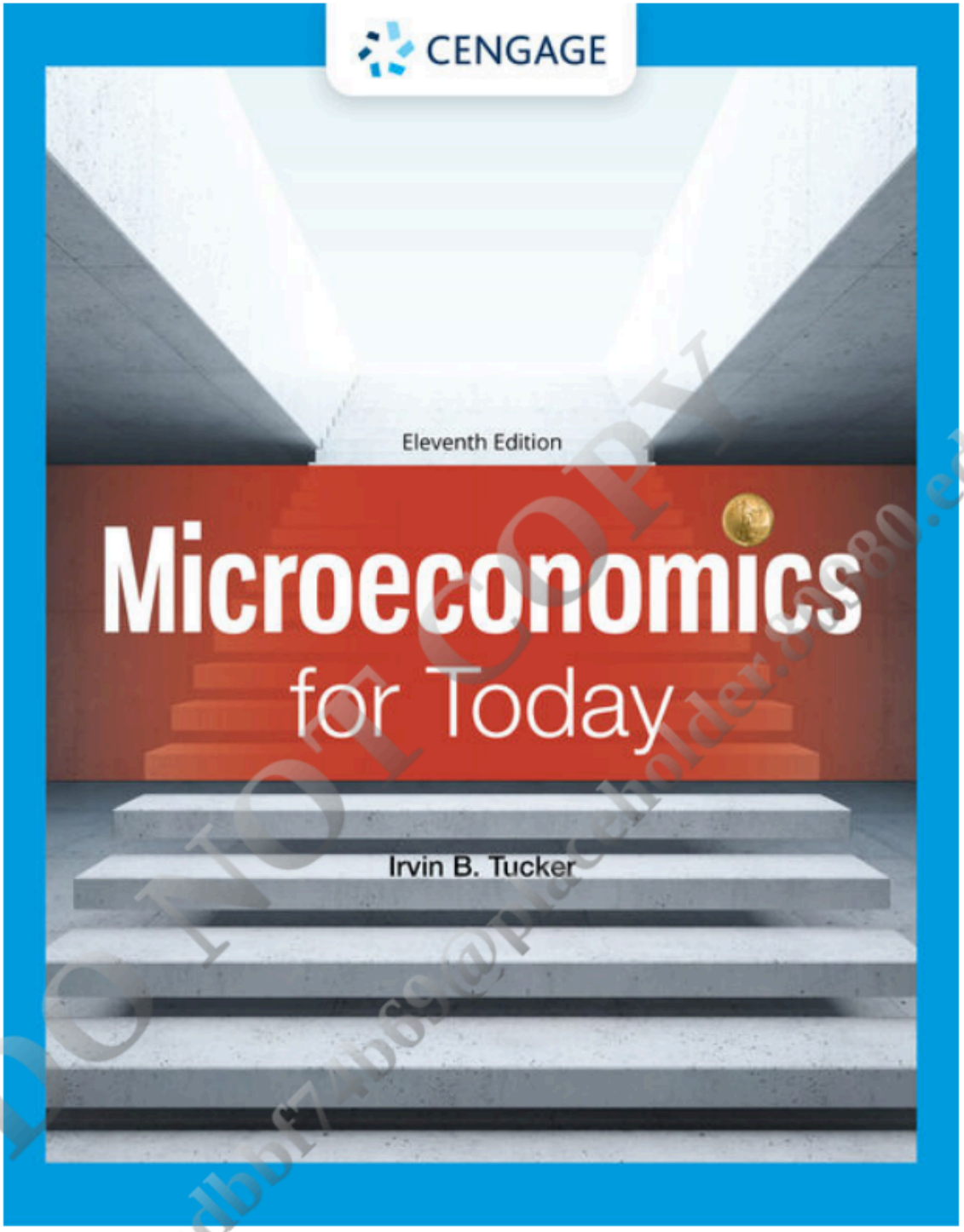

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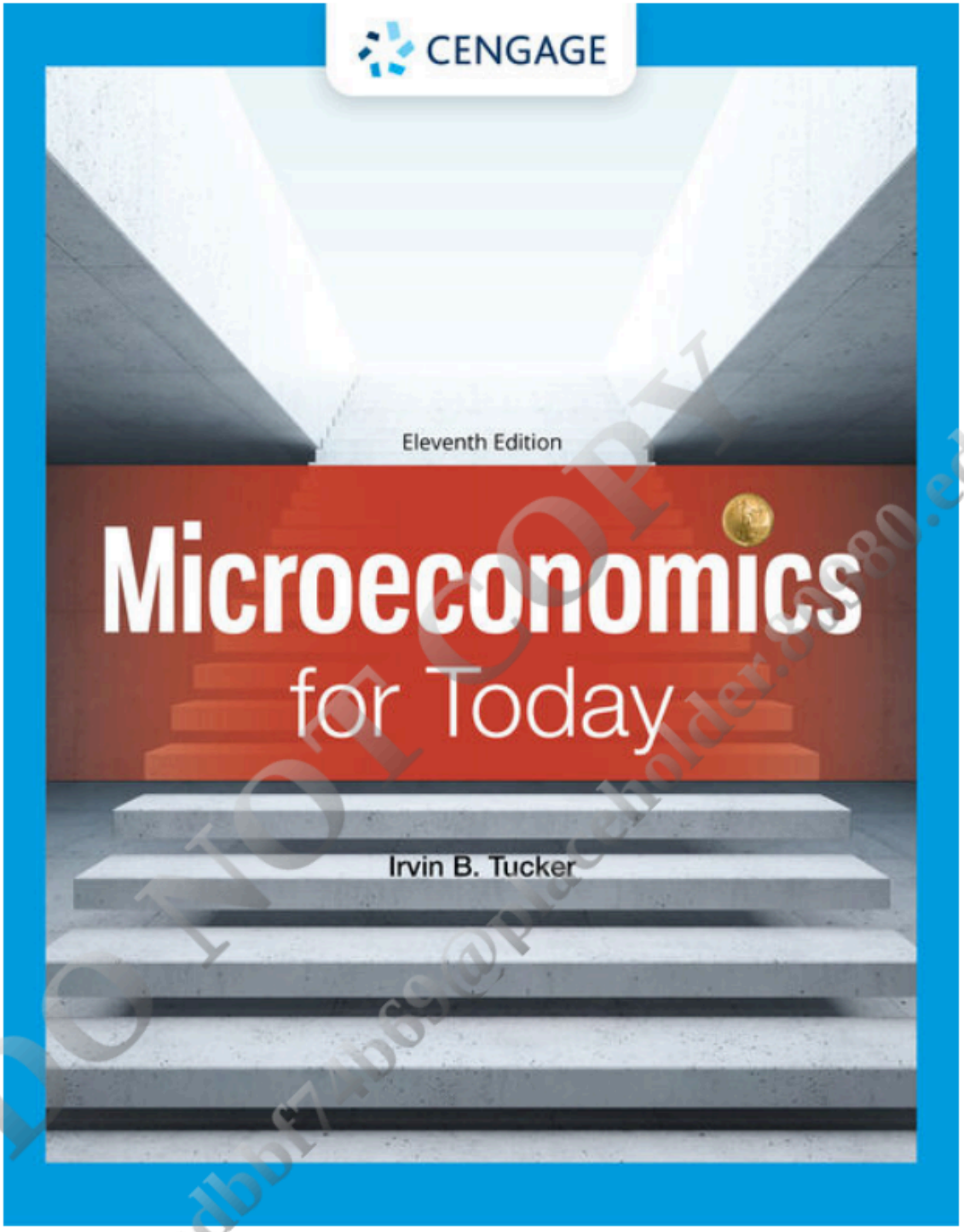

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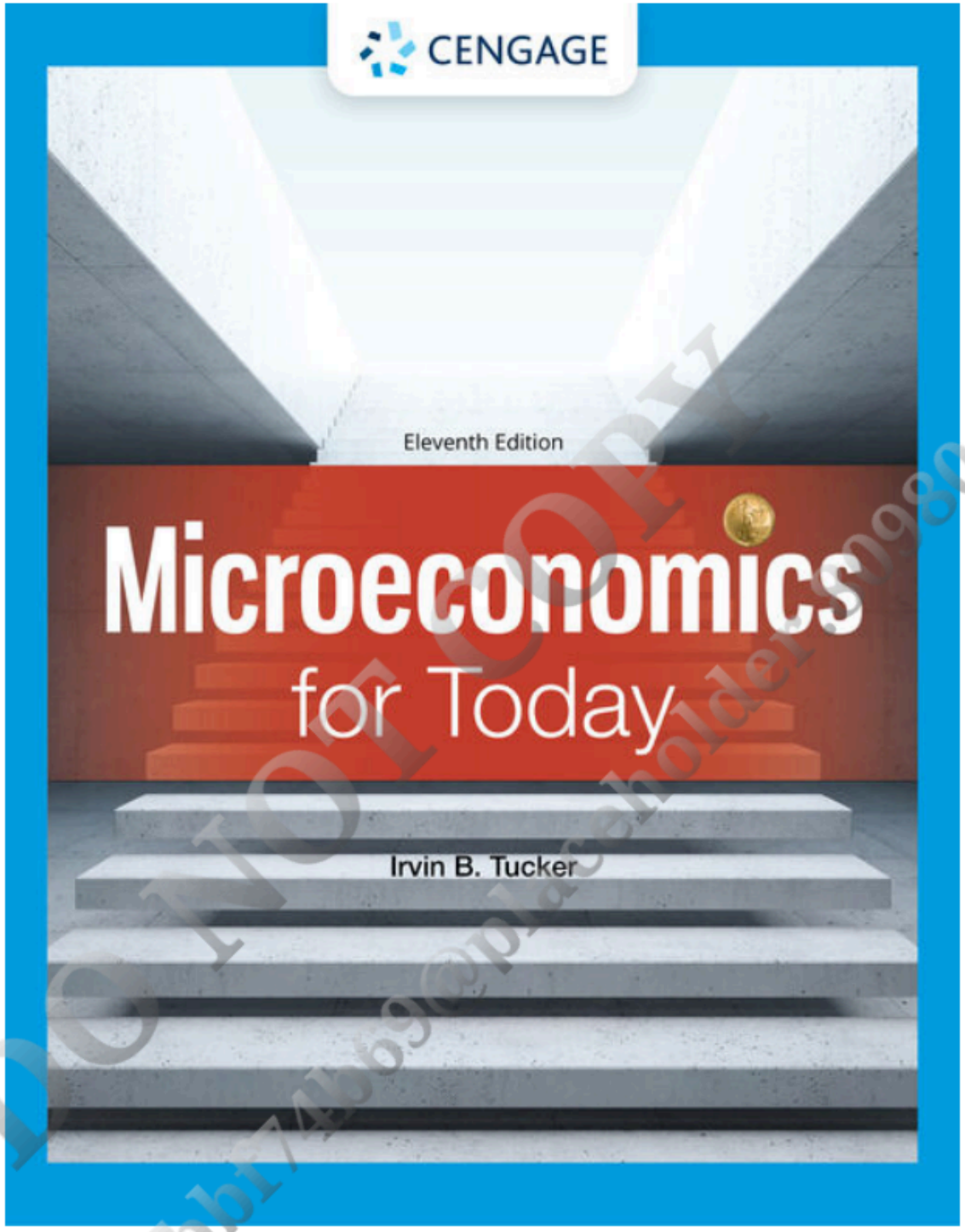

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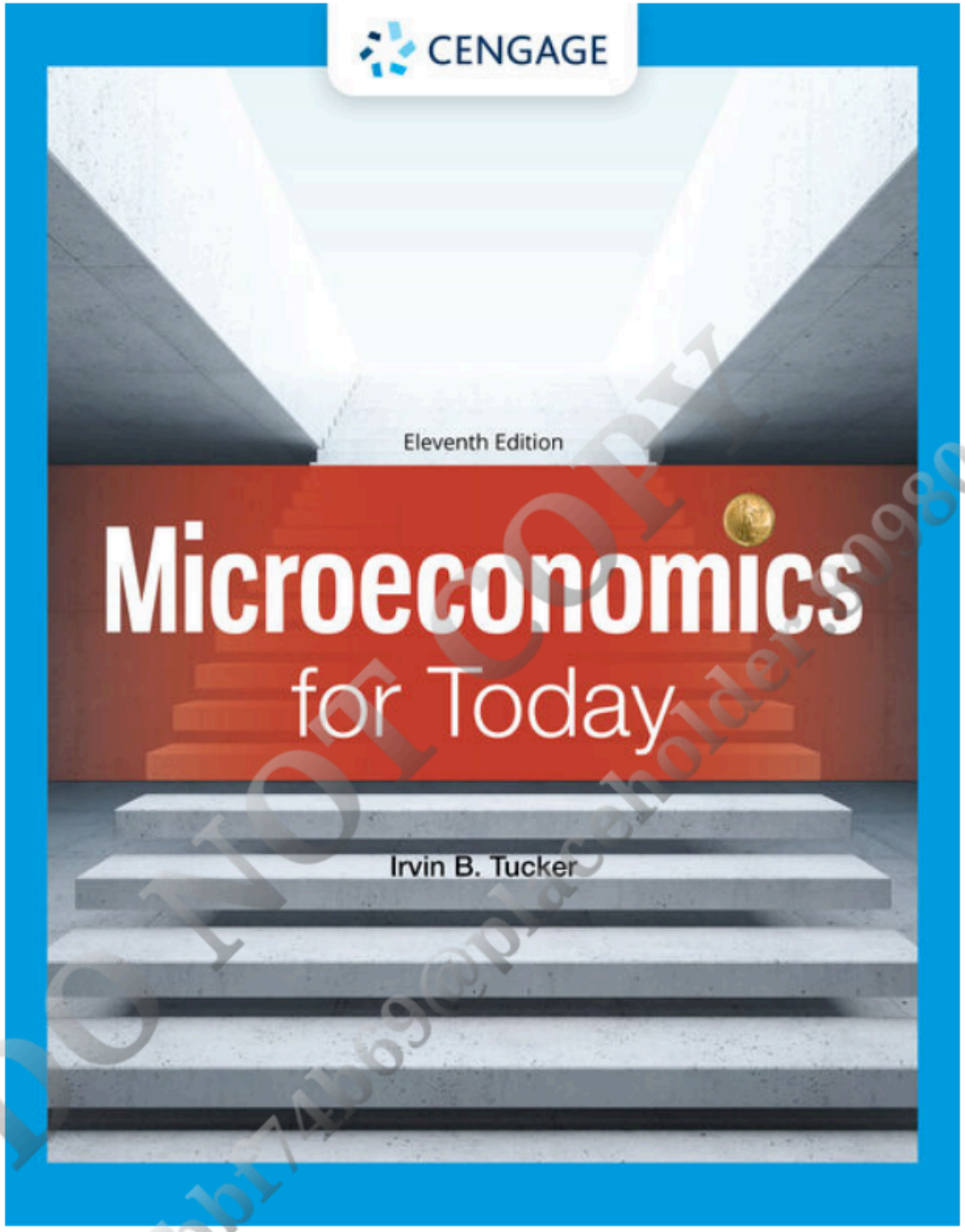

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Microeconomics for Today

11th Edition

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IRVIN B. TUCKER was a longtime leader in economic education with over 30 years of experience teaching introductory economics at the University of North Carolina in Charlotte. He earned his B.S. in economics at N.C. State University and his M.A. and Ph. D. in economics from the University of South Carolina. Dr. Tucker served as the executive director of the S.C. Council of Education and director of the Center for Economic Education at the University of North Carolina in Charlotte. Dr. Tucker is recognized for his ability to relate basic principles to economic issues and public policy. His work has received national recognition by being awarded the Meritorious Levy Award for Excellence in Private Enterprise Education, the Federation of Independent Business Award for Postsecondary Educator of the Year in Entrepreneurship and Economic Education, and the Freedom Foundation's George Washington Medal for Excellence in Economic Education. In addition, his research has been published in numerous professional economics journals on a wide range of topics, including industrial organization, entrepreneurship, and economics of education. Dr. Tucker is also the author of the highly successful *Survey of Economics*, eleventh edition, a text for the one-semester principles of economics courses, published by Cengage Learning.

The Four Versions of This Book

Economics for Today	Economics for Today	Microeconomics for Today	Macroeconomics for Today
Introducing the Economic Way of Thinking	1	1	1
Production Possibilities, Opportunity Cost, and Economic Growth	2	2	2
Market Demand and Supply	3	3	3
Markets in Action	4	4	4
Elasticity	5	5	
Consumer Choice Theory	6	6	
Production Costs	7	7	

Perfect Competition	8	8	
Monopoly	9	9	
Monopolistic Competition and Oligopoly	10	10	
Labor Markets	11	11	
Income Distribution, Poverty, and Discrimination	12	12	
Antitrust and Regulation	13	13	
Environmental Economics	14	14	
Gross Domestic Product	15		5
Business Cycles and Unemployment	16		6

Inflation	17		7
The Keynesian Model	18		8
The Keynesian Model in Action	19		9
Aggregate Demand and Supply	20		10
Fiscal Policy	21		11
The Public Sector	22		12
Federal Deficits, Surpluses, and the National Debt	23		13
Money and the Federal Reserve System	24		14
Money Creation	25		15

Monetary Policy	26		16
The Phillips Curve and Expectations Theory	27		17
International Trade and Finance	28	15	18
Economies in Transition	29	16	19
Growth and the Less-Developed Countries	30	17	20

Note: Chapter numbers refer to the complete book, *Economics for Today*.

Preface

Text with a Mission

The purpose of *Economics for Today*, eleventh edition, is to teach, in an engaging style, the basic operations of the U.S. economy to students who will take a two-term economics course. Rather than taking an encyclopedic approach to economic concepts, *Economics for Today* focuses on the most important tools in economics and applies these concepts to clearly explain real-world economic issues and events.

Every effort has been made to make *Economics for Today* the most student-friendly text on the market. This text was written because so many others expose students to a confusing array of economic analyses that force students to simply memorize to pass the course. Instead, *Economics for Today* presents a straightforward and unbiased approach that effectively teaches the application of basic economic principles. After reading this text, the student should be able to say, "Now that economics stuff in the news makes sense."

How It Fits Together

This text presents the core principles of microeconomics, macroeconomics, and international economics. The first 14 chapters introduce the logic of economic analysis and develop the core of microeconomic analysis. Here, students learn the role of demand and supply in determining prices in competitive markets versus monopolistic markets. Within these chapters, the book explores issues such as minimum wage laws, rent control, and pollution. The next 13 chapters develop the macroeconomics part of the text. Using the modern yet simple aggregate demand and aggregate supply model, the text explains the measurement of and changes in the price level, national output, and employment in the economy. The study of macroeconomics also includes how

employment in the economy. The study of macroeconomics also includes how the supply of and the demand for money influences the economy. Finally, this text concludes with three chapters devoted entirely to global issues. For example, students will learn how the supply of and demand for currencies determine exchange rates and what the implications are for a strong or a weak dollar on our nation's economy.

Text Flexibility

The full version of *Economics for Today* is easily adapted to an instructor's preference for the sequencing of microeconomic and macroeconomic topics. This text can be used in a macroeconomic–microeconomic sequence by teaching the first four chapters and then Parts 5 through 7. Next, microeconomics is covered in Parts 2 through 4. Finally, the course can be completed with Part 8, consisting of three chapters devoted to international economics.

An important design feature of this text is that it accommodates the two major approaches for teaching principles of macroeconomics: those who cover both the Keynesian Cross and AD–AS models and those who skip the Keynesian model and cover only the AD–AS model. For instructors who prefer the former, *Economics for Today* moves smoothly in Chapters 18–19 (*Macroeconomics for Today* Chapters 8–9) from the Keynesian model (based on the Great Depression) to the AD–AS model in Chapter 20 (*Macroeconomics for Today* Chapter 10). For instructors using the latter approach, this text is written so instructors can skip the Keynesian model in Chapters 18–19 (*Macroeconomics for Today* Chapters 8–9) and proceed from Chapter 17 (*Macroeconomics for Today* Chapter 7) to Chapter 20 (*Macroeconomics for Today* Chapter 10) without losing anything. For example, the spending multiplier is completely covered both in the Keynesian and AD–AS model chapters.

For instructors who want to teach the self-correcting AD–AS model, emphasis can be placed on the appendices to Chapters 20 (*Macroeconomics for Today* Chapter 10) and 26 (*Macroeconomics for Today* Chapter 16). Instructors who choose not to cover this model can simply skip these appendices. In short,

choose not to cover this model can simply skip these appendices. In short, *Economics for Today* provides more comprehensive and flexible coverage of macroeconomics models than is available in other texts. Also, a customized text might meet your needs. If so, contact your Cengage learning consultant for information.

How Not to Study Economics

To some students, studying economics is a little frightening because many chapters are full of graphs. Students often make the mistake of preparing for tests by trying to memorize the lines of graphs. When their graded tests are returned, the students using this strategy will probably exclaim, "What happened?" The answer to this question is that the students should have learned the economic concepts *first*; then, they would understand the graphs as *illustrations* of these underlying concepts. Stated simply, superficial cramming for economics quizzes does not work.

For students who are anxious about using graphs, the Appendix to Chapter 1 provides a brief review of graphical analysis. In addition, Graph Builder in the Tucker MindTap product contains step-by-step features on how to construct and interpret graphs. Moreover, videos entitled "GuideMe Videos" (A Graphing Tutorial for Students) are found in the Tucker MindTap product that explain numerous key graphs throughout the textbook.

Changes to the Eleventh Edition

The basic layout of the eleventh edition remains the same. However, there have been many important changes. Each chapter now begins with clearly stated Chapter Objectives that outline the key learning goals students should achieve after having studied the chapter.

Throughout the narrative, the eleventh edition has replaced the "Conclusion Statements" of previous editions with "*Take Note Statements*." These *Take Note* statements have been carefully designed and updated to highlight key concepts

statements have been carefully designed and updated to highlight key concepts and are strategically placed within the chapters to enhance pedagogy. Students will be able to use these to remember key points when reviewing the chapter and studying for quizzes and tests. A summary of these *Take Note* statements is provided at the end of each chapter.

The eleventh edition has also added a new feature entitled "*Am I on Track?*" which are multiple-choice questions testing students' understanding as they move through the chapter. They are designed to pique interest and to maximize mastery of the material presented in the chapters. They have been strategically placed throughout each chapter to maximize learning. These questions spark

student interest and enable them to check their progress by comparing their answers against the Key provided at the end of the chapter. Students who answer correctly earn the satisfaction of knowing they are on track and can feel more confident taking quizzes and tests because these questions are very similar to those they will face on their exams!

Finally, "Checkpoint" features of the previous editions have become, when appropriate, new "Study Questions and Problems" found at the end of the chapters.

The following are some additional specific changes.

- Chapter 1, Introducing the Economic Way of Thinking, has added a brief introduction to the efficiency versus equity trade-off and has an updated "A Closer Look" Feature on Unusual Economic Indicators to add interest for students. In addition, our discussion of the three fundamental economic questions that result from scarcity has been moved to Chapter 1, where scarcity is introduced. Three "Am I on Track?" multiple-choice questions and two "Study Questions and Problems" have been created.

- Chapter 2, Production Possibilities, Opportunity Cost, and Economic Growth, now introduces the concept of economic efficiency using the PPC. Three new "Am I on Track?" multiple-choice questions, two new "Study Questions and Problems," and three new "Sample Quiz" questions have

Questions and Problems," and three new "Sample Quiz" questions have been included.

- Chapter 3, Market Demand and Supply, now concludes with a discussion of how changes in demand and supply impact the market equilibrium price and quantity. Four "Am I on Track?" multiple-choice questions, two "Study Questions and Problems," and three "Sample Quiz" questions have been created.
- Chapter 4, Markets in Action, expands the efficiency discussion while maintaining many of the same examples from previous editions of the text. The Appendix to Chapter 4 now describes efficiency using consumer and producer surplus. Three "Am I on Track?" multiple-choice questions, two "Study Questions and Problems," and six "Sample Quiz" questions have been added.
- Chapter 5, Elasticity, maintains much of the narrative of the tenth edition while reducing the number of equations for simplicity. Three "Am I on Track?" multiple-choice questions, two "Study Questions and Problems," and two "Sample Quiz" questions have been created.
- Chapter 6, Consumer Choice Theory, has added one "Study Questions and Problems" and four new "Am I on Track?" questions.
- Chapter 7, Production Costs, has added three new "Am I on Track?" multiple-choice questions.
- Chapter 8, Perfect Competition, has streamlined the coverage of short-run supply derivation. Three "Am I on Track?" multiple-choice questions and one "Sample Quiz" question have been added.
- Chapter 9, Monopoly, has added four new "Am I on Track?" multiple-choice questions.
- Chapter 10, Monopolistic Competition and Oligopoly, has added one "Study Questions and Problems" and four new "Am I on Track?" multiple-choice questions.

- Chapter 11, Labor Markets, has condensed the discussion of labor unions and simplified the corresponding graphs. Three “Am I on Track?” multiple-choice questions, one “Study Questions and Problems,” and two “Sample Quiz” questions have been created.

- Chapter 12, Income Distribution, Poverty, and Discrimination, has been updated with the latest figures on family income distribution and poverty rates. Three “Am I on Track?” multiple-choice questions and one “Study Questions and Problems” have been created.

- Chapter 13, Antitrust and Regulation, Three “Am I on Track?” multiple-choice questions and one “Study Questions and Problems” have been created.

- Chapter 14, Environmental Economics, has been condensed, and market inefficiency has been highlighted to tie in with concepts introduced in Chapter 4. Three “Am I on Track?” multiple-choice questions, one “Study Questions and Problems,” and one “Sample Quiz” question have been added.

- Chapter 15, International Trade and Finance, has updated data for the international balance of payments and trade. Three new “Am I on Track?” multiple-choice questions and two new “Study Questions and Problems” have been created.

- Chapter 16, Economies in Transition, has greater clarification on the differences between capitalism and socialism and why all real-world economies are mixed economies. Three new “Am I on Track?” multiple-choice questions and one new “Study Questions and Problems” have been created.

- Chapter 17, Growth and the Less Developed Countries, presents updated data ranking countries by their GDP per capita. It also presents updated data comparing regions of the world by their average GDP per capita. Here, updated data is used to explain the link between economic freedom and quality-of-life indicators. Three new “Am I on Track?” multiple-choice

and quality-of-life indicators. Three new "Am I on Track?" multiple-choice questions" and two new "Study Questions and Problems" have been created.

Alternative Versions of the Book

For instructors who want to spend various amounts of time for their courses and offer different topics of this text:

- *Economics for Today*. This complete version of the book contains all 30 chapters. It is designed for two-semester introductory courses that cover both microeconomics and macroeconomics.
- *Microeconomics for Today*. This version contains 17 chapters and is designed for one-semester courses in introductory microeconomics.
- *Macroeconomics for Today*. This version contains 20 chapters and is designed for one-semester courses in introductory macroeconomics.
- *Survey of Economics*. This version of the book contains 24 chapters. It is designed for one-semester courses that cover the basics of both microeconomics and macroeconomics.

The Available Versions accompanying table on page xi shows precisely which chapters are included in each book. Instructors who want more information about these alternative versions should contact their local Cengage learning consultant.

Motivational Pedagogical Features

Economics for Today strives to motivate and advance the boundaries of pedagogy with the following features:

Part Openers

Each part begins with a statement of the overall mission of the chapters in the

Each part begins with a statement of the overall mission of the chapters in the part. In addition, there is a nutshell introduction for each chapter in relation to the part's learning objective.

Chapter Objectives

Each chapter begins with Chapter Objectives that outline the key learning goals students should achieve after having studied the chapter. This is followed by a brief introduction to the chapter that is designed to pique the student's interest and help place the chapter material into the broader context of the book.

Margin Definitions and Flashcards

Key concepts introduced in the chapter are highlighted in bold type and then defined with the definitions again in the margins. This feature, therefore, serves as a quick reference. Key terms are also defined on the Tucker MindTap product with a flashcard feature that is great for learning terms.

A Closer Look

Each chapter includes boxed inserts that provide the acid test of "relevance to everyday life." These were formerly known as the "You're the Economist" boxed sections. This feature gives the student an opportunity to encounter timely, real-world extensions of economic theory by taking a closer look at important concepts introduced in the chapter. For example, students read about Fred Smith as he writes an economics term paper explaining his plan to create FedEx. To ensure that the student wastes no time figuring out which chapter concepts apply to these boxed features, applicable concepts are listed after each title. Several of these boxed features include quotes from newspaper articles over a period of years, demonstrating that economic concepts remain relevant over time. Many of these boxed features have been updated or changed in the eleventh edition to reflect the latest issues, developments, and relevant applications of economics for students today.

The accompanying “Analyze the Issue” questions found in previous editions have now been moved to the Instructor’s Manual, where suggested answers are also provided for these thought-provoking questions that require students to test their knowledge of how the material in the boxed insert is relevant to the applicable concept introduced in the chapter.

Take Note Statements

Throughout the chapters, highlighted *Take Note* statements of key concepts strategically appear where most pedagogically advantageous. These *Take Note* statements have been carefully designed and updated to replace the “Conclusion Statements” of the previous edition. Students will be able to use these to remember key points when reviewing the chapter and studying for tests. A summary of these *Take Note* statements is provided at the end of each chapter.

Am I on Track? Multiple-Choice Questions

Watch for these! Who said learning economics can’t be fun? This new feature is a unique approach to generating interest and critical thinking. These questions spark students to check their progress by asking challenging economics questions. Students enjoy thinking through and answering these *Am I on Track?* multiple-choice questions and then checking the answers at the end of the chapter. Students who answer correctly earn the satisfaction of knowing they are on track and ready to continue progressing through the material and can feel more confident taking tests because these questions are very similar to those they will face on their exams! All of these are new for the updated eleventh edition to pique interest and to maximize mastery of the material presented in the chapters.

Exhibits

Attractive, large graphical presentations with grid lines and real-world numbers are essential for any successful economics textbook. Each exhibit has been carefully analyzed to ensure that the key concepts being represented stand out

carefully analyzed to ensure that the key concepts being represented stand out clearly. Brief descriptions are included with graphs to provide guidance for students as they study the graph. The MindTap course brings these exhibits to life:

- Students can interact with selected exhibits via Graph Builder.
- Students can watch detailed explanations of selected exhibits via the GuideMe Videos (a graphing tutorial for students.)

Key Terms

Key terms introduced in the chapter are listed at the end of each chapter and defined in the margins. Visit the Tucker MindTap to access interactive flashcards.

Visual Summaries

Each chapter ends with a brief point-by-point summary of the key concepts. Many of these summarized points include miniaturized versions of the important graphs and causation chains that illustrate many of the key concepts. These are intended to serve as visual reminders for students as they finish the chapters and are also useful in reviewing and studying for quizzes and exams.

Study Questions and Problems

These end-of-chapter questions and problems offer a variety of levels ranging from straightforward recall to deeply thought-provoking applications. The answers to odd-numbered questions and problems are found in Appendix A in the back of the text. This feature gives students immediate feedback without requiring the instructor to check their work. The even-numbered answers are found in the Instructor's Manual. Most of the previous edition's "Checkpoints" have been added as new Study Questions and Problems in this eleventh edition.

End-of-Chapter Sample Quizzes

End-of-Chapter Sample Quizzes

These particular assessments are a great help before quizzes and tests. Many instructors test students using multiple-choice questions. For this reason, the final section of each chapter provides the type of multiple-choice questions given in the test bank. The answers are readily available to students to help them learn the material and are found in Appendix B at the end of the textbook. In addition to the end-of-chapter sample quizzes, each section quiz appears in the Tucker MindTap product. Each quiz contains multiple questions like those found on a typical exam. Feedback is included for each answer so the student will know instantly why they have answered correctly or incorrectly. Between this feature and the end-of-chapter sample quizzes, students are well prepared for tests. Finally, the Instructor's Manual also contains four to five multiple-choice questions per chapter that can also be used to engage students with the material.

Road Maps

This feature concludes each sectioned part with review questions listed by chapter from the particular part. These help to reinforce learning and prepare students for tests. Answers to the questions are also found in Appendix C in the back of the text.

A Supplements Package Designed for Success

Tucker is known for its unequaled resources for instructors and students. To access additional course material for *Economics for Today*, visit www.cengagebrain.com. At the CengageBrain.com home page, search for "Tucker" using the search box on the page. This will take you to the product page where these resources can be found. For additional information, contact your Cengage learning consultant.

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Acknowledgments

A deep debt of gratitude is owed to the reviewers of all 11 editions for their expert assistance. All comments and suggestions were carefully evaluated and served to improve the final product.

Special Thanks

Much appreciation goes to Chris Rader, Product Manager, for allowing us contributing authors, Douglas W. Copeland (Johnson Country Community College) and Inge O'Connor (Syracuse University), to have the opportunity to revise Irvin Tucker's *Economics for Today* for this eleventh edition. Many thanks also goes to Anita Verma and Colleen Farmer, senior Content Managers; Brian Rodriguez and Eugenia Belova as senior In-House Subject Matter Experts and Andrew DeJong as In-House Subject Matter Expert. We also want to express our sincere thanks for a job well done to the entire team at Cengage.

A Tribute to Irvin B. Tucker

The contributing authors, Douglas W. Copeland, and Inge O'Connor, and the entire Cengage team want to express our heartfelt gratitude for the opportunity and the privilege to have been able to work on this textbook. Many of us had the pleasure of working with Irvin Tucker and this textbook over all these many years. Some of us, including Doug Copeland, have had the honor of working with Irvin from the beginning, when this book was just a manuscript. We know of few, if any, other authors who have consistently demonstrated such a firm commitment and tireless dedication to teaching and learning. Irvin always believed that knowledge of economics can enhance people's lives and should, therefore, be made accessible to everyone. And Irvin displayed the rare ability to translate complex concepts into easily understood principles that have enriched the lives of countless numbers of students across the globe. He has made economics not only accessible but fun to learn. For this, he has distinguished himself among the very best economists of our time! His life has complemented the profession of economics and promoted the noble cause of education. Beyond having earned our respect as a superb economist and author, Irvin was also always a joy to work with. He was always kind to everyone, willing to listen to any new ideas or suggestions, and consistently made everyone feel needed and appreciated.

We would be remiss if we did not also make a tribute to Irvin's wife, Nonie. Nonie has also demonstrated the traits of those you feel blessed to work with. She has also made countless meaningful contributions to this title from the very beginning. Irvin and Nonie have always been known to be "quite the team!" Thank you, Irvin, and thank you, Nonie! You have made the world a better place!

This edition is dedicated to the memory of Irvin B. Tucker.

Chapter 1. Introducing the Economic Way of Thinking

Chapter Objectives

1. Describe economics as a field of study.
2. Describe the three fundamental economic questions that arise from scarcity.
3. Discuss the steps and common pitfalls in the economic model-building process.
4. Describe common sources of disagreement among economists.

Introduction

Have you ever wondered why colleges and universities charge students different tuition rates for the same education or why some countries grow rich while others remain poor and less developed? In this text, you will learn what it means to think economically, and you will come to see how the economic way of thinking is a powerful tool that can be used to explain a broad array of issues, from small choices we make in our daily lives to larger issues faced by countries

worldwide. So, let's get started and begin exploring the economic way of thinking.

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worldwide. So, let's get started and begin exploring the economic way of thinking.

1-1. Economics: The Study of Scarcity and Choice

Economics is sometimes referred to as the "science of choice." We all make choices every day. Should you get up early to study for a test or sleep in? Should you stop at a fast food restaurant on the way home or wait to cook dinner when you get home? The need to make choices is unavoidable. Robert Frost described this in his poem "The Road Less Traveled" and the Rolling Stones sang "You Can't Always

Get What You Want." Let's look a bit more closely now at why we must make choices and how the economic way of thinking helps us understand the choices people make.

Get What You Want." Let's look a bit more closely now at why we must make choices and how the economic way of thinking helps us understand the choices people make.

1-1a. The Problem of Scarcity

At the heart of the economic way of thinking is the fact that we live in a world of scarcity. **Scarcity** is the condition in which human wants are forever greater than the available supply of time, goods, and resources. Because of scarcity, we are unable to have as much as we would like. Pause for a moment to consider some of your own unsatisfied wants. Perhaps you would like a new winter coat, a car, clean air, better health care, shelter for the homeless, more leisure time, and so on. Unfortunately, there is not enough time nor are there enough resources to satisfy every want. Instead, there are always limits on the economy's ability to satisfy these unlimited wants and as a result, choices must be made.

The problem of scarcity impacts individuals, governments, and societies throughout the world. You may think the scarcity problem would disappear if you were rich, but even the "rich and famous" desire finer homes, faster planes, and more yachts. What is true for individuals also applies to society. The federal government never has enough money to spend for education, highways, police, national defense, Social Security, and all the other programs it wants to fund. Finally, scarcity is a fact of life throughout the world.

In much of South America, Africa, and Asia, the problem of scarcity is often life-threatening. On the other hand, even in more developed countries where life is much less "grueling" such as in North America, Western Europe, and some parts of Asia, the problem of scarcity still exists because individuals and countries never have as much of all the goods and services as they would like to have.

As a result of scarcity, every nation must decide what combination of goods and services to produce, how to produce them, and who is going to get those goods and services. These economic choices have profound social and political implications.

Take Note

Scarcity forces all societies to make choices regarding what combination of goods and services to produce, how to produce them and who will get the limited supply of those goods and services.

The old saying "look at the forest rather than the trees" describes **macroeconomics**, which is the branch of economics that studies decision making for the economy as a whole. This "big picture" view is concerned with what causes the broader economy to sometimes expand and grow and provide for more jobs, while at other times it experiences a recession and higher rates of unemployment. In our discussions of the macroeconomy, we often focus on this "business cycle" and what government can do to try to smooth out these fluctuations to promote full employment and economic growth, and to minimize inflation.

Examining individual trees, leaves, and pieces of bark, rather than surveying the forest, illustrates microeconomics. **Microeconomics** is the branch of economics that studies decision making by a single individual, household, firm, industry, or level of government. It applies a microscope to study specific parts of an economy, as one would examine cells in the body. Microeconomics typically focuses on a specific market or industry, or even a specific firm within an industry.

We have described macroeconomics and microeconomics as two separate branches, but they are related. Because the overall economy is the sum, or aggregation, of its parts, micro changes affect the macro economy, and macro changes produce micro changes.

Take Note

Economics is the study of how society chooses to allocate its scarce resources to the production of goods and services to satisfy unlimited wants; microeconomics studies how decisions are made by individuals and firms, while macroeconomics is concerned with broader issues that impact the economy as a whole.

The old saying "look at the forest rather than the trees" describes **macroeconomics**, which is the branch of economics that studies decision making for the economy as a whole. This "big picture" view is concerned with what causes the broader economy to sometimes expand and grow and provide for more jobs, while at other times it experiences a recession and higher rates of unemployment. In our discussions of the macroeconomy, we often focus on this "business cycle" and what government can do to try to smooth out these fluctuations to promote full employment and economic growth, and to minimize inflation.

Examining individual trees, leaves, and pieces of bark, rather than surveying the forest, illustrates microeconomics. **Microeconomics** is the branch of economics that studies decision making by a single individual, household, firm, industry, or level of government. It applies a microscope to study specific parts of an economy, as one would examine cells in the body. Microeconomics typically focuses on a specific market or industry, or even a specific firm within an industry.

We have described macroeconomics and microeconomics as two separate branches, but they are related. Because the overall economy is the sum, or aggregation, of its parts, micro changes affect the macro economy, and macro changes produce micro changes.

Take Note

Economics is the study of how society chooses to allocate its scarce resources to the production of goods and services to satisfy unlimited wants; microeconomics studies how decisions are made by individuals and firms, while macroeconomics is concerned with broader issues that impact the economy as a whole.

1-2. Three Fundamental Economic

Questions

Because of the problem of scarcity, whether rich or poor, every nation must answer the same three fundamental economic questions:

1. *What* products will be produced?
2. *How* will they be produced? and
3. *For Whom* will they be produced?

Let's take a closer look at each fundamental question.

1-2b. How to Produce?

After deciding *what* products to make, the second question for society to decide is *how* to mix existing technology and resources to produce these goods. Because of the economic problem of scarcity, no society has enough resources to produce all the goods and services necessary to satisfy all human wants. **Resources** are the basic categories of inputs used to produce goods and services. Resources are also called *factors of production* (or *"inputs"*). Economists divide resources into three categories:

1. *Land*
2. *Labor*
3. *Capital*

Land is a shorthand expression for any natural resource provided by nature that is used to produce a good or service. *Land* includes those resources or raw materials that are gifts of nature available for use in the production process. Farming, building factories, and constructing oil refineries would be impossible without land. Land includes anything natural above or below the ground, such as forests, gold, diamonds, oil, coal, wind, and the ocean.

Labor is the mental and physical capacity of workers to produce goods and services. The services of farmers, assembly-line workers, lawyers, professional football players, and economists are all *labor*. The labor resource is measured both by the number of people available for work and by the skills or quality of workers. One reason that nations differ in their ability to produce is that human characteristics, such as the educational opportunities, experience, and health, of workers, differ among nations. For this reason, education and training, which improve the ability of workers to perform their work, play an important role in answering the *How* question.

Capital can be defined as a human-made good used to produce other goods and

services; it includes physical plants, machinery, equipment, roads, and bridges. The term *capital*, as it is used in the study of economics, should not be confused with the term *financial capital*, which when used in everyday conversations refers to money or stocks and bonds. However, *capital* as used by economists means a factor of production such as a factory or machinery.

The three factors of production are organized, managed, and directed by entrepreneurs. **Entrepreneurship** is the creative ability of individuals to seek profits by taking risks and combining resources to produce innovative products. Entrepreneurs, because they are another human resource, could be thought of as a special type of labor. Entrepreneurs are often successful when they embrace new or existing technologies (using their "know-how") in creative ways. For example, consider all of the amazing apps created for use with Androids and the iPhone. An important benefit of entrepreneurship is that it creates a growing economy.

Am I on Track?

1. Because of scarcity, no society has enough resources (land, labor, and capital) to produce the goods and services necessary to satisfy all human wants. As a result, every nation must:

SHOW ANSWER

SHOW ANSWER

a. Work to eliminate scarcity

b. Make choices about what, how, and for whom to produce

c. Establish a minimum wage

d. All of the above

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1-3. The Methodology of Economics

As used by other disciplines, such as criminology, biology, chemistry, and physics, economists employ a step-by-step procedure for solving problems.

Step 1: Identify

Step 1: the problem

Step 2: Develop a model

Step 3: Gather data and test whether the theory can be supported by the data

Step 4: Formulate a conclusion

Step 3: Gather Data and Test the Theory

The purpose of an economic model is to *forecast* or *predict* the results of various changes in variables. An economic theory can be expressed in the form "If *X*, then *Y*, all other things held constant." An economic model is useful only if it yields accurate predictions. In this third step, the economist gathers data to test the theory that if the price of gasoline *rises*, then gasoline purchases *fall*—all other relevant factors held constant.

Step 4: Formulate a Conclusion

When the evidence is consistent with the theory that *X* causes outcome *Y*, there is confidence in the theory's validity. When the evidence is inconsistent with the theory that *X* causes outcome *Y*, the researcher rejects this theory. Suppose the investigation reveals that the price of gasoline rose sharply between May and December. The data, therefore, appear to support the theory that the quantity of gasoline consumed falls when its price rises, assuming no other factors which could have caused people to buy less gasoline have changed.

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1-4. Hazards of the Economic Way of Thinking

As we just saw, models help us understand and predict the impact of changes in economic variables. As such, a model is an important tool in the economist's toolkit, but it must be handled with care. The economic way of thinking seeks to avoid reasoning mistakes. Two of the most common pitfalls to clear thinking are:

1. failing to understand the *ceteris paribus assumption*.
2. confusing *correlation* and *causation*.

Take Note

It is important to make sure the ceteris paribus assumption, that all other things remain unchanged, is satisfied if we wish to correctly conclude there is a relationship between two variables.

Take Note

It is important to make sure the ceteris paribus assumption, that all other things remain unchanged, is satisfied if we wish to correctly conclude there is a relationship between two variables.

1-4b. Correlation versus Causation

Another common error in reasoning is confusing *correlation* (or association) and *causation* between variables. Stated differently, you err when you read more into a relationship between variables than is actually there. A model is valid only when a cause- and-effect relationship is stable or dependable over time, rather than being an association that occurs by chance and eventually disappears. Suppose Jai baked cookies during three different months and stock market prices rose during each of those months. Jai's cookie baking is *correlated* with the increase in stock prices, but this does not mean the baking *caused* the event. Even though there is a statistical relationship between these two variables in a number of observations, eventually the cookie baking will occur and stock prices will fall or remain unchanged. The reason is that there is no true systematic economic relationship between cookie baking and stock prices.

Take Note

The fact that one event follows another does not necessarily mean that the first event caused the second event.

Am I on Track?

2. Ajay received an A on the math exam he took last week while wearing his blue sweater. He plans to wear the same sweater to his

wearing his blue sweater. He plans to wear the same sweater to his sociology exam this week hoping to receive an A on that exam as well. Ajay's behavior is an example of:

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

The steps in the model-building process

The ceteris paribus assumption

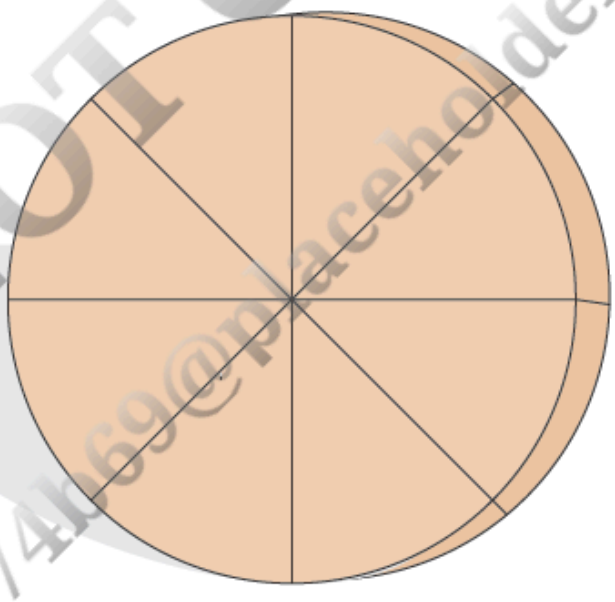
An error in reasoning by confusing correlation with causation

Macroeconomics

1-5a. Efficiency versus Equity

Economists generally use the term **efficiency** to describe a situation where society is "doing the best it can" with its existing resources and technology. This implies society is producing the best combination of goods and services as well as maximizing production. **Equity**, on the other hand, focuses on fairness in the way production is distributed among members of society. Simply stated, and shown in Exhibit 1, efficiency is concerned with maximizing the size of the economic pie while equity is concerned with how the pie is divided. Often society faces a trade-off between efficiency and equity.

Exhibit 1 Efficiency vs. Equity



Generally speaking, efficiency refers to maximizing the size of the economic pie while equity refers to fairly distributing the pie. Government policies often face a trade-off between the two.

Consider a simple example. You are in line at the grocery store on a busy Friday afternoon. Many other customers are also in line. The store opens a new check-out lane to get more customers through the line faster (to increase efficiency). Typically, when a new lane opens, it's the customer at the back of the existing lines who is most able to move to the new lane as they do not yet have their

lines who is most able to move to the new lane as they do not yet have their items on the conveyor belt. Here we see the trade-off between efficiency, more items being scanned, and equity, those who have waited the shortest amount of time moving through more quickly.

Many economic policies encounter the efficiency versus equity trade-off. For example, it may be more efficient for foreign companies to produce a particular good because they have lower costs of production. This reduces the prices paid by consumers. However, this could also drive domestic firms out of businesses and create job loss in that industry. Many government policies face the efficiency versus equity trade-off including those pertaining to the environment, income taxes, international trade, and much more. Economists may disagree on the importance of efficiency versus equity in any given situation because of differences in their subjective value judgments concerning what they consider to be “fair” or “just.” This brings us to the importance of distinguishing positive economics from normative economics.

1-5b. Positive versus Normative Economics

Economists must distinguish between positive economics and normative economics when analyzing any economic problem or issue. **Positive economics** objectively deals with facts that can be tested and therefore addresses "***what is***" true or false regarding how the economy works. "The minimum wage in California is $15 per hour" is a positive statement. It may be true or it may be false, but it can be tested. **Normative economics**, on the other hand, subjectively deals with "***what ought to be***" based on value judgments and cannot be proven by facts to be true or false. Certain words or phrases, such as "good," "bad," "need," and "should" indicate that we have entered the realm of normative economics. "All states should have a $15 minimum wage" is a normative statement. It reflects an opinion or value judgement that cannot be tested by facts.

These subjective value judgements are the result of ever-present social and political influences that shape our opinions. One person may argue that government *ought to* take steps to ensure a more *fair* distribution of income and wealth. Another may argue that health care is a basic human right that *needs* to be made available to all regardless of their ability to pay. And the real "art" of economics is applying the knowledge gained from positive economics, about "what is" true concerning how the economy actually works, to formulating policies that will best achieve our normative economic goals regarding "what ought to be."

Take Note

Positive economics deals with "what is" while normative economics deals with "what ought to be." The "art" of economics is applying the knowledge gained from positive economics to formulate policies to best achieve the goals of "what ought to be" in normative economics.

Am I on Track?

3. Which of the following statements is a positive economic statement?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

The unemployment rate is 4.5 percent.

Too many people are unemployed.

We should cut unemployment benefits to encourage people to go back to work.

The government needs to be an employer of last resort to ensure everyone has a job when they want one.

Key Terms

Scarcity

Resources

Land

Labor

Entrepreneurship

Capital

Economics

Equity

Macroeconomics

Microeconomics

Model

Efficiency

Ceteris paribus

Positive economics

Normative economics

Summary

- Scarcity is the fundamental economic problem that human wants exceed the available time, goods, and resources. Individuals and society therefore can never have everything they desire.
- Economics is the study of how individuals and society choose to allocate scarce resources to satisfy unlimited wants. Faced with unlimited wants

and scarce resources, we must make choices among alternatives.

- Macroeconomics applies an economy-wide perspective that focuses on such issues as inflation, unemployment, and the growth rate of the economy while microeconomics examines individual decision-making units within an economy, such as a consumer's response to changes in the price of coffee and the reasons for changes in the market price of personal computers.

- Because of the problem of scarcity, whether rich or poor, every nation must answer the same three fundamental economic questions:

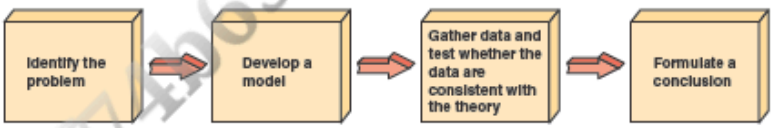
  (1) *What* goods and services to produce

  (2) *How* to produce those goods and services, and

  (3) *For Whom* will they be produced?

- Resources are factors of production classified as land, labor, and capital. Entrepreneurs seek profits by taking risks and combining resources to produce innovative products.

- Models are simplified descriptions of reality used to understand and predict economic events. If the event is not consistent with the model, the model is rejected.



▸ Details

- Ceteris paribus holds "all other factors unchanged" that might affect a particular relationship. If this assumption is violated, a model may not predict accurately. Another reasoning pitfall is to think that *correlation* means *causation*.

- Society often faces a tradeoff between efficiency, or doing the best we can with our existing resources, and equity, which is concerned with

distributing that limited production fairly among members of society.

- Positive economics deals with “what is” true about how the economy actually works, while normative economics deals with value judgments regarding “what ought to be.” The “art” of economics is using the knowledge gained in positive economics to develop policies that will help us realize the goals established in normative economics.

- The fact that one event follows another does not necessarily mean that the first event caused the second event.

- Positive economics deals with “what is” while normative economics deals with “what ought to be.” The “art” of economics is applying the knowledge gained from positive economics to formulate policies to best achieve the goals of “what ought to be” in normative economics.

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Study Questions and Problems

Please see Appendix A for answers to the odd-numbered questions. Your instructor has access to the answers for even-numbered questions.

1. Explain why both nations with high living standards and nations with low living standards face the problem of scarcity. If you won $1 million in a lottery, would you escape the scarcity problem?

   SHOW ANSWER

2. Why do you think economics is sometimes referred to as “the science of choice”?

3. Explain the difference between macroeconomics and microeconomics. Give examples of the areas of concern to each branch of economics.

   SHOW ANSWER

4. Which of the following are microeconomic issues? Which are macroeconomic issues?

   a. How will an increase in the price of Coca- Cola affect the quantity of Pepsi Cola sold?

b. What will cause the nation's inflation rate to fall?

c. How does a quota on textile imports affect the textile industry?

d. Does a large federal budget deficit reduce the rate of unemployment in the economy?

5. What are two other terms that might be used interchangeably with the term "resources"?

SHOW ANSWER

6. Why isn't money considered capital in economics?

7. Explain why it is important for an economic model to be an abstraction from the real world.

SHOW ANSWER

8. Explain the importance of the ceteris paribus assumption for an economic model.

9. Suppose Congress cuts spending for the military, and then unemployment rises in the U.S. defense industry. Is there causation in this situation, or are we observing a correlation between events?

SHOW ANSWER

10. Use the analogy of a pie to explain the terms efficiency and equity.

11. Suppose universities that belong to big-time athletic conferences have higher graduation rates than nonmembers. Does this mean Nebraska State should join a big-time athletic conference?

SHOW ANSWER

Appendix to Chapter 1. Applying Graphs to Economics

Economists are famous for their use of graphs. The reason is “a picture is worth a thou- sand words.” Graphs are used throughout this text to present economic models. By drawing a line, you can use a two-dimensional illustration to analyze the effects of a change in one variable on another variable. You could describe the same information using other model forms, such as verbal statements, tables, or equations, but a graph is the simplest way to present and understand the relationship between economic variables.

Don’t be worried that graphs will “throw you for a loop.” Relax! This appendix explains all the basic graphical language you will need. The following illustrates the simplest use of graphs for economic analysis.

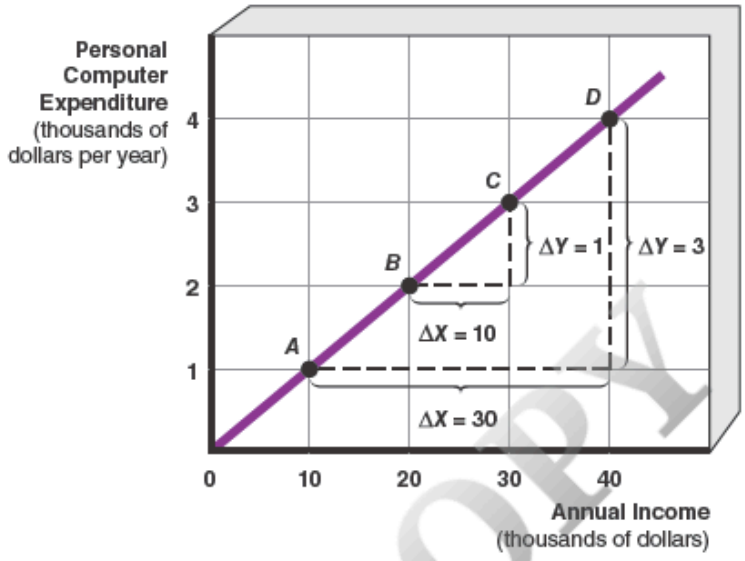
1A-1. A Direct Relationship

Basic economic analysis typically concerns the relationship between two variables, both having positive values. Hence, we can confine our graphs to the upper-right (northeast) quadrant of the coordinate number system. In Exhibit A-1, notice that the scales on the horizontal axis (*x*-axis) and the vertical axis (*y*-axis) do not necessarily measure the same numerical values.

Exhibit A-1. Direct Relationship between Variables

The line with a positive slope shows that the expenditure per year for a personal computer has a direct relationship to annual income, ceteris paribus. As annual income increases along the horizontal axis, the amount spent on a PC also increases, as measured by the vertical axis. Along the line, each 10-unit increase in annual income results in a 1-unit increase in expenditure for a PC. Because the slope is constant along a straight line, we can measure the same slope between any two points. Between points *A* and

can measure the same slope between any two points. Between points A and D, the slope $= \Delta Y/\Delta X = +3/+30 = +1/+10 = 1/10$.



▸ Details

Expenditure for a Personal Computer at Different Annual Incomes

Point	Personal Computer Expenditure (thousands of dollars per year)	Annual Income (thousands of dollars)
A	1	10
B	2	20
C	3	30
D	4	40

The horizontal axis in Exhibit A-1 measures annual income, and the vertical axis shows the amount spent per year for a personal computer (PC). The intersection of the horizontal and vertical axes is the *origin* and the point at which both income and expenditure are zero. In Exhibit A-1, each point is a coordinate that matches the dollar value of income and the corresponding expenditure for a PC. For example, point *A* on the graph shows that people with an annual income of $10,000 spent $1,000 per year for a PC. Other incomes are associated with different expenditure levels. For example, at $30,000 per year (point *C*), $3,000 will be spent annually for a PC.

The straight line in Exhibit A-1 allows us to determine the direction of change in PC expenditure as annual income changes. This relationship is *positive* because PC expenditure, measured along the vertical axis, and annual income, measured along the horizontal axis, move in the same direction. PC expenditure increases as annual income increases. As income declines, so does the amount spent on a PC. Thus, the straight line representing the relationship between income and PC expenditure is a direct relationship. A **direct relationship** is a positive association between two variables. When one variable increases, the other variable increases, and when one variable decreases, the other variable decreases. In short, both variables change in the *same* direction.

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Finally, an important point to remember: A two-variable graph, like any model, isolates the relationship between two variables and holds all other variables constant under the ceteris paribus assumption. In Exhibit A-1, for example, factors such as the prices of PCs and education are held constant by assumption. In Chapter 3, you will learn that allowing variables not shown in the graph to change can shift the position of the line or curve.

Take Note

A direct (positive) relationship is expressed graphically as an upward sloping curve (or line).

sloping curve (or line).

1A-2. An Inverse Relationship

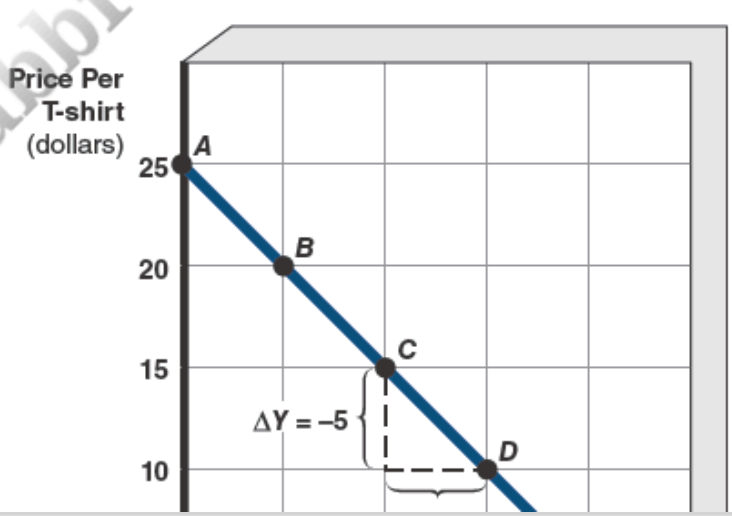
Now consider the relationship between the price of T-shirts and the quantity consumers will buy per year, shown in Exhibit A-2. These data indicate an *inverse* (or *negative*) relationship between the price and quantity variables. When the price is low, consumers purchase a greater quantity of T-shirts than when the price is high.

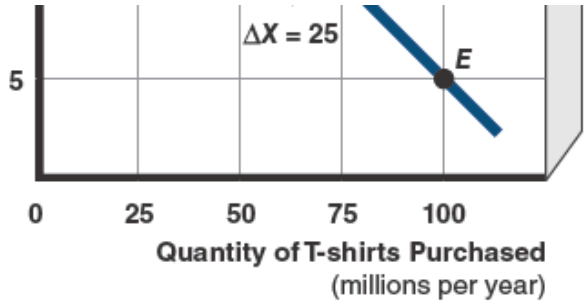
An **inverse relationship** is a negative association between two variables. When one variable increases, the other variable decreases, and when one variable decreases, the other variable increases. Stated simply, the variables move in *opposite* directions.

Exhibit A-2. An Inverse Relationship between Variables

The line with a negative slope shows an inverse relationship between the price per T-shirt and the quantity of t-shirts consumers purchase, ceteris paribus. As the price of a T-shirt rises, the quantity of T-shirts purchased falls. A lower price for T-shirts is associated with more T-shirts purchased by consumers. Along the line, with each $5 decrease in the price of T-shirts, consumers increase the quantity purchased by 25 units.

The Slope $= \Delta Y / \Delta X = -5/+25 = -1/5$.





▸ Details

The Quantity of T-Shirts Consumers Purchase at Different Prices

Point	Price per T-shirt	Quantity of T-shirts Purchased (millions per year)
A	$25	0
B	20	25
C	15	50
D	10	75
E	5	100

The line drawn in Exhibit A-2 is an inverse relationship. By long-established tradition, economists put price on the vertical axis and quantity on the horizontal axis. In Chapter 3, we will study in more detail the relationship between the price and the quantity demanded called the *law of demand.*

Exhibit A-9 Multicurve Graph

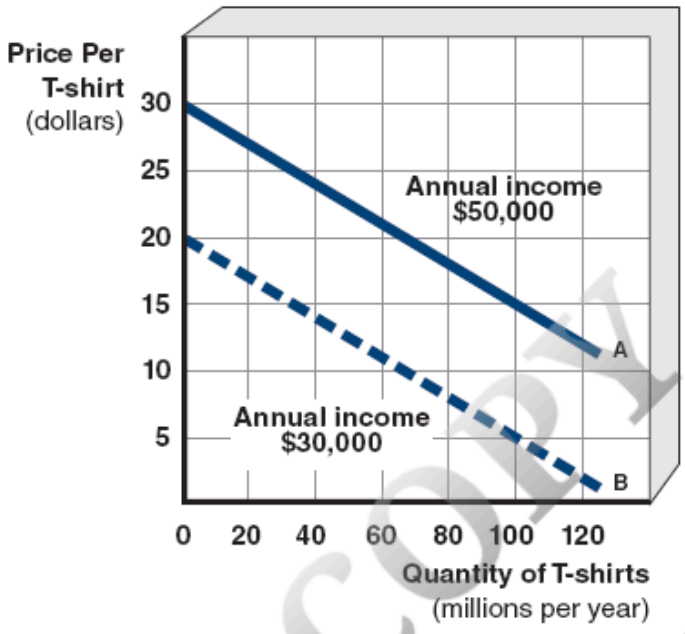


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Exhibit A-9 Multicurve Graph

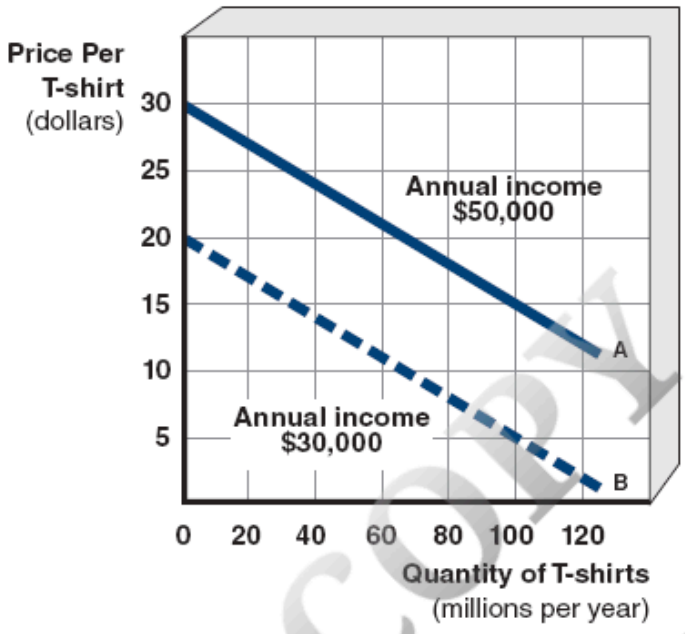

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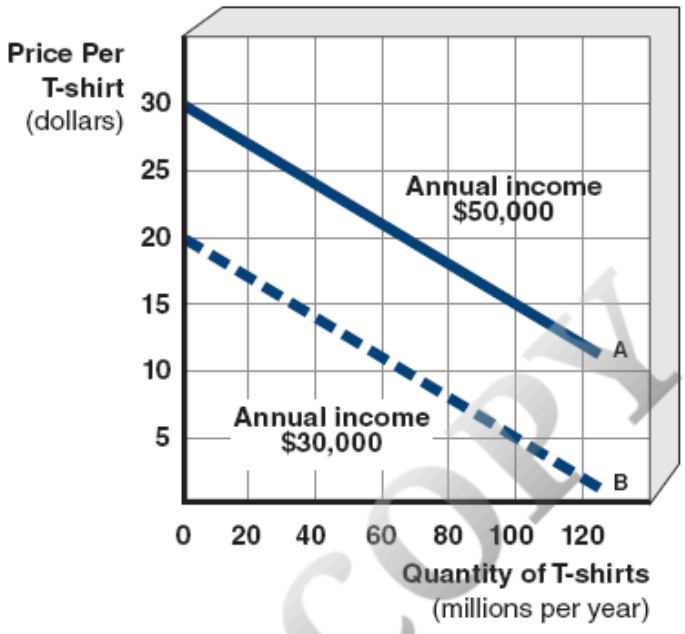
Exhibit A-9 Multicurve Graph



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Chapter 2. Production Possibilities, Opportunity Cost, and Economic Growth

Chapter Objectives

1. Explain the relationship between opportunity cost and scarcity.
2. Describe how the production possibilities curve models aggregate production.
3. Use the production possibilities curve to analyze opportunity costs in production decisions.
4. Use the production possibilities curve to analyze economic growth.

Introduction

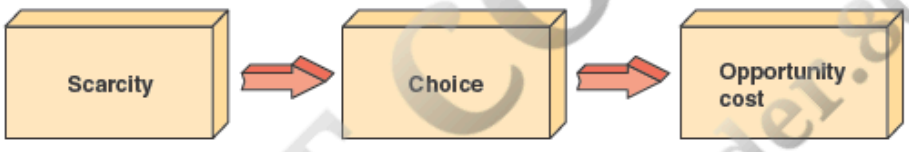
In Chapter 1 we learned that every nation must answer three fundamental economic questions: what to produce, how to produce, and for whom to produce. In this chapter we develop one of the most fundamental economic models, the production possibilities model. This model helps us understand the choices that must be made because of scarcity when answering these questions.

2-1. Opportunity Cost

Because of scarcity, the three basic questions cannot be answered without sacrifice or cost. But what does the term *cost* really mean? The common response would be to say that the purchase price is the cost. A movie ticket *costs* $10, or a shirt *costs* $50. Applying the economic way of thinking, however, *cost* is defined differently. A well-known phrase from Nobel Prize–winning economist Milton Friedman says, "*There is no such thing as a free lunch.*" This expression captures the links among the concepts of scarcity, choice, and cost. Because of scarcity, people must make choices, and each choice incurs a cost (sacrifice). Once one option is chosen, another option is given up. The money you spend on a movie ticket cannot also buy a pizza. The time you spend studying cannot also be spent working out. A business may purchase a new textile machine to manufacture towels, but this same money cannot be used to buy a new recreation facility for employees.

These examples illustrate that the true cost of these decisions is what was sacrificed when making the choice, or the opportunity cost. **Opportunity cost** is the next best alternative that was sacrificed when making a choice. The highest-valued good or use of time given up for the chosen good or use of time, therefore, measures the opportunity cost. We may omit the word "opportunity" before the word cost, but the concept remains the same. Exhibit 1 illustrates the causation chain linking scarcity, choice, and opportunity cost.

Exhibit 1 The Links between Scarcity, Choice, and Opportunity Cost



▸ Details

Scarcity means that no society has enough resources to produce all the goods and services necessary to satisfy all human wants. As a result, society is always confronted with the problem of making choices. This means that each decision has a sacrifice in terms of an alternative choice that has to be foregone, which is the opportunity cost of that decision.

Examples are endless, but let's consider a few. Suppose your economics professor decides to become a rock star in the Rolling in Dough band. Now all your professor's working hours are devoted to creating hit music, and the opportunity cost is the educational services no longer provided. Opportunity cost also applies to national economic decisions. Suppose the federal government decides to spend tax revenues on a space station. The opportunity cost depends on the next best program *not* funded. Assume roads and bridges are the highest-valued projects not built as a result of the decision to construct the space station. Then the opportunity cost of the decision to devote resources to the space station is the forgone roads and bridges and not the money actually spent to build the space station.

spent to build the space station.

To personalize the relationship between time and opportunity cost, ask yourself what you would be doing if you were not reading this text. Your answer might be watching television, sleeping, or working out at the gym. If sleeping is your next best choice, then the opportunity cost of reading this text is the sleep you sacrifice. Have you ever wondered why very few rock stars or movie stars attend college? The concept of opportunity cost can help us understand the answer to this question. Rock stars and movie stars would need to forfeit a large amount of income to spend time attending college, that is, the opportunity cost of doing so would be very high.

Take Note

Because of scarcity, society must make choices. The opportunity cost is the next best alternative that must be given up when making any choice.

Am I on Track?

1. Niki has exams in calculus, English, and biology this week. She studies in one-hour blocks of time. Niki has decided that studying for biology is most important, calculus second most important, and English least important. When Niki decides to spend her first hour studying biology, the opportunity cost of this is:

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. $10

b. Not studying calculus

c. Not studying English

d. Not studying calculus and not studying English

Am I on Track?

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SHOW ANSWER

SHOW ANSWER

a. $10

b. Not studying calculus

c. Not studying English

d. Not studying calculus and not studying English

Am I on Track?

1. Niki has exams in calculus, English, and biology this week. She studies in one-hour blocks of time. Niki has decided that studying for biology is most important, calculus second most important, and English least important. When Niki decides to spend her first hour studying biology, the opportunity cost of this is:

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. $10

b. Not studying calculus

c. Not studying English

d. Not studying calculus and not studying English

2-2. Marginal Analysis

At the heart of all rational decision-making is marginal analysis.

Marginal analysis examines the effects of incremental additions to or

subtractions from a current situation. This is a very valuable tool in the economic way of thinking toolkit because it considers the "marginal" effects of change. The ***rational*** decision maker decides on an option only if the marginal benefit exceeds the marginal cost. For example, you must decide how to use your scarce time. Should you devote an extra hour to reading this text, going to the gym, watching television, or sleeping? Which of your many options do you choose? The answer depends on marginal analysis. If you decide the benefit of a higher grade in economics exceeds the opportunity cost of, say sleep, then you allocate the extra hour to studying economics.

Businesses also use marginal analysis. Hotels, for example, rent space to student groups for dances and other events. Assume you are the hotel manager, and a student group offers to pay $400 to use the ballroom for a party. To decide whether to accept the offer requires marginal analysis. The marginal benefit of renting otherwise vacant space is $400, and the marginal cost is $300 for extra electricity and cleaning services. Since the marginal benefit exceeds the marginal cost, the manager sensibly accepts the offer.

Marginal analysis is also an important concept when the government considers changes in various programs. For example, as demonstrated in the next section, an increase in the production of military goods will result in an opportunity cost of fewer consumer goods being produced and that trade-off will need to be considered.

2-3. The Production Possibilities Model

The economic problem of scarcity means that society's capacity to produce combinations of goods is constrained by its limited resources and existing technology. This condition can be represented in a model called the production possibilities curve (*PPC*), which we will now explore.

2-3a. Assumptions

It is important when building any model to first be clear about the assumptions you are making. Three basic assumptions underlie the production possibilities curve model we are about to develop:

1. **Fixed Resources.** The quantities and qualities of all resources remain unchanged during the time period. But the economy can shift any resource from the production of one output to the production of another output. For example, an economy might shift workers from producing ***consumer goods*** (such as iPhones, pizza, clothing, etc.) to producing ***capital goods*** (such as machinery, office buildings, roads, etc.). Although the number of workers remains unchanged, this transfer of labor will produce fewer consumer goods and more capital goods.

2. **Fully Employed Resources.** The economy operates with all its factors of production fully employed and producing the greatest output possible without waste or mismanagement.

3. **Fixed Technology.** Holding the level of existing technology fixed creates limits, or constraints, on the amounts and types of goods any economy can produce. **Technology** is the body of knowledge applied to how goods are produced.

2-4. Opportunity Cost and the Production Possibilities Curve

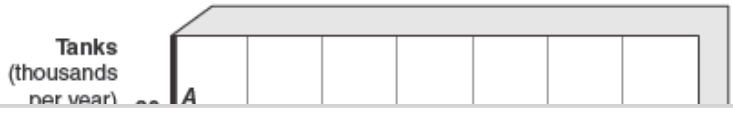
We now know that every point on the *PPC* is productively efficient, meaning the only way to produce more of one good is to produce less of the other. Let's look more carefully at what happens when an economy produces more of one good.

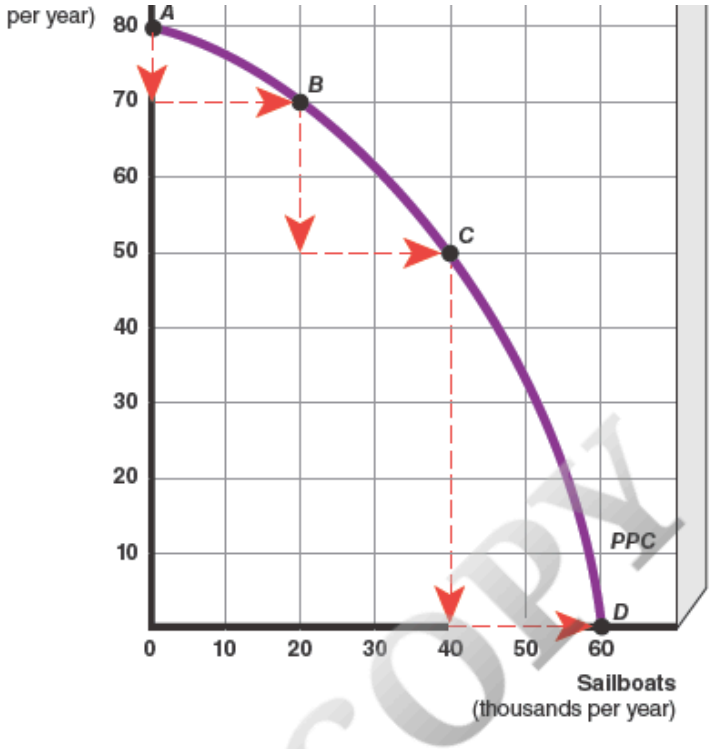
2-4a. Identifying Opportunity Cost Using the *PPC* Model

Exhibit 3 presents a production possibilities curve for a hypothetical economy that must choose between producing tanks and producing sailboats. Consider point *A*, which represents the situation where this economy is devoting all of its resources to the production of tanks and can produce 80,000 tanks. As we have seen, the only way to increase the production of sailboats, given the existing resources and technology, is to decrease the production of tanks. We can use this idea to calculate the opportunity cost of sailboat production.

Exhibit 3. The Law of Increasing Opportunity Costs

Points *A* through *D* on the production possibilities curve (*PPC*) below represent a hypothetical economy increasing production of sailboats in equal increments of 20,000 sailboats per year. If the economy moves from point *A* to point *B*, the opportunity cost of 20,000 sailboats is a reduction in tank output of 10,000 per year. This opportunity cost rises to 20,000 tanks if the economy moves from point *B* to point *C*. Finally, production at point *D*, rather than point *C*, results in an opportunity cost of 50,000 tanks per year. The opportunity cost rises because workers are not equally suited to making both tanks and sailboats.





▸ Details

Production Possibilities Schedule for Tanks and Sailboats per Year

Output (thousands per year)	Production Possibilities			
	A	B	C	D
Tanks	80	70	50	0
Sailboats	0	20	40	60

Let's examine the movement from point *A* to point *B* along the *PPC*. To increase the production of sailboats by 20,000 units requires decreasing the production of tanks from 80,000 to 70,000. This 10,000-unit reduction in the production of tanks, then, is the opportunity cost of producing 20,000 sailboats. It represents

tanks, then, is the opportunity cost of producing 20,000 sailboats. It represents what the economy must give up in order to produce those sailboats.

2-4b. The Law of Increasing Opportunity Cost

What happens in Exhibit 3 if we continue to expand the production of sailboats in 20,000-unit increments? If we move from producing at combination *B* to producing at combination *C*, the next 20,000 sailboats produced will require a reduction in tank production from 70,000 to 50,000. The opportunity cost, then, of producing these additional 20,000 sailboats is 20,000 tanks. What if we continue to produce more sailboats? As we move from *C* to *D*, the opportunity cost increases again, now to 50,000 tanks (as production of these last 20,000 sailboats requires tank production fall from 50,000 to 0). The **law of increasing opportunity costs** states that the opportunity cost increases as production of one output expands. Holding the stock of resources and technology constant (ceteris paribus), the law of increasing opportunity costs, therefore, causes the production possibilities curve to display a *bowed-out* shape.

Why must our hypothetical economy sacrifice larger and larger quantities of tank production in order to produce each additional 20,000 sailboats? The reason is that resources, like workers, are not equally suited to the production of both goods. For example, expanding the output of sailboats requires shifting the use of resources, like workers, from tank production to sailboat production. When our hypothetical economy produces no sailboats (point *A*) and then decides to produce them, initially, the least-skilled tank workers are transferred to making sailboats. As such, only 10,000 tanks are sacrificed to move to point *B*. However, as the economy moves from point *B* to point *C*, more highly skilled tank makers become sailboat makers, and the opportunity cost rises to 20,000 tanks. Finally, if the economy decides to move from point *C* to point *D*, the remaining tank workers, who are superb tank makers, but poor sailboat makers, must adapt to the techniques of sailboat production and the opportunity cost increases even more—to 50,000 tanks.

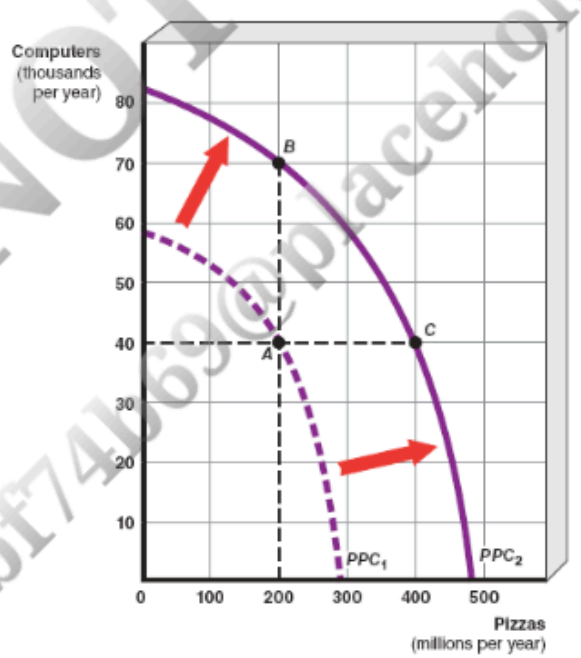
It should be noted that the production possibilities curve model could assume

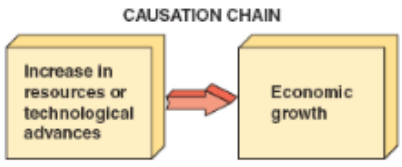
that resources are equally well-suited to the production of all goods and the opportunity

2-5. Sources of Economic Growth

The economy's production capacity is not permanently fixed. The points on our production possibilities curve (*PPC*) are productively efficient, meaning society is producing the most it can *with its existing resources and technology*. If either the quantity or the quality of resources increase or technology advances, the economy will experience economic growth, and the *PPC* will shift outward. **Economic growth** is the ability of an economy to produce greater levels of output, represented by an outward shift of its production possibilities curve. Exhibit 4 illustrates this outward shift.

Exhibit 4 An Outward Shift of the Production Possibilities Curve for Computers and Pizzas





▸ Details

The economy begins with the capacity to produce combinations along the

first production possibilities curve PPC_1 . Growth in the quantity or quality of resources, or technological advances can shift the production possibilities curve outward from PPC_1 to PPC_2 . Points along PPC_2 represent new production possibilities that were previously impossible. This outward shift permits the economy to produce greater quantities of output. Instead of producing combination *A*, the economy can produce, for example, more computers at point *B* or more pizzas at point *C*. If the economy grows and produces at a point between *B* and *C*, more of both pizzas and computers can be produced, compared to point *A*.

At point *A* on PPC_1 , a hypothetical full-employment, productively efficient economy produces 40,000 computers and 200 million pizzas per year. If the economy experiences economic growth, then the production possibilities curve will shift outward to PPC_2 . One option now will be to produce at point *B* and increase computer output to 70,000 per year. Another possibility would be to increase pizza output to 400 million per year. Yet another choice is to produce more of both at some point between points *B* and *C* on PPC_2 .

Let's explore further these sources of economic growth, which, as we've indicated, include:

1. More or better resources (land, labor, capital)
2. New technologies

2-5a. Changes in Resources

One way to realize economic growth is to obtain more resources. Any increase in resources, for example, more natural resources (land), a baby boom (labor), or more factories (capital) will shift the production possibilities curve outward. Conversely, a reduction in resources, for example, a natural disaster like fires that destroy forests and therefore lumber available for construction (land), a pandemic that causes many casualties (labor), or the destruction of factories during a war (capital) will cause the production possibilities curve to shift inward.

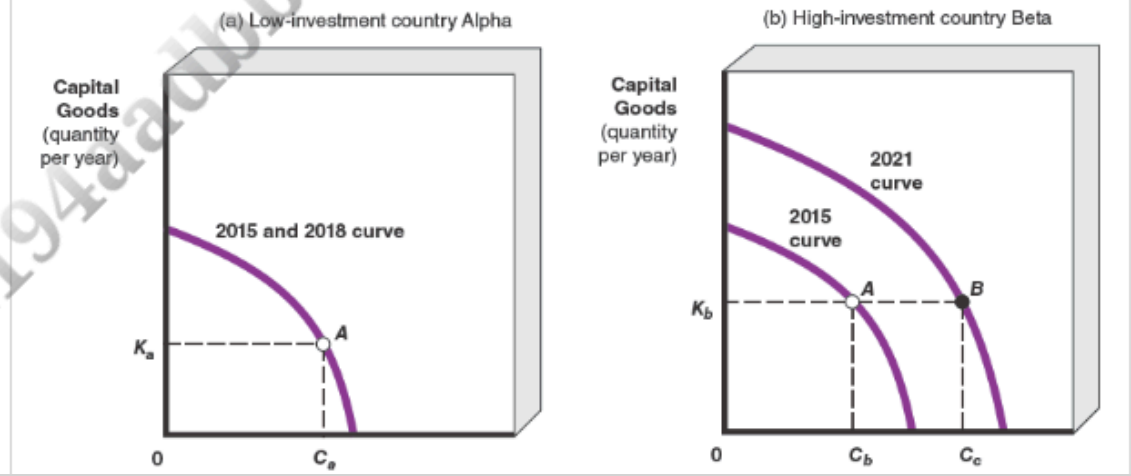
Another way to promote economic growth is by increasing the productivity of existing resources, particularly labor. Investments in health, education, and training of the existing labor force increase the productivity of those workers and shifts the *PPC* outward. In addition, if the quality of capital (our physical facilities like factories and machinery) is improved, then this too creates more growth.

2-5c. Present Investment in Capital

We now know that if an economy increases the amount of available capital, it will experience economic growth. How is that capital accumulated? When the decision for an economy involves choosing between the production of capital goods and the production of consumer goods, the output combination chosen for the present period can determine future production capacity. Exhibit 6 compares two countries producing different combinations of capital and consumer goods. Part (a) shows the production possibilities curve for the low-investment economy of Alpha. This economy was producing combination *A* in 2015, which is an output of C_a of consumer goods and an output of K_a of capital goods per year. This economy is currently producing relatively few capital goods and lots of consumer goods. Let's assume K_a is just enough capital output to replace the capital being worn out each year (depreciation). As a result, Alpha fails to accumulate the net gain of factories and equipment required to expand its production possibilities curve outward in future years.

39 Why wouldn't Alpha simply move up along its production curve by shifting more resources to capital goods production? The problem is that sacrificing consumer goods for capital formation causes a current lower standard of living today, which can be unpopular.

Exhibit 6 Alpha's and Beta's Present and Future Production Possibilities Curves



Consumer Goods
(quantity per year)

Consumer Goods
(quantity per year)

▸ Details

In part (a), each year Alpha produces only enough capital K_a to replace existing capital that has worn out. Without more capital, and assuming other resources remain fixed as well, Alpha is unable to grow and shift its production possibilities curve outward. In part (b), each year Beta produces K_b capital, which is more than the amount required to replenish its depreciated capital. In 2021, this expanded capital provides Beta with the extra production capacity to shift its production possibilities curve to the right (outward). If Beta chooses point *B* on its curve, it has the production capacity to increase the amount of consumer goods from C_b to C_c without producing fewer capital goods. Because it now has more consumer goods, the country has increased its standard of living.

A Closer Look Applicable Concept: Economic Growth

How Does Public Capital Affect a Nation's Curve?

iStock.com/Robert Hackett

The discussion of low-investment country Alpha versus high-investment country Beta explained that sacrificing production of consumer goods for an increase in capital goods output can result in economic growth and a higher standard of living. Stated differently, there was a long-run benefit from the accumulation of capital that offset the short-run opportunity cost in terms of consumer goods foregone. Here the analysis was in terms of investment in private capital such as factories, machines, and inventories. However, public or government capital can also influence a nation's production possibilities over time.

production possibilities over time.

For example, according to Josh Bivens at the Economic Policy Institute: "Public investment by federal, state, and local governments builds the nation's capital stock by devoting resources to the basic physical infrastructure (such as roads, bridges, rail lines, airports, and water distribution), innovative activity (basic research), green investments (clean power sources and weatherization), and education (both primary and advanced, as well as job training) that leads to higher productivity and/or higher living standards." Moreover, ... "investments in public capital have significant positive impacts on private-sector productivity, with estimated rates of return ranging from 15 percent to upwards of 45 percent," and "public investment has benefits that extend beyond simply increasing [overall production]: It also offers benefits that are more broadly shared by all... such as safer water and cleaner air."

Finally, economic growth and development is a major goal of countries throughout the world, and there are numerous factors that cause some countries to experience greater economic growth compared to other countries.

Comparing Alpha to Beta illustrates the importance of being able to do more than just replace worn out capital. In 2015, Beta operated at point *A* in panel (b), which is an output of C_b of consumer goods and K_b of capital goods. Assuming K_b is more than enough to replenish worn-out capital, Beta is a high-investment economy, adding to its capital stock and creating extra production capacity. This process of accumulating capital (*capital formation*) is investment. **Investment** is the accumulation of capital, such as factories, machines, and inventories, used to produce goods and services. With more factories and machinery Beta's production possibilities expand and its economy grows and prospers, while Alpha's standard of living remains unchanged because the production of consumer goods remains unchanged. As mentioned earlier, not only will capital accumulation create economic growth, but if this additional capital is also of higher quality (it is more "high-tech"), then the production

capital is also of higher quality (it is more "high-tech"), then the production possibilities curve will shift even further to the right and we will get even more economic growth.

Take Note

A nation can accelerate economic growth by devoting more resources to the production of capital goods. While this increases economic growth and provides for higher standards of living over time, it can be unpopular because it entails an opportunity cost—it requires current sacrifice of consumer products.

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Key Terms

Opportunity cost

Marginal analysis

Production possibilities curve

Technology

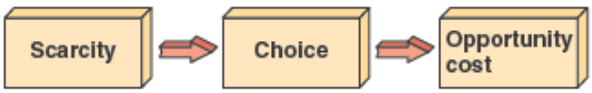
law of increasing opportunity costs

Economic growth

Investment

Summary

- Opportunity cost is the best alternative forgone for a chosen option. This means no decision can be made without cost.



Details

▸ Details

- Marginal analysis examines the impact of incremental changes from a current situation and is a technique used extensively in economics. The basic approach is to compare the additional benefits of a change with the additional costs of the change.

- A production possibilities curve (*PPC*) illustrates an economy's capacity to produce goods, subject to the constraint of scarcity. The production possibilities curve is a graph of the maximum possible combinations of two outputs that can be produced in a given period of time, subject to three conditions:

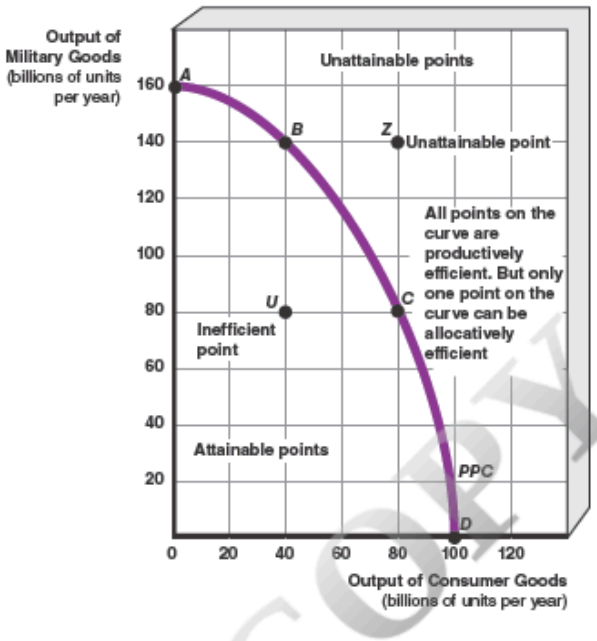
  (1) All resources are fully employed;

  (2) The resource base is not allowed to vary during the time period; and

  (3) Technology, which is the body of knowledge applied to the production of goods, remains constant.

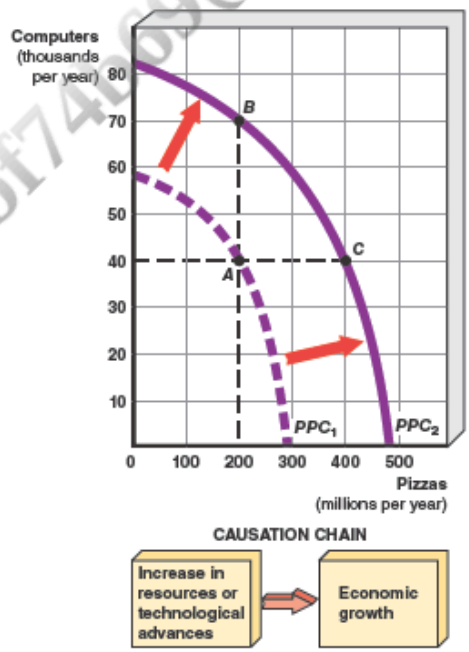
- All points along the *PPC* are productively efficient points because each point represents a maximum output possibility. Inefficient production occurs at any point inside the *PPC*. Only one point on the curve can be allocatively efficient. This point represents a combination of products that is most desired by society. Finding that combination requires comparing

the marginal benefit and marginal cost of the products produced. Points outside the curve are currently unattainable.



▸ Details

- Economic growth is represented by the production possibilities curve shifting outward as the result of an increase in the quantity and quality of resources or an advance in technology. Economic growth is desired because it increases the nation's standard of living.



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- The law of increasing opportunity costs states that the opportunity cost increases as the production of a good expands. The explanation for this law is that the suitability of resources declines sharply as greater amounts are transferred from producing one output to producing another output.

- Investment means that an economy is producing and accumulating capital. Investment consists of factories, machines, and inventories (capital) produced in the present that are used to shift the production possibilities curve outward in the future. The current location on the *PPC* will determine the future location of that *PPC*.

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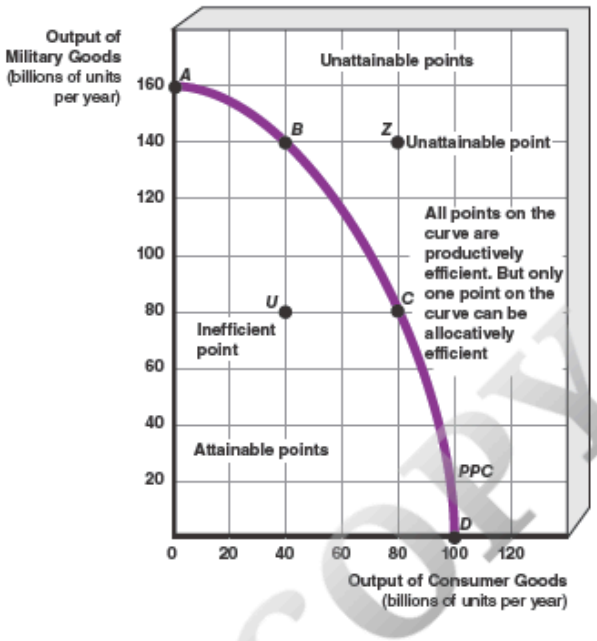

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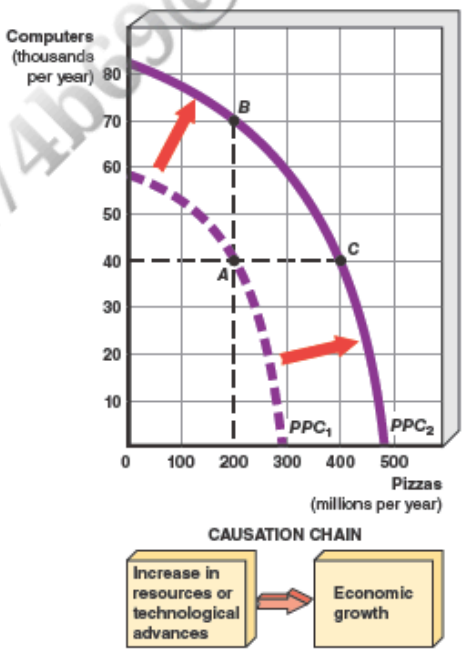

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Take Note Revisited

- Because of scarcity, society must make choices. The opportunity cost is the next best alternative that must be given up when making any choice.
- Scarcity limits an economy to points on or below its production possibilities curve.
- Productive efficiency is illustrated by all points along a production possibilities curve where more of one good can only be produced by producing less of another good. Only one point on the *PPC* will be allocatively efficient, reflecting the one combination of products most desired by society.
- Because resources are not equally suited to the production of all goods, it's common to experience increasing opportunity costs and a bowed-out production possibilities curve.
- Economic growth is represented by an outward shift of the production possibilities curve and is caused by improvements in technology as well as more or better resources.

more or better resources.

- A nation can accelerate economic growth by devoting more resources to the production of capital goods. While this increases economic growth and provides for higher standards of living over time, it can be unpopular because it entails an opportunity cost—it requires current sacrifice of consumer products.

Sample Quiz

Please see Appendix B for answers to Sample Quiz questions.

1. Because of scarcity, people must make choices, and each choice incurs a cost. The _____ cost is the next best alternative that was sacrificed when making that choice.

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. financial

b. money

c. optional

d. opportunity

2. Suppose the alternative uses of an hour of your time in the evening, ranked from best to worst, are

(1) study economics,

(2) watch two half-hour sitcoms,

(3) play video games, and

(4) jog around town.

You can choose only one activity. What is the opportunity cost of studying economics for one hour given this information?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. Jogging around town

b. Watching two half-hour TV sitcoms

c. Playing video games

d. The sum of watching two half-hour TV sitcoms, playing pool, and doing your laundry

3. Which word or phrase *best* completes the following sentence?

Marginal analysis means evaluating _____ changes from a current situation.

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. incremental

b. infinite

c. no

d. maximum

4. Which of the following is an example of an organization using marginal analysis?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. A hotel manager calculating the average cost per guest for the past year

b. A farmer hoping for rain

c. A government official considering the effect an increase in military goods production will have on the production of consumer goods

d. A businessperson calculating economic profits

5. A production possibilities curve shows the various combinations of two outputs that

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. consumers would like to consume.

b. producers would like to produce.

c. an economy can produce.

d. an economy should produce.

6. A production possibilities curve is drawn based on which of the following assumptions?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. Resources are fixed and fully employed, and technology advances at the rate of growth of the economy overall.

b. Resources will decline, but labor remains fully employed and technology is unchanged.

c. Resources can vary; most resources experience times of unemployment; and technology advances, particularly during wartime.

d. Resources such as labor and capital will grow and are fully employed, and technology is unchanged.

e. None of the answers correct.

7. If an economy can produce various combinations of food and shelter along a production possibilities curve (*PPC*), then if we increase the production of shelter along the *PPC*, which of the following is true?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. We also increase the production of food.

b. We must decrease the production of food, and this forgone food production represents the opportunity cost of the increase in shelter.

c. We cannot change the production of food.

d. The concept of opportunity cost does not apply along *PPC*.

8. An economy can produce various combinations of food and shelter along a production possibilities curve (*PPC*). First, increase the production of shelter along the *PPC*; then continue to shift more and more production to shelter. Which of the following will most likely happen to the opportunity cost of a unit of shelter?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. Opportunity cost will increase because as more and more shelter is produced, labor and capital that is highly productive at producing food is being shifted to shelter production, and so more and more food is being given up to produce a unit of shelter.

b. Opportunity cost is the amount of labor (but not capital) that is used to produce the extra shelter.

c. Opportunity cost must stay constant if we are to stay on the production possibilities curve (*PPC*).

d. Opportunity cost includes all options given up to produce

shelter.

9. An economy can produce various combinations of food and shelter along a production possibilities curve (*PPC*). Suppose a technological innovation resulted in a new, higher-yielding crop that generated more bushels of grain for a given set of land, labor, and capital resources. If this innovation did not affect the productivity of shelter production, which of the following would be *true*?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. The *PPC* will shift outward equally along both axes of the graph.

b. The *PPC* will rotate inward along the food axis, but will not shift on the shelter axis.

c. The *PPC* will rotate outward along the food axis, but will not shift on the shelter axis.

d. The *PPC* will not change.

10. If a production possibilities curve (*PPC*) has capital on the vertical axis and consumer goods on the horizontal axis, which of the following is

true?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. There is a trade-off between emphasizing the production of capital today to benefit people today versus emphasizing the production of consumer goods today that will generate benefits in the future.

b. Greater emphasis on the production of capital today leads to future inward shifts in the *PPC*, thus decreasing the wealth of people in the future.

c. Greater emphasis on the production of consumer goods today leads to greater outward shifts in the *PPC*, thus increasing the wealth of people in the future.

d. Greater emphasis on the production of capital today leads to greater outward shifts in the *PPC*, thus increasing the wealth of people in the future.

11. Which of the following reasons could explain why an economy would be operating inside its production possibilities curve (*PPC*)?

a. Because shrinking population has reduced the number of productive workers in the economy

b. Because technological innovations have increased the productivity of labor and capital

c. Because damage to natural resources, such as damage caused by deforestation leading to erosion of topsoil, has shrunk the land resource

45

Road Map for Chapters 1 and 2

Road Map: Introduction to Economics

This road map feature helps you tie together material in the part as you travel the Economic Way of Thinking Highway. The following are review questions listed by chapter from the previous part. The key concept in each question is given for emphasis, and each question or set of questions concludes with an interactive game to reinforce the concepts. The correct answers to the multiple choice questions are given in Appendix C.

Chapter 1. Introducing the Economic Way of Thinking

1. Key Concept: Scarcity

Economists believe that scarcity forces everyone to

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. satisfy all wants.

b. abandon consumer sovereignty.

c. lie about their wants.

d. create unlimited resources.

e. make choices.

2. Key Concept: Economics

The subject of economics is primarily the study of

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. the government decision-making process.

b. how to operate a business successfully.

c. decision making because of the problem of scarcity.

d. how to make money in the stock market.

3. Key Concept: Model

3. Key Concept: Model

When building a model, an economist must

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. adjust for exceptional situations.

b. provide a complete description of reality.

c. make simplifying assumptions.

d. develop a set of behavioral equations.

47 **4. Key Concept: Ceteris paribus**

If the price of a textbook rises and students purchase fewer textbooks, an economic model can show a cause-and-effect relationship only if which of the following conditions holds?

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. Students' incomes fall.

b. Tuition decreases.

c. The number of students increases.

d. Everything else is constant.

e. The bookstore no longer accepts used book trade-ins.

5. Key Concept: Efficiency

Economists generally use the term efficiency to describe a situation where society is

SHOW ANSWER

SHOW ANSWER

SHOW ANSWER

a. doing the best it can with its existing resources and technology.

b. producing the best combination of goods and services.

c. maximizing production.

d. all of the above.

Chapter 2. Production Possibilities, Opportunity

Chapter 2: Production Possibilities, Opportunity Cost, and Economic Growth

6. Key Concept: Production possibilities curve

Points on a production possibility curve

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are attainable.

are productively efficient.

represent maximum production.

all of the above.

7. Key Concept: Opportunity cost

Which of the following can be calculated by looking at the movement from one point to another along a production possibilities curve?

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Opportunity cost

Opportunity cost

Equity

Economic growth

Inventory changes

8. Key Concept: Economic growth

Economic growth is represented by an outward shift of an economy's production possibilities curve and could be caused by

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entrepreneurship.

an increase in labor.

an advance in technology.

all of the above.

9. Key Concept: Investment

A nation can accelerate its economic growth by

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reducing the number of immigrants allowed into the country.

adding to its stock of capital.

printing more money.

imposing tariffs and quotas on imported goods.

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Chapter 3. Market Demand and Supply

Chapter Objectives

1. Describe how both individual and market demand curves are constructed.
2. Explain how changes in nonprice determinants of demand will affect demand.
3. Describe how both individual and market supply curves are constructed.
4. Explain how changes in nonprice determinants of supply will affect supply.
5. Analyze how demand and supply determine the market equilibrium price and quantity.
6. Predict how a change in supply or demand (or both) impacts market equilibrium.

Introduction

A cornerstone of the U.S. economy is the use of markets to answer the basic economic questions that result from the problem of scarcity. Consider gasoline, haircuts, soft drinks, and sneakers. In a *market economy*, each is bought and sold by individuals coming together as buyers and sellers in markets. This chapter is extremely important because it introduces basic supply and demand analysis. In the market for goods and services, demand represents the choice-making behavior of consumers, whereas supply represents the choices of producers. Let's get started to see how the interaction of demand and supply in the marketplace determines the prices and quantities exchanged.

3-1. Demand

Economists are known for using graphs to illustrate many economic concepts. It should come as no surprise, then, that we start our discussion of demand with a graph.

3-1a. The Demand Curve

We are all consumers, people who make purchases in a market by buying goods or services such as a bus ticket, a cup of coffee, a T-shirt, a sandwich, or a haircut. You probably already know more about how markets work than you realize. Consider, for example, what happens when an item is put on "sale." It is likely no surprise to you that consumers buy more when the price of merchandise is cut. Economists use a graph to represent this basic relationship.

A **demand curve** is a curve or schedule showing the different quantities of a product consumers are willing to purchase at various prices during a specified period of time, ceteris paribus. Exhibit 1 reveals an important "law" in economics called the law of demand. The **law of demand** states there is an inverse relationship between the price of a good and the quantity buyers are willing to purchase in a defined time period, ceteris paribus. In Exhibit 1, the *demand curve* is formed by the line connecting various price and quantity

purchased choices of an individual consumer. The demand curve, therefore, allows you to find the quantity demanded by a buyer at any possible selling price by moving along the curve. For example, Bob, a sophomore at Marketplace College, enjoys fun T-shirts. Bob's demand curve shows that at a price of $15 per T-shirt, his quantity demanded is six T-shirts purchased annually (point *B*).