange are called **transaction costs**. High transaction costs can be a barrier to potentially productive exchange.

Transaction costs are sometimes high because of physical obstacles, such as oceans, rivers, and mountains, that make it difficult to get products to customers. Investment in roads and improvements in transportation and communications can reduce these transaction costs. In other instances, transaction costs may be high because of the lack of information. For example, you may want a new coat in a particular style, color, and size but don't know which store has it at an attractive price. The time and energy you spend gathering this information are part of your transaction costs. In still other cases, transaction costs are high because of political obstacles, such as taxes, licensing requirements, government regulations, price controls, tariffs, or quotas. Regardless of whether the roadblocks are physical, informational, or political, high transaction costs reduce the potential gains from trade.

Because of transaction costs, we should not expect all potentially valuable trades to take place, any more than we expect all useful knowledge to be learned, all safety measures to be taken, or all potential "A" grades to be earned. The cost of information, transportation, and other elements of transaction costs will sometimes be so great that potential gains from trade will go unrealized.

Reductions in transaction costs will increase the gains from trade. In recent years, technology has reduced the transactions costs of numerous exchanges. With just a few swipes on a touch screen, buyers can now acquire information about potential sellers and virtually any product. Phone apps are routinely used to shop, book travel, obtain event tickets, order food, or even get a ride home. These reductions in transaction costs have increased the volume of trade and have enhanced living standards.

Moreover, reductions in transaction costs can be profitable, and they can even make it possible for us to achieve more value from our existing assets. Examples abound. Uber and Lyft have grown rapidly by reducing the transaction costs of arranging for ground transportation. Airbnb has become a sizable business by reducing the transaction costs between apartment and housing owners and those seeking short-term living quarters. In turn, these reductions in transaction costs have increased the value generated by our cars, houses, and apartments.

Are items less costly during Black Friday sales once you factor in the transaction costs of dealing with the lines and crowds? To some people, it isn't and they find it cheaper to simply pay full price on a different day.

Philip Pacheco/Getty Images

2-2b THE MIDDLEMAN AS A COST REDUCER

Because it is costly for buyers and sellers to find each other and to negotiate the exchange, an entrepreneurial opportunity exists for people to become **middlemen**. Middlemen provide buyers and sellers information at a lower cost and arrange trades between them. Many people think middlemen just add to the buyer's expense without performing a useful function. However, because of transaction costs, without middlemen, many trades would never happen (nor would the gains from them be realized). Services like Uber Eats and Postmates are middlemen that, for a fee, are willing to solve the problem of getting food from your favorite restaurant to you when you don't feel like making the drive.

Middlemen
People who buy and sell goods or services or arrange trades. A middleman reduces transaction costs.

Grocers are also middlemen. Each of us could deal with farmers directly to buy our food—probably at a lower monetary cost. But that would have a high opportunity cost. Finding and dealing with different farmers for every product we wanted to buy would take a lot of time. Stockbrokers, realtors, publishers, and merchants of all sorts are other kinds of middlemen. For a fee, they reduce transaction costs for both buyers and sellers. By making exchanges cheaper and more convenient, middlemen expand the number of trades. In so doing, they themselves create value.

2-3 THE IMPORTANCE OF PROPERTY RIGHTS

Property rights
The rights to use, control, and obtain the benefits from a good or resource.

Private property rights
Property rights that are exclusively held by an owner and protected against invasion by others. Private property can be transferred, sold, leased, or mortgaged at the owner's discretion.

The buyer of an orange, a laptop, a television, or an automobile generally takes the item home. The buyer of a cargo ship, satellite, or an office building, though, may never touch it. When exchange occurs, it's really the **property rights** of the item that change hands.

Private property rights involve three things:

1. the right to exclusive use of the property and to the income or benefits it produces (that is, the owner has sole possession, control, and use of the property, including the right to exclude others);
2. legal protection against invasion from other individuals who would seek to use or abuse the property without the owner's permission; and
3. the right to transfer, sell, exchange, rent, lease, or mortgage the property.

Private owners can do anything they want with their property as long as they do not use it in a manner that invades or infringes on the rights of another. For example, I cannot throw the hammer that I own through the television that you own. If I did, I would be violating your property right to your television. The same is true if I operate a factory spewing out pollution harming you or your land.[4] Because an owner has the right to control the use of property, the owner also must accept responsibility for the outcomes of that control. Private property rights represent a bundle of legal rights that are often separable, as an owner may lease the usage rights to another individual.

In contrast to private ownership, common-property ownership occurs when multiple people simultaneously have or claim ownership rights to a good or resource. If the resource is open to all, none of the common owners can prevent the others from using or damaging the property. Most beaches, rivers, and roads are examples of commonly owned property. The distinction between private- and common-property ownership is important because common ownership does not create the same powerful incentives for conservation and efficient use as private ownership. Economists are fond of saying that when everybody owns something, nobody owns it.

KEYS TO ECONOMIC PROSPERITY

Private Ownership

Private ownership provides people with a strong incentive to take care of things and develop resources in ways that are highly valued by others.

Clearly defined and enforced private property rights are a key to economic progress because of the powerful incentive effects that private ownership generates. The following four incentives are particularly important:

1. Private owners can gain by employing their resources in ways that are beneficial to others, and they bear the opportunity cost of ignoring the wishes of others. Realtors often advise homeowners to use neutral colors for countertops and walls in their house because they will improve the resale value of the home. As a private owner, you could install bright green fixtures and paint your walls deep purple, but you will bear the cost (in terms of a lower selling price) of ignoring the wishes of others who might want to buy your house later. Conversely, by fixing up a house and doing things to it that others find beneficial, you can reap the benefit of a higher selling price.

[4]For a detailed explanation of how property rights protect the environment, with several real-world examples, see Roger E. Meiners and Bruce Yandle, *The Common Law: How It Protects the Environment* (Bozeman, MT: PERC, 1998), available online at www.perc.org.

Similarly, you could spray paint orange designs all over the outside of your brand-new car, but private ownership gives you an incentive not to do so because the resale value of the car depends on the value that *others* place on it.

Consider a parcel of undeveloped, privately owned land near a university. The private owner of the land can do many things with it. For example, she could leave it undeveloped, turn it into a metered parking lot, erect a restaurant, or build rental housing. Will the wishes and desires of the nearby students be reflected in her choice, even though they are not the owners of the property? Yes. Whichever use is more highly valued by potential customers will earn her the highest investment return. If housing is relatively hard to find but there are plenty of other restaurants, the profitability of using her land for housing will be higher than the profitability of using it for a restaurant. Private ownership gives her a strong incentive to use her property in a way that will also fulfill the wishes of others. If she decides to leave the property undeveloped instead of erecting housing that would benefit the students, she will bear the opportunity cost of forgone rental income from the property.

Consider a second example: the incentive structure confronted by the owner of an apartment complex near your campus. The owner may not care much for swimming pools, workout facilities, study desks, washers and dryers, or green areas. Nonetheless, private ownership provides the owner with a strong incentive to provide these items if students and other potential customers value them more than the costs of their provision. Why? Because tenants will be willing to pay higher rents to live in a complex with amenities that they value. The owners of rental property can profit by providing an additional amenity that tenants value as long as the tenants are willing to pay enough additional rent to cover their cost.

The Wall Street Journal/Cartoon Features Syndicate

A private owner has a strong incentive to do things with his or her property that increase its value to others.

2. Private owners have a strong incentive to care for and properly manage what they own. Will Ed regularly change the oil in his car? Will he see to it that the seats don't get torn? Probably so, because being careless about these things would reduce the car's value, both to him and to any future owner. The car and its value—the sale price if he sells it—belong just to Ed, so he would bear the burden of a decline in the car's value if the oil ran low and ruined the engine, or if the seats were torn. Similarly, he would capture the value of an expenditure that improved the car, like a new paint job. As the owner, Ed has both the authority and the incentive to protect the car against harm or neglect and even to enhance its value. Private property rights give owners a strong incentive for good stewardship.

Do you take equally good care not to damage an apartment you rent as you would your own house? If you share an apartment with several roommates, are the common areas of the apartment (such as the kitchen and living room) as neatly kept as the bedrooms? Based on economic theory, we guess that the answer to both of these questions is probably "No."

3. Private owners have an incentive to conserve for the future—particularly if the property is expected to increase in value. People have a much stronger incentive to conserve privately owned property than they do commonly owned property. For example, when Steven was in college, the general rule among his

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Dream Pictures/Jupiter Images

When apartments and other investment properties are owned privately, the owner has a strong incentive to provide amenities that others value highly relative to their cost.

roommates was that any food or drink in the house was common property—open game for the hungry or thirsty mouth of anyone who stumbled across it. There was never a reason for Steven to conserve food or drinks in the house because it would be quickly consumed by a roommate coming in later that night. When Steven first started living alone, he noticed a dramatic change in his behavior. When he ordered a pizza, he would save some for the next day's lunch rather than eating it all that night. Steven began counting his drinks before he had one to make sure there were enough left for the next day. When Steven was the sole owner, he began delaying his current consumption to conserve for the future because he was the one, not his roommates, who reaped the benefit from his conservation.

Similarly, when more than one individual has the right to drill oil from an underground pool of oil, each has an incentive to extract as much as possible, as quickly as possible. Any oil conserved for the future will probably be taken by someone else. In contrast, when only one owner has the right to drill, the oil will be extracted more slowly. The same applies to the common-property problems involved in overfishing of the sea compared with fisheries that use privately owned ponds.

Someone who owns land, a house, or a factory has a strong incentive to bear costs now, if necessary, to preserve the asset's value for the future. The owner's wealth is tied up in the value of the property, which reflects nothing more than the net benefits that will be available to a future owner. Thus, the wealth of private owners is dependent upon their willingness and ability to look ahead, maintain, and conserve those things that will be more highly valued in the future. This is why private ownership is particularly important for the optimal conservation of natural resources.

4. Private owners have an incentive to lower the chance that their property will cause damage to the property of others. Private ownership links responsibility with the right of control. Private owners can be held accountable for damage done to others through the misuse of their property. A car owner has a right to drive his car, but will be held accountable if the brakes aren't maintained and the car damages someone else's property. Similarly, a chemical company has control over its products, but, exactly for that reason, it is legally liable for damages if it mishandles the chemicals. Courts of law recognize and enforce the authority granted by ownership, but they also enforce the responsibility that goes with that authority. Because private property owners can be held accountable for damages they cause, they have an incentive to use their property responsibly and take steps to reduce the likelihood of harm to others. A property owner, for example, has an incentive to cut down a dying tree before it falls into a neighbor's house and to leash or restrain his or her dog if it's likely to bite others.

2-3a PRIVATE OWNERSHIP AND MARKETS

Private ownership and competitive markets provide the foundation for cooperative behavior among individuals. When private property rights are protected and enforced, the permission of the owner must be sought before anyone else can use the property. Put another way, if you want to use a good or resource, you must either buy or lease it from the owner. This means that each of us must face the cost of using scarce resources. Furthermore, market prices give private owners a strong incentive to consider the desires of others and use their resources in ways others value highly relative to cost.

Friedrich Hayek, a Nobel Prize winner in economics, used the expression "the extended order" to refer to the tendency for markets to lead perfect strangers from different backgrounds around the world to cooperate with one another. Let's go back to the example of the property owner who has the choice of leaving her land idle or building housing to benefit students. The landowner might not know any students in her town nor particularly care about providing them housing. However, because she is motivated by market prices, she might build an apartment complex and eventually do business with a lot of students she never intended to get to know. In the process, she will purchase materials, goods, and services produced by other strangers.

APPLICATIONS IN ECONOMICS

Protecting Endangered Species with Private Property Rights and Trade

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Have you ever wondered why the wild tiger is endangered in much of the world but most domestic cats are thriving? Or why the northern spotted owl is threatened in the West but chickens are not? Why have elephant and rhinoceros populations declined in number but not cattle or hogs? The incentives accompanying private ownership and freedom to trade provide the answer.

To understand why many wild animals are scarce, consider what happens with animals that provide food, most of which are privately owned. Suppose that people decided to eat more beef. Beef prices would rise, and the incentive for individuals to dedicate land and other resources to raise cattle would increase so they could sell more. The result would be more cows. Because cattle are privately owned, the market demand for beef *creates* the incentive for suppliers to maintain herds of cattle and to protect them under a system of private ownership.

In some ways, the rhinoceros is similar to a cow. A rhino, like a large bull in a cattle herd, may charge if disturbed. At 3,000 pounds, a charging rhino can be very dangerous to humans. Also like cattle, rhinos can be valuable to people—a single horn from a black rhino, used for artistic carvings and medicines, can sell for many thousands of dollars.

But the rhino is endangered because trade is not allowed. Even though rhino horn can be harvested without killing the animal, the Convention on International Trade in Endangered Species (CITES) forbids selling the horn as part of its overall policy of banning trade in products of endangered species. People who want black rhino horn—and demand for it has been rising—cannot obtain it legally. When hunting rhinos and selling their horns are illegal, trade goes underground. Rhinos become a favorite target of poachers, who are sometimes even assisted by local people eager to reap some value from the horn. To stem poaching, many nations outlaw rhino hunting and forbid the sale of rhino parts. Sadly, this has not reduced the number of rhino killings.[1] After the government banned domestic trade in rhino horns in South Africa in 2009, the number of illegal killings went up. Today, over 1,000 rhinos are killed annually in South Africa, compared to less than 100 prior to the ban. In 2017, 21 government officials were even arrested for poaching-related crimes. Most of the poaching occurs in the country's famed Krueger National Park.[2]

Some parts of Africa, however, have been able to increase the numbers of wild animals such as elephants, lions, and white rhinos, by giving private owners and local communities control of them. Namibia, for example, gave ownership rights to private landholders in the 1960s and extended them to communal lands in the mid-1990s. With this policy change, tribal communities began to hold ownership rights over the wildlife in their areas and were able to keep all revenues from wildlife. This transformed the incentives in Namibia.

Namibian communities have been receiving nearly $10 million a year from wildlife, says Fred Nelson, a wildlife expert who spent 11 years in Africa developing wildlife management partnerships. Since the revenues come primarily from trophy hunting and tourism ventures, local communities had a strong incentive to protect the animals and their habitat.[3] These new incentives led to a natural resurgence in wildlife numbers. Even the number of black rhinos in Namibia rose from 707 in 1997 to 1,134 in 2004. Clearly, property rights to ownership or use and freedom to trade are among the keys to conservation. These incentives can spur protection, care, and increased numbers, just as they do with cattle. Indeed, after litigation by private rhino holders, a judge in South Africa lifted the ban on domestic trade in rhino horn. Trade will give those farmers and communities that own rhinos an incentive to protect them. But where ownership and trade are prohibited, the protection will be missing and poaching will probably continue.

[1]See Michael De Alessi, *Private Conservation and Black Rhinos in Zimbabwe: The Savé Valley and Bubiana Conservancies*, available online at www.cei.org/gencon/025,01687.cfm.

[2]See Rachael Bale, "More Than 1,000 Rhinos Killed by Poachers in South Africa Last Year," *National Geographic*, January 25, 2018, at news.nationalgeographic.com/2018/01/wildlife-watch-rhino-poaching-crisis-continues-south-africa/ and "Rhino Poaching in South Africa at Record Levels Following 18% Rise in Killings," *The Guardian*, May 15, 2015, at www.theguardian.com/world/2015/may/11/rhino-poaching-in-south-africa-at-record-levels-following-18-rise-in-killings.

[3]Fred Nelson, "Conservation Can Work: Southern Africa Shows Its Neighbours How," *Swara* (East African Wildlife Society) 32, no. 2 (2009): 36–37.

Things are different in countries that don't recognize private-ownership rights or enforce them. In his book *The Mystery of Capital*, economist Hernando de Soto argues that the lack of well-defined and enforced property rights explains why some underdeveloped countries (despite being market based) have made little economic progress. He points out that in many of these nations, generations of people have squatted on the land without any legal deed giving them formal ownership. These squatters cannot borrow against the land or the homes they built on it to generate capital because they don't have a deed to it, nor can they prevent someone else from arbitrarily taking the land away from them. Private ownership and markets can also play an important role in environmental protection and natural-resource conservation. Ocean fishing rights, tradable rights to pollute, and private ownership of endangered species are just some examples. The accompanying Applications in Economics feature, "Protecting Endangered Species with Private Property Rights and Trade," explores some of these issues.

2-4 PRODUCTION POSSIBILITIES CURVE

People try to get the most from their limited resources by making purposeful choices and engaging in economizing behavior. This can be illustrated using a conceptual tool called the **production possibilities curve**. The production possibilities curve shows the maximum amount of any two products that can be produced from a fixed set of resources, and the possible trade-offs in production between them. The real economy obviously produces more than just two products, but this concept can help us understand a number of important economic ideas.

Production possibilities curve
A curve that outlines all possible combinations of total output that could be produced, assuming (1) a fixed amount of productive resources, (2) a given amount of technical knowledge, and (3) full and efficient use of those resources. The slope of the curve indicates the amount of one product that must be given up to produce more of the other.

Exhibit 1 illustrates the production possibilities curve for Susan, an intelligent economics major. This curve indicates the combinations of English and economics grades that she thinks she can earn if she spends a total of ten hours per week studying for the two subjects. Currently, she is choosing to study the material in each course that she expects will help her grade the most for the time spent, and she is allocating five hours of study time to each course. She expects that this amount of time, carefully spent on each course, will allow her to earn a B grade in both, indicated at point *T*. But if she were to take some time away from studying one of the two subjects and spend it studying the other, she could raise her grade in the course receiving more study time. However, it would come at the cost of a lower grade in the course. If she were to move to point *S* by spending more hours on economics and fewer on English, for example, her expected

EXHIBIT 1

Production Possibilities Curve for Susan's Grades in English and Economics

The production possibilities for Susan, in terms of grades, are illustrated for ten hours of total study time. If Susan studied ten hours per week in these two classes, she could attain a D in English and an A in economics (point *S*), a B in English and a B in economics (point *T*), or an A in English and a D in economics (point *U*).