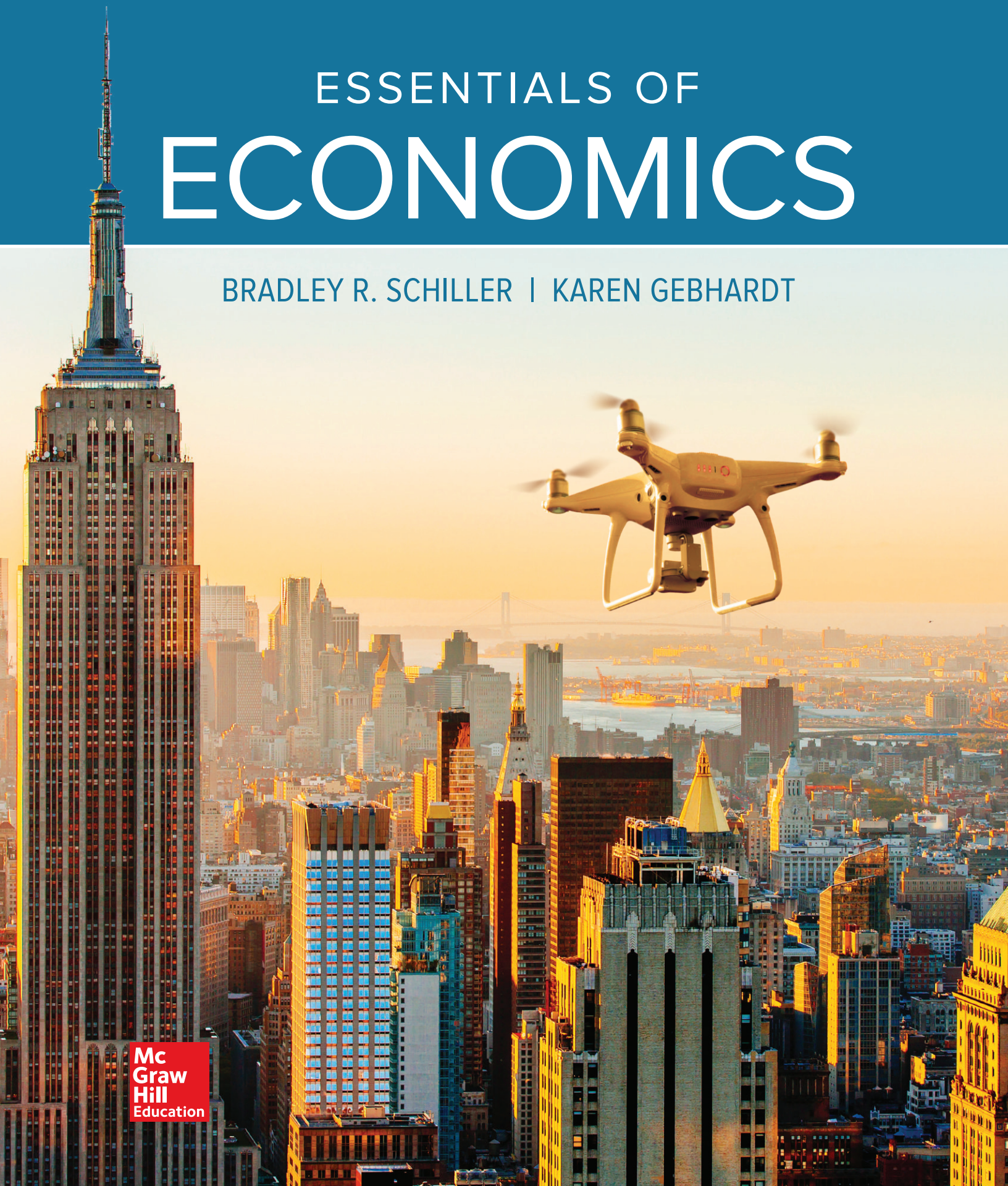
ELEVENTH EDITION

ESSENTIALS OF ECONOMICS

BRADLEY R. SCHILLER | KAREN GEBHARDT



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Essentials of Economics

Eleventh Edition

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ESSENTIALS OF ECONOMICS, ELEVENTH EDITION

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About the Authors

©Bradley Schiller

Bradley R. Schiller has over four decades of experience teaching introductory economics at American University, the University of California (Berkeley and Santa Cruz), the University of Maryland, and the University of Nevada (Reno). He has given guest lectures at more than 300 colleges ranging from Fresno, California, to Istanbul, Turkey. Dr. Schiller's unique contribution to teaching is his ability to relate basic principles to current socioeconomic problems, institutions, and public policy decisions. This perspective is evident throughout *Essentials of Economics*.

Dr. Schiller derives this policy focus from his extensive experience as a Washington consultant. He has been a consultant to most major federal agencies, many congressional committees, and political candidates. In addition, he has evaluated scores of government programs and helped design others. His studies of income inequality, poverty, discrimination, training programs, tax reform, pensions, welfare, Social Security, and lifetime wage patterns have appeared in both professional journals and popular media. Dr. Schiller is also a frequent commentator on economic policy for television, radio, and newspapers.

Dr. Schiller received his PhD from Harvard and his BA degree, with great distinction, from the University of California (Berkeley). When not teaching, writing, or consulting, Professor Schiller is typically on a tennis court, schussing down a ski slope, or enjoying the crystal blue waters of Lake Tahoe.

©Karen Gebhardt

Karen Gebhardt is the Director of the Online Economics Program in the Department of Economics and regularly teaches in the Masters of the Environment program at the University of Colorado Boulder. Dr. Gebhardt has a passion for teaching economics. She has taught online since 2005, and regularly instructs on-campus large introductory courses in macro- and microeconomics; upper-division courses in Public Finance, Microeconomics, Money and Banking, and International Trade; and graduate courses in Public Finance and Environmental Statistics. She is an early adopter of technology in the classroom and advocates strongly for it because she sees the difference it makes in student engagement and learning. Dr. Gebhardt was the recipient of the Water Pik Excellence in Education Award in 2006 and was awarded the Colorado State University Best Teacher Award in 2015.

Dr. Gebhardt's research interests, publications, and presentations involve economics education and the economics of human–wildlife interaction. Before joining academia, she worked as an economist at the USDA/APHIS/Wildlife Services/National Wildlife Research Center conducting research on the interactions of humans and wildlife. Her current research focuses on using learning analytics to improve student learning outcomes in economics education with an emphasis on improving grades and completion rates in online courses.

In her free time, Dr. Gebhardt enjoys learning about new teaching methods that integrate technology, as well as rock climbing and camping in the Colorado Rockies and beyond.

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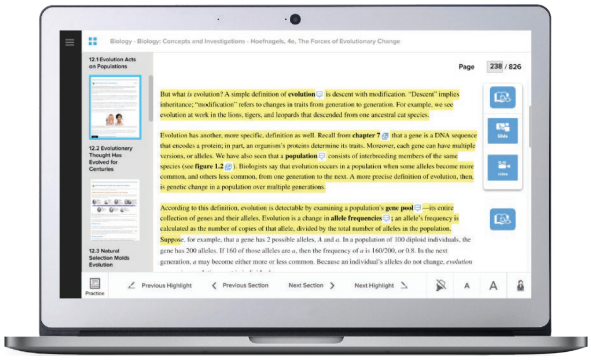

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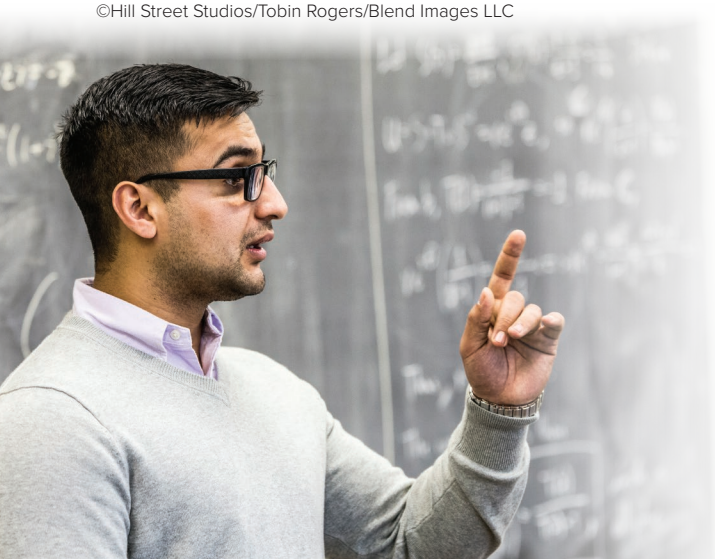

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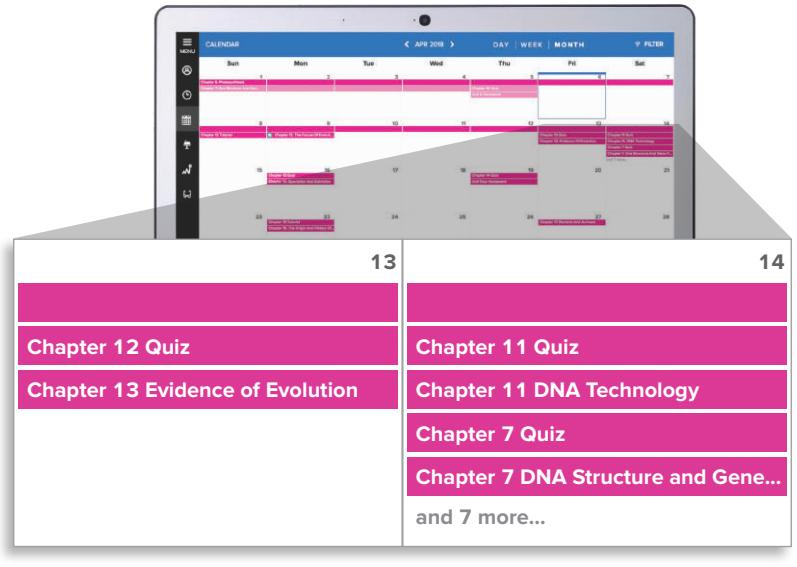

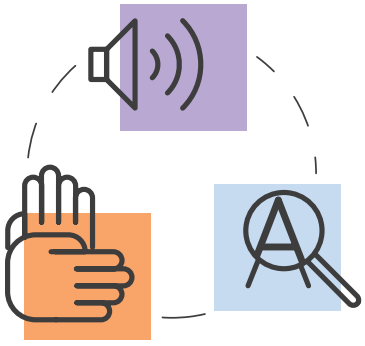

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Preface

Election campaigns bring out the best and the worst economic ideas. Virtually every candidate promises a "chicken in every pot," without regard to the supply of chickens. They will clean up the environment, fix our schools, put more police on the streets, build more affordable housing, and, of course, guarantee every American access to quality health care. And they'll do this while cutting taxes, subsidizing alternative energy sources, and rebuilding America's infrastructure.

Don't you wish you lived in such a utopia?! I know I do. And our students overwhelmingly embrace these promises.

The problem is, of course, that there is no such thing as a free lunch. Nor free health care, free environmental protection, or free infrastructure development. As economists, we know this; we know that resource scarcity requires us to make difficult choices about competing uses of those resources. We know that politicians can't place a chicken in every pot without allocating more resources to poultry production—and fewer resources to the production of other desired goods and services.

Our first task as instructors is to convince students of this basic fact of life—that every decision about resource use entails opportunity costs. If we can establish that beachhead early on, we have a decent chance of instilling in students a basic appreciation of economic theory.

The other challenge for us as instructors is to instill in students a sense of *why* the economic problems we analyze are important. We know that inflation and unemployment cause serious hardships. But most of our students haven't experienced the income losses that accompany unemployment or seen their retirement savings decimated by inflation. We have to explain and illustrate why the macro problems we seek to solve are politically, socially, and economically important.

The same reference gap exists in micro. Formulas and graphs illustrating externalities or monopoly pricing are meaningless abstractions to most students. If we want them to appreciate these concepts, we have to illustrate them with real-world examples (e.g., the death toll from secondhand smoke; the higher airfares that result on monopoly airplane routes). For most students, this course is their first exposure to economics. If we want them to understand the subject—maybe even pursue it further—we have got to relate our concepts and theories to the world that they live in. This has been the hallmark of *Essentials* from the beginning: introducing the core concepts of economics in a reality-based, policy-driven context. This eleventh edition continues that tradition.

WHAT, HOW, FOR WHOM?

The core theme that weaves through the entire text is the need to find the best possible answers to the basic questions of WHAT, HOW, and FOR WHOM to produce. Students are confronted early on with the reality that the economy doesn't always operate optimally at either the macro or micro level. In Chapter 1 they learn that markets sometimes fail to generate optimal outcomes, but also that government interventions can fail to improve economic performance. The policy challenge is to find the mix of market reliance and government regulation that generates the best possible outcomes. Every chapter ends with a Policy Perspectives feature that challenges students to apply the economic concepts they have just encountered to real-world policy issues. In Chapter 1 the policy question is, "Is 'Free' Health Care Really Free?"—a question that emphasizes the opportunity costs associated with all economic activity. In Chapter 10 the issue is "Is Another Recession Coming?"—which challenges students to think about the causes and advance indicators of

economic downturns. And Chapter 17 is devoted to explaining the perennial contrast between theory and reality, with a mixture of institutional, political, and theoretical factors. Students love that macro capstone.

FOCUS ON CORE CONCEPTS

It's impossible to squeeze all the content—and the excitement—of both micro and macro economics into a one-semester course, much less an abbreviated intro text. But economics is, after all, the science of choice. Instructors who teach a one-term survey of economics know how hard the content choices can be. There are too many topics, too many economic events, and too little time.

Few textbooks confront this scarcity problem directly. Some one-semester books are nearly as long as full-blown principles texts. The shorter ones tend to condense topics and omit the additional explanations, illustrations, and applications that are especially important in survey courses. Students and teachers alike get frustrated trying to pick out the essentials from abridged principles texts.

Essentials of Economics lives up to its name by making the difficult choices. The standard table of contents has been pruned to the core. The surviving topics are the essence of economic concepts. In microeconomics, for example, the focus is on the polar models of perfect competition and monopoly. These models are represented as the endpoints of a spectrum of market structures. Intermediate market structures—oligopoly, monopolistic competition, and the like—are noted but not analyzed. The goal here is simply to convey the sense that market structure is an important determinant of market outcomes. The contrast between the extremes of monopoly and perfect competition is sufficient to convey this essential message. The omission of other market structures from the outline also leaves more space for explaining and illustrating *how* market structure affects market behavior.

The same commitment to essentials is evident in the section on macroeconomics. Rather than attempt to cover all the salient macro models, the focus here is on a straightforward presentation of the aggregate supply–demand framework. The classical, Keynesian, and monetarist perspectives on aggregate demand (AD) and aggregate supply (AS) are discussed within that common, consistent framework. There is no discussion of neo-Keynesianism, rational expectations, public choice, or Marxist models. The level of abstraction required for such models is neither necessary nor appropriate in an introductory survey course. Texts that include such models tend to raise more questions than survey instructors can hope to answer. In *Essentials* students are exposed to only the ideas needed for a basic understanding of how macro economies function.

CENTRAL THEME

The central goal of this text is to convey a sense of how economic *systems* affect economic *outcomes*. When we look back on the twentieth century, we see how some economies flourished while others languished. Even the "winners" had recurrent episodes of slow, or negative, growth. The central analytical issue is how various economic systems influenced those diverse growth records. Was the relatively superior track record of the United States a historical fluke or a by-product of its commitment to market capitalism? Were the long economic expansions of the 1980s and 1990s the result of enlightened macro policy, more efficient markets, or just good luck? What roles did policy, markets, and (bad) luck play in the Great Recession of 2008–2009? What forces deserve credit for the accelerated economic growth of 2016–2019?

In the looming 2020 presidential election, economic issues will again be at the forefront (as Yale economist Ray Fair has been telling us for decades). President Trump will claim credit for the economic expansion of the last few years. Democrats will argue that the expansion started when President Obama was in office. Republicans will say the 2017 tax cuts propelled the economy forward. Democrats will counter that the 2017 tax cuts merely enriched the top 1 percent of U.S. households and ballooned budget deficits. President Trump will hail his trade and tariff policies as sources of economic strength; Democrats will emphasize how those same policies increased the cost of living for middle-class households.

How are students—and voters—supposed to sort out these conflicting claims? *Essentials* offers an analytical foundation for assessing both economic events and political platforms. Students get an initial bird's-eye view of the macro economy that relates macro determinants to macro outcomes. Then they get enough tools to identify cause-and-effect relationships and to sort out competing political claims.

A recurrent theme in *Essentials* is the notion that economic institutions and policies *matter.* Economic prosperity isn't a random occurrence. The right institutions and policies can foster or impede economic progress. The challenge is to know when and how to intervene.

This central theme is the focus of Chapter 1. Our economic accomplishments and insatiable materialism set the stage for a discussion of production possibilities. The role of economic systems and choices is illustrated with the starkly different "guns versus butter" decisions in North and South Korea, Russia, and the United States. The potential for both market failure (or success) and government failure (or success) is highlighted. After reading Chapter 1, students should sense that "the economy" is important to their lives and that our collective choices on how the economy is structured are important.

A GLOBAL PORTRAIT OF THE U.S. ECONOMY

To put some meat on the abstract bones of the economy, *Essentials* offers a unique portrait of the U.S. economy. Few students easily relate to the abstraction of the economy. They hear about specific dimensions of the economy but rarely see all the pieces put together. Chapter 2 fills this void by providing a bird's-eye view of the U.S. economy. This descriptive chapter is organized around the three basic questions of WHAT, HOW, and FOR WHOM to produce. The current answer to the WHAT question is summarized with data on GDP and its components. Historical and global comparisons are provided to underscore the significance of America's $21 trillion economy. Similar perspectives are offered on the structure of production and the U.S. distribution of income. An early look at the role of government in shaping economic outcomes is also provided. This colorful global portrait is a critical tool in acquainting students with the broad dimensions of the U.S. economy and is unique to this text.

REAL-WORLD EMPHASIS

The decision to include a descriptive chapter on the U.S. economy reflects a basic commitment to a real-world context. Students rarely get interested in stories about the mythical widget manufacturers that inhabit so many economics textbooks. But glimmers of interest—even some enthusiasm—surface when real-world illustrations, not fables, are offered.

Every chapter starts out with real-world applications of core concepts. As the chapters unfold, empirical illustrations continue to enliven the text analysis. The chapters end with a **Policy Perspectives** section that challenges the student to apply new concepts to real-world issues. The Policy Perspective in Chapter 3 ("Cap Water Prices in Natural Disasters?") highlights the challenges that policymakers face when markets shift in the wake of natural disasters.

POLICY PERSPECTIVES

CAP WATER PRICES IN NATURAL DISASTERS?

Hurricane Harvey was the second most costly natural disaster in the United States since 1900. When it slammed into the Houston area in August 2017, it destroyed thousands of homes, forced the evacuation of nearly 40,000 people, and caused massive flooding. It also damaged 10 water systems, temporarily cutting off water to thousands of homes and businesses. Bottled water became the only option for thousands of people.

The real-world approach of *Essentials* is reinforced by the boxed **News Wires** that appear in every chapter. The 72 News Wires offer up-to-date domestic and international applications of economic concepts. Some new examples that will particularly interest your students include:

- The opportunity cost (famine) of North Korea's rocket program.
- The impact of lower gas prices on sales of electric vehicles.
- The diversity in starting pay for various college majors.
- Taylor Swift's use of dynamic pricing for concerts.
- Tesla's new Gigafactory in Shanghai.
- The impact of the 2017 tax cuts on consumer spending.
- The price fixing conspiracy on canned tuna.
- How the strong dollar has made European vacations cheaper.

This is just a sampling of the stream of real-world applications that cascades throughout this text. Thirty-five of the News Wires are new to this edition.

NEWS WIRE INSATIABLE WANTS

NEVER ENOUGH MONEY!

A public opinion poll asked Americans how much money they would need each year to be "happy." In general, people said they needed twice as much income as they had at present to be happy.

Source: CNN/ORC POLL, May 29–June 1, 2014.

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NOTE: People always want more than they have. Even multimillionaires say they don't have enough to live "comfortably."

THEORY AND REALITY

In becoming acquainted with the U.S. economy, students will inevitably learn about the woes of the business cycle. As the course progresses, they will not fail to notice a huge gap between the pat solutions of economic theory and the dismal realities of occasional recession. This experience will kindle one of the most persistent and perplexing questions students have. If the theory is so good, why is the economy such a mess?

Economists like to pretend that the theory is perfect but politicians aren't. That's part of the answer, to be sure. But it isn't fair to either politicians or economists. In reality, the design and implementation of economic policy is impeded by incomplete information, changing circumstances, goal trade-offs, and politics. Chapter 17 examines these real-world complications. In this signature chapter, students get a more complete explanation of why the real world doesn't always live up to the promises of economic theory.

NEW IN THIS EDITION

The dedication of *Essentials* to introducing core economic principles in a real-world context requires every edition to focus on trending policies and front-page developments. As in earlier editions, this eleventh edition strives to arouse interest in economic theories by illustrating them in the context of actual institutions, policy debates, and global developments. The following list highlights both the essential focus of each chapter and the new material that enlivens its presentation:

Chapter 1: The Challenge of Economics—The first challenge here is to get students to appreciate the concept of *scarcity* and how it forces us to make difficult choices among desirable, but

competing, options. That is really the essence of economic thinking. How we make those choices is also critical. Political campaigns always seem to suggest that we can have it all, without higher taxes or other sacrifices. With the 2020 elections looming on the horizon, we have another chance to emphasize opportunity costs. The opportunity costs of North Korea's stepped-up rocket program and the implied costs of "affordable" health care also make for good illustrations. Chapter 1 includes eight new Problems, two new Discussion Questions, one new News Wire, and new opinion polls about fears of another recession in 2020 and the prospects for the next generation of Americans.

Chapter 2: The U.S. Economy—The purpose of this chapter is to give students an accurate picture of the size and content of the U.S. economy, especially as compared to other nations. Most students have no sense of how large the U.S. economy is or what it produces or trades. The description here is organized around the core questions of What, How, and For Whom output is produced. The portrait includes the latest data on U.S. and global output, income distributions, and government sectors. New News Wires on global happiness rankings, global inequalities, and manufacturing output vs. employment help put the changing answers to the What question into perspective. There are eight new Problems and a Policy Perspective on global poverty.

Chapter 3: Supply and Demand—This introduction to the market mechanism explains how markets set both prices and production for various goods. Interesting new News Wires include the shortages that accompany new iPhone launches and the impact of falling gasoline prices on sales of electric vehicles. Four new Problems and four new Discussion Questions are included, as well as a new Policy Perspective on post-hurricane price gouging.

Micro

Chapter 4: Consumer Demand—This chapter starts by looking at patterns of U.S. consumption, then analyzing the demand factors that shape those patterns. The elasticity of demand gets a lot of attention, as illustrated by consumer responses to iMac prices, price hikes at Starbucks, and higher gasoline prices (all new News Wires). There are four new Problems and three new Discussion Questions.

Chapter 5: Supply Decisions—The key point of this chapter is to highlight the difference between what firms *can* produce (as illustrated by the production function) and what they *want* to produce (as illustrated by profit-maximization calculations). The importance of marginal costs in the production decision gets its proper spotlight. The Tesla decision to build a "Gigafactory" in Shanghai is used to contrast the long-run *investment decision* and the short-run *production decision*. The addition of three new Discussion Questions keeps the topic lively.

Chapter 6: Competition—This first look at market structure emphasizes the lack of pricing power possessed by small, competitive firms. Perfectly competitive firms must relentlessly pursue cost reductions, quality improvements, and product innovation if they are to survive and prosper. Although few firms are perfectly competitive, competitive dynamics keep all firms on their toes. Those dynamics affect even the behavior of such giants as Apple (relentlessly trying to stay ahead of the pack)—not just the small T-shirt vendors on beach boardwalks (both new News Wires). How firms locate the most profitable rate of production with the use of market prices and marginal costs is illustrated. The chapter includes four new Problems and three new Discussion Questions. The chapter-ending Policy Perspective considers how competition helps rather than hurts society.

Chapter 7: Monopoly—As a survey introduction to economics, *Essentials* focuses on the differences in structure, behavior, and outcomes of only two market structures—namely, perfect competition and monopoly. This two-way contrast underscores the importance of market structure for social welfare. The monopoly produces less and charges more than a competitive market with the same cost structure, as illustrated with a step-by-step comparison of market behavior. The various barriers monopolies use to preserve their position and profits are illustrated as well. The chapter includes three new Problems, three new Discussion Questions, and three News Wires on monopoly-like behavior in Big Pharma, canned tuna, and oil.

Chapter 8: The Labor Market—The looming 2020 elections are showcasing very different views about income equality, minimum wages, unions, and mandatory workforce regulations.

This chapter delves into these issues by first illustrating how market wages are set and then examining how various interventions alter market outcomes. Highlighted stories include Dale Earnhardt's earnings, Nick Saban's salary and benefits at Alabama, minimum-wage proposals, and Bernie Sanders' critique of CEO pay. Of special interest to students is the latest data on salaries for college grads in various majors. There are three new Problems and four new Discussion Questions.

Chapter 9: Government Intervention—Another focus of every election is the appropriate role for government in a market-driven economy. This chapter identifies the core rationale for government intervention and offers new illustrations of public goods (Israel's "Iron Dome" anti-missile program) and externalities (the Keystone XL Pipeline). There is also new poll data on trust in government. The chapter includes four new Problems and one new Discussion Question.

Macro

Chapter 10: The Business Cycle—This introduction to macro examines the up-and-down history of the economy and then looks at the impact of cyclical instability on unemployment, inflation, and the distribution of income. The goal here is to get students to recognize why macro instability is a foremost societal concern. The latest macro data are incorporated, along with a new News Wire on seasonal unemployment, four new Problems, and one new Discussion Question.

Chapter 11: Aggregate Supply and Demand—This chapter gives students a conceptual overview of the macro economy, highlighting the role that market forces and other factors play in shaping macro outcomes. Aggregate supply (AS) and aggregate demand (AD) are assessed, with an emphasis on the distinction between curve positions and curve shifts (the source of instability). The bottom line is that either AS or AD must shift if macro outcomes are to change. A News Wire on the aftermath of Hurricane Harvey illustrates how an aggregate supply curve can shift. There are five new Problems and three new Discussion Questions. The Policy Perspectives section summarizes the broad policy options that President Trump and other presidents have at their disposal to alter market outcomes.

Chapter 12: Fiscal Policy—This chapter highlights the potential of changes in government spending and taxes to shift the AD curve. The power of the income multiplier is illustrated in the context of the AS/AD framework and operationalized with analysis of the 2017 income tax cuts. The implications of fiscal policy for budget deficits are also examined. Updated budget data are included, along with five new Problems and three new Discussion Questions.

Chapter 13: Money and Banks—ApplePay and Bitcoins are used to illustrate differences between *payment services* and *money*. A News Wire focuses on the methods of payment consumers utilize. The core of the chapter depicts how deposit creation and the money multiplier work, using a step-by-step illustration of each. The Policy Perspectives section assesses why Bitcoins aren't really "money." There are six new Problems and one new Discussion Question. A new News Wire highlights the importance of a stable currency by looking at the resort to barter in inflation-battered Venezuela.

Chapter 14: Monetary Policy—In this chapter, students first get an overview of how the Federal Reserve is organized, including an introduction to Jerome Powell. Then the three basic tools of monetary policy are illustrated, with an emphasis on how open-market operations work. The narrative then focuses on how the use of these monetary tools shifts the AD curve, ultimately affecting both output and prices. News about China's cut in reserve requirements helps illustrate the intended effects. The 2008–2015 spike in excess reserves is also discussed, along with the Fed's new policy targeting. The chapter includes seven new Problems and three new Discussion questions.

Chapter 15: Economic Growth—The challenge of every society is to grow its economy and lift living standards. This chapter reviews the world's growth experience and then highlights the factors that affect growth rates. Of special interest in today's policy context is the role of immigration in spurring growth. The chapter's Policy Perspectives section examines whether economic growth is desirable, a question which students often ask. There are eight new Problems and four new Discussion Questions.

International

Chapter 16: International Trade—Students are first introduced to patterns of global trade, highlighting international differences in export dependence and trade balances. Then the question of "why trade at all?" is explicitly addressed, leading into an illustration of comparative advantage. Of importance is also a discussion of the sources of resistance to free trade and the impact of trade barriers. A News Wire illustrates how some people lost from President Trump's tariff policies and how others won. In addition to updating all data, four new News Wires, five new Problems, and two new Discussion Questions are included.

Capstone

Chapter 17: Theory and Reality—This unique capstone chapter addresses the perennial question of why economies don't function better if economic theory is so perfect. The chapter reviews the major policy tools and their idealized uses. Then it contrasts theoretical expectations with real-world outcomes and asks why macro performance doesn't live up to its promise. Impediments to better outcomes are explored, and the chapter ends by asking students whether they favor more or less policy intervention. Lots of new data are incorporated, along with four new Problems and three new Discussion Questions.

ASSURANCE OF LEARNING READY

Many educational institutions today are focused on the notion of *assurance of learning*, an important element of some accreditation standards. *Essentials of Economics* is designed specifically to support your assurance of learning initiatives with a simple yet powerful solution.

Each test bank question for *Essentials of Economics* maps to a specific chapter learning objective listed in the text. You can use *Connect Economics* or our test bank software, EZ Test Online, to easily query for learning objectives that directly relate to the learning objectives for your course. You can then use the reporting features of *Connect* to aggregate student results in similar fashion, making the collection and presentation of assurance of learning data simple and easy.

AACSB STATEMENT

The McGraw-Hill Companies is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Essentials of Economics*, *11e,* recognizes the curricula guidelines detailed in the AACSB standards for business accreditation by connecting selected questions in the text and the test bank to the six general knowledge and skill guidelines in the AACSB standards.

The statements contained in *Essentials of Economics*, *11e,* are provided only as a guide for the users of this textbook. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. While *Essentials of Economics, 11e,* and the teaching package make no claim of any specific AACSB qualification or evaluation, we have within *Essentials of Economics*, *11e,* labeled selected questions according to the six general knowledge and skills areas.

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INSTRUCTOR'S RESOURCE MANUAL

The *Instructor's Resource Manual* is designed to assist instructors as they cope with the demands of teaching a survey of economics in a single term. The manual has been fully updated for the eleventh edition by Larry Olanrewaju of John Tyler Community College. Each chapter of the *Instructor's Resource Manual* contains the following features:

- *What is this chapter all about?* A brief summary of the chapter.
- *New to this edition* A list of changes and updates to the chapter since the last edition.
- *Lecture launchers* Designed to offer suggestions on how to launch specific topics in each chapter.
- *Common student errors* To integrate the lectures with the student *Study Guide,* this provides instructors with a brief description of some of the most common problems that students have when studying the material in each chapter.
- *News Wires* A list of News Wires from the text is provided for easy reference.
- *Annotated outline* An annotated outline for each chapter can be used as lecture notes.
- *Structured controversies* Chapter-related topics are provided for sparking small group debates that require no additional reading. Also accessible on the website.
- *Mini-debates* Additional chapter-related debate topics that require individual students to do outside research in preparation. Also accessible on the website.
- *Mini-debate projects* Additional projects are provided, cutting across all the chapters. These include several focus questions and outside research. Also accessible on the website.
- *Answers to the chapter questions and problems* The *Instructor's Resource Manual* provides answers to the end-of-chapter questions and problems in the text, along with explanations of how the answers were derived.
- *Answers to flipped and online class applications* Answers to web activities from the textbook are provided in the *Instructor's Resource Manual* as well as on the website.
- *Media exercise* Provides a ready-to-use homework assignment using current newspapers and/or periodicals to find articles that illustrate the specific issues.

Test Bank

The Test Bank has been rigorously revised for this eleventh edition of *Essentials*. Digital co-author Karen Gebhardt and Christopher Blake of Emory University assessed every problem in the Test Bank, assigning each problem a letter grade and identifying errors and opportunities for improvement. This author team assures a high level of quality and consistency of the test questions and the greatest possible correlation with the content of the text. All questions are coded according to chapter learning objectives, AACSB Assurance of Learning, and Bloom's Taxonomy guidelines. The computerized Test Bank is available in EZ Test, a flexible and easy-to-use electronic testing program that accommodates a wide range of question types, including user-created questions. Tests created in EZ Test can be exported for use with course management systems such as WebCT, BlackBoard, or PageOut. The program is available for Windows, Macintosh, and Linux environments. Additionally, you can access the test bank through McGraw-Hill *Connect*.

PowerPoints

Digital co-author Karen Gebhardt and Jennifer Rester-Savoie of Pearl River Community College have prepared a concise set of Instructor PowerPoint presentations to correspond with the tenth edition of *Essentials*. Developed using Microsoft PowerPoint software, these slides are a step-by-step review of the key points in each of the book's chapters. They are equally useful to the student in the classroom as lecture aids or for personal review at home or the computer lab. The slides use animation to show students how graphs build and shift.

Flipped and Online Class Applications

To keep *Essentials* connected to the real world, flipped and online class applications, updated by Charles Newton of Houston Community College, appear in the Instructor Resources section in *Connect* for each chapter. These require the student to access data or materials on a website and then use, summarize, or explain this external material in the context of the chapter's core economic concepts. The *Instructor's Resource Manual* provides answers to the web-based activities.

Digital Image Library

A digital image library of all figures from the textbook is available on the Instructor's Resource section in *Connect*. Professors can insert the exact images from the textbook into their presentation slides or simply post them for student viewing on their course management site.

ACKNOWLEDGMENTS

The eleventh edition continues to benefit from the prodigious contributions of my digital co-author, Karen Gebhardt. Karen is a distinguished teacher who won numerous awards for her pedagogical prowess. As the Director of the Online Economics Program in the Department of Economics at University of Colorado Boulder she continues to share her passion for teaching economics by teaching online, mentoring online instructors, and teaching face-to-face in the Masters of the Environment program. She has assumed responsibility for the digital content of the *Essentials* learning package, including an overhaul of the test bank, the *Connect* program, LearnSmart, and other digital products. She has done a marvelous job not only improving the content of each digital supplement, but also enhancing the symmetry between the text and all dimensions of the digital products. Students and instructors will share my gratitude for Karen's excellent work.

The following manuscript reviewers were generous in sharing their teaching experiences and offering suggestions for the revision:

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FINAL THOUGHTS

I am deeply grateful for the enormous success *Essentials* has enjoyed. Since its first publication, it has been the dominant text in the one-semester survey course. I hope that its brevity, content, style, and novel features will keep it at the top of the charts for years to come. The ultimate measure of the book's success, however, will be reflected in student motivation and learning. As the author, I would appreciate hearing how well *Essentials* lives up to that standard.

Bradley R. Schiller

Contents in Brief

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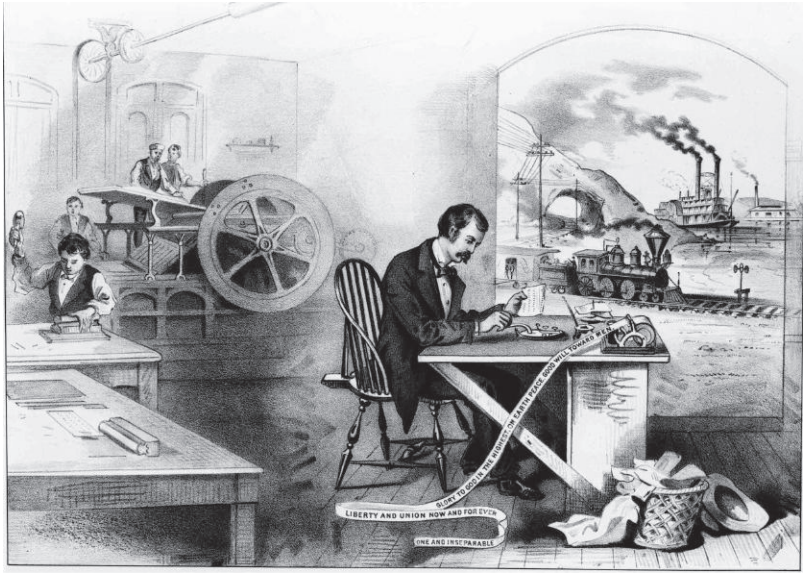
Section III MACROECONOMICS

CHAPTER ONE

The Challenge of Economics



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LEARNING OBJECTIVES

After reading this chapter, you should be able to:

1. Explain the meaning of scarcity.
2. Define "opportunity cost."
3. Recite society's three core economic questions.
4. Discuss how market and command economies differ.
5. Describe the nature of market and government failures.

It's hard to imagine how much life has changed for the better in a relatively short amount of time. Back in 1900, life was hard and short. Life expectancy in the United States was only 47 years for whites and a shockingly low 33 years for blacks and other minorities. Americans who survived infancy faced substantial risk of early death from tuberculosis, influenza, pneumonia, or gastritis. Measles, syphilis, whooping cough, malaria, typhoid, and smallpox were all life-threatening diseases back then.

Work was a lot harder back then, too. In 1900 one-third of all U.S. families lived on farms, where the workday began before sunrise and lasted all day. Those who lived in cities typically worked 60 hours a week for wages of only 22 cents an hour. Hours were long, jobs were physically demanding, and workplaces were often dirty and unsafe.

Work Then:

Source: Library of Congress, LC-DIG-nclc-01107

Work Now:

Technology has transformed work.

People didn't have much to show for all that work. By today's standards, nearly everyone was poor at that time. The average income per person was less than $4,000 per year (in today's dollars). Very few people had telephones, and even fewer had cars. There were no television sets, no home freezers, no microwaves, no dishwashers or central air conditioning, and no computers. Even indoor plumbing was a luxury. Only a small elite went to college; an eighth-grade education was the norm.

All this, of course, sounds like ancient history. Today most of us take new cars, central air and heat, remote-control TVs, flush toilets, smartphones, college attendance, and even long weekends for granted. We seldom imagine what life would be like without the abundance of goods and services we encounter daily. Nor do we often ponder how hard work might still be had factories, offices, and homes not been transformed by technology.

HOW DID WE GET SO RICH?

We ought to ponder, however, how we got so affluent. Billions of people around the world are still as poor today as we were in 1900. How did we get so rich? Was it our high moral standards that made us rich? Was it our religious convictions? Did politics have anything to do with it? Did extending suffrage to women, ending prohibition, or repealing the military draft raise our living standards? Did the many wars fought in the twentieth century enhance our material well-being? Was the tremendous expansion of the public sector the catalyst for growth? Were we just lucky?

Some people say America has prospered because our nation was blessed with an abundance of natural resources. But other countries are larger. Many nations have more oil, more arable land, more gold, more people, and more math majors. Yet few nations have prospered as much as the United States.

Students of history can't ignore the role that economic *systems* might have played in these developments. Way back in 1776 the English economist Adam Smith asserted that a free market economy would best promote economic growth and raise living standards. As he saw it, people who own a business want to make a profit. To do so, they have to create new products, improve old ones, reduce costs, lower prices, and advance technology. As this happens, the economy grows, more jobs are created, and living standards rise. *Market capitalism*, Adam Smith reasoned, would foster prosperity.

Karl Marx, a German philosopher, had a very different view of market capitalism. Marx predicted that the *capitalist system* of private ownership would eventually self-destruct. The capitalists who owned the land, the factories, and the machinery would keep wages low and their own lifestyles high. They would continue exploiting the working class until it rose up and overthrew the social order. Long-term prosperity would be possible only if the *state* owned the means of production and managed the economy—a *communist system*.

Subsequent history gave Adam Smith the upper hand. The "working class" that Marx worried so much about now own their own homes, a couple of cars, smart TVs and phones; exercise in air-conditioned health clubs; have prepared meals delivered; and take expensive vacations they locate on the Internet. By contrast, the nations that adopted Marxist systems—Russia, China, North Korea, East Germany, Cuba—fell behind more market-oriented economies. The gap in living standards between communist and capitalist nations got so wide that communism effectively collapsed. People in those countries wanted a different economic system—one that would deliver the goods capitalist consumers were already enjoying. In the last decade of

the twentieth century, formerly communist nations scrambled to transform their economies from centrally planned ones to more market-oriented systems. They sought the rules, the mechanisms, the engine that would propel their living standards upward.

Even in the United States the quest for greater prosperity continues. As rich as we are, we always want more. Our materialistic desires, it seems, continue to outpace our ever-rising incomes. We need to have the newest iPhone, a larger TV, a bigger home, a faster car, and a more exotic vacation. People today seem to think they need twice as much income as they have to be really happy (see the News Wire "Insatiable Wants"). Even multimillionaires say they need much more money than they already have: People with more than $10 million of net worth say they need at least $18 million to live "comfortably."

How can any economy keep pace with these ever-rising expectations? Will the economy keep churning out more goods and services every year like some perpetual motion machine? Or will we run out of goods, basic resources, and new technologies? Will the future bring *more* goods and services—or *less*?

NEWS WIRE INSATIABLE WANTS

NEVER ENOUGH MONEY!

A public opinion poll asked Americans how much money they would need each year to be "happy." In general, people said they needed twice as much income as they had at present to be happy.

Source: CNN/ORC Poll, May 29–June 1, 2014.

©Ekasit Wangprasert/Alamy Stock Photo

NOTE: People always want more than they have. Even multimillionaires say they don't have enough to live "comfortably."

The Great Recession of 2008–2009

Anxiety about the ability of the U.S. economy to crank out more goods every year spiked in 2008–2009. Indeed, the economic system screeched to a halt in September 2008, raising widespread fears about another 1930s-style Great Depression. Things didn't turn out nearly that bad, but millions of Americans lost their jobs, their savings, and even their homes in 2008–2009. As the output of the U.S. economy contracted, people's faith in the capitalist *system* plunged. By the end of 2009, only one of four American adults expected their income to increase in the next year. Ten years later—after years of economic growth—that kind of fear persisted: nearly 60 percent of Americans feared another recession would occur in 2020. Worse yet, one of two Americans also expected their children to have *fewer* goods and services in the future than people now do (see the News Wire "Future Living Standards"). Could that happen?

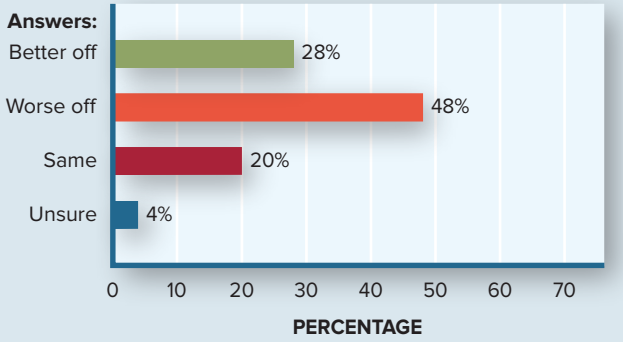
People worry not only about the resilience of the economic *system* but also about resource limitations. We now depend on oil, water, and other resources to fuel our factories and irrigate our farms. What happens when we run out of these resources? Do the factories shut down? Do the farms dry up? Does economic growth stop?

An end to world economic growth would devastate people in other nations. Most people in the world have incomes far below American standards. A *billion* of the poorest inhabitants of Earth subsist on less than $3 per day—a tiny fraction of the $75,000 a year the average U.S. family enjoys. Even in China, where incomes have been rising rapidly, daily living standards are below those that U.S. families experienced in the Great Depression of the 1930s. To attain current U.S. standards of affluence, these nations need economic systems that will foster economic growth for decades to come.

NEWS WIRE FUTURE LIVING STANDARDS?

WILL YOUR KIDS BE BETTER OFF?

Question: Do you think the future of the next generation of Americans will be better, worse, or about the same as life today?



Source: *Children's Financial Future,* Pew Research Center, June–July 2017.

NOTE: Will you be better off than your parents? For living standards to keep rising, the economy must continue to grow. Will that happen? How?

Will consumers around the world get the kind of persistent economic growth the United States has enjoyed? Will living standards rise, stagnate, or fall in future years?

To answer this question, we need to know what makes economies "tick." That is the foremost goal of this course. We want to know what kind of system a "market economy" really is. How does it work? Who determines the price of a textbook in a market economy? Who decides how many textbooks will be produced? Will everyone who needs a textbook get one? And why are gasoline prices so high? How about jobs? Who decides how many jobs are available or what wages they pay in a market economy? What keeps an economy growing? Or stops it in its tracks?

To understand how an economy works, we have to ask and answer a lot of questions. Among the most important are these:

- What are the basic goals of an economic system?
- How does a market economy address these goals?
- What role should government play in shaping economic outcomes?

We won't answer all of these questions in this first chapter. But we will get a sense of what the study of economics is all about and why the answers to these questions are so important.

THE CENTRAL PROBLEM OF SCARCITY

The land area of the United States stretches over 3.5 million square miles. We have a population of 340 million people, about half of whom work. We also have over $100 trillion worth of buildings and machinery. With so many resources, the United States produces an enormous volume of output. But it is never enough: Consumers always want more. We want not only faster cars, more clothes, and larger TVs but also more roads, better schools, and more police protection. Why can't we have everything we want?

The answer is fairly simple: ***Our wants exceed our resources.*** As abundant as our resources might appear, they are not capable of producing everything we want. The same kind of problem makes doing homework so painful. You have only 24 hours in a day. You can

spend it watching movies, shopping, hanging out with friends, sleeping, texting, scrolling your Facebook timeline, or doing your homework. With only 24 hours in a day, you can't do everything you want to, however: Your time is *scarce*. So you must choose which activities to pursue—and which to forgo.

Economics offers a framework for explaining how we make such choices. The goal of economic theory is to figure out how we can use our scarce resources in the *best possible* way.

economics
The study of how best to allocate scarce resources among competing uses.

Consider again your decision to read this chapter right now. Hopefully, you'll get some benefit from finishing it. You'll also incur a *cost*, however. The time you spend reading could be spent doing something else. You're probably missing a good show on TV right now. Giving up that show is the *opportunity cost* of reading this chapter. You have sacrificed the opportunity to watch TV in order to finish this homework. In general, whatever you decide to do with your time will entail an **opportunity cost**—that is, the sacrifice of a next-best alternative.

opportunity cost
The most desired goods and services that are forgone in order to obtain something else.

What should you do? The rational thing to do is to weigh the benefits of doing your homework against the implied opportunity cost (watching TV) and then make a choice.

The larger society faces a similar dilemma. For the larger economy, time is also limited. So, too, are the resources needed to produce desired goods and services. To get more houses, more cars, or more movies, we need not only time but also resources to produce these things. These resources—land, labor, capital, and entrepreneurship—are the basic ingredients of production. They are called **factors of production**. The more factors of production we have, the more we can produce in a given period of time.

factors of production
Resource inputs used to produce goods and services (e.g., land, labor, capital, and entrepreneurship).

As we've already noted, our available resources always fall short of our output desires. The central problem here again is **scarcity**, a situation where our desires for goods and services exceed our capacity to produce them.

scarcity
Lack of enough resources to satisfy all desired uses of those resources.

THREE BASIC ECONOMIC QUESTIONS

The central problem of scarcity forces every society to make difficult choices. Specifically, every nation must resolve three critical questions about the use of its scarce resources:

- **WHAT** to produce.
- **HOW** to produce.
- **FOR WHOM** to produce.

We first examine the nature of each question and then look at how different countries answer these three basic questions.

WHAT to Produce

The WHAT question is quite simple. We've already noted that there isn't enough time in the day to do everything you want to. You must decide *what* to do with your time. The economy confronts a similar question: There aren't enough resources in the economy to produce all the goods and services society desires. ***Because wants exceed resources, we have to decide WHAT goods and services we want most, sacrificing less desired products.***

Production Possibilities

Figure 1.1 illustrates this basic dilemma. Suppose there are only two kinds of goods, "consumer goods" and "military goods." In this case, the question of WHAT to produce boils down to finding the most desirable combination of these two goods.

To make that selection, we first need to know how much of each good we *could* produce. That will depend in part on how many resources we have available. The first thing we need to do, then, is count our factors of production.

The factors of production include the following:

- **Land** (including natural resources).
- **Labor** (number and skills of workers).
- **Capital** (machinery, buildings, networks).
- **Entrepreneurship** (skill in creating products, services, and processes).

The more we have of these factors, the more output we can produce. Technology is also critical. The more advanced our technological and managerial abilities, the more output we will be able to produce with available factors of production. If we inventoried all our resources and technology, we could figure out what the physical *limits* to production are.

To simplify the computation, suppose we wanted to produce only consumer goods. How much *could* we produce? Surely not an infinite amount. With *limited* stocks of land, labor, capital, and technology, output would have a *finite* limit. The *limit* is represented by point *A* in Figure 1.1. That is to say, the vertical distance from the origin (point *O*) to point *A* represents the *maximum* quantity of consumer goods that could be produced this year. To produce the quantity *A* of consumer goods, we would have to use *all* available factors of production. At point *A* no resources would be available for producing military goods. The choice of *maximum* consumer output implies *zero* military output.

We could make other choices about WHAT to produce. Point *B* illustrates another extreme. The horizontal distance from the origin (point *O*) to point *B* represents our *maximum* capacity to produce military goods. To get that much military output, we would have to devote *all* available resources to that single task. At point *B*, we wouldn't be producing *any* consumer goods. We would be well protected but ill nourished and poorly clothed (wearing last year's clothes).

Our choices about WHAT to produce are not limited to the extremes of points *A* and *B*. We could instead produce a *combination* of consumer and military goods. Point *C* represents one such combination. To get to point *C*, we have to forsake maximum consumer goods output (point *A*) and use some of our scarce resources to produce military goods. At point *C* we are producing only *OD* of consumer goods and *OE* of military goods.

production possibilities The alternative combinations of goods and services that could be produced in a given time period with all available resources and technology.

Point *C* is just one of many combinations we *could* produce. We could produce *any* combination of output represented by points along the curve in Figure 1.1. For this reason we call it the **production possibilities** curve; it represents the alternative combinations of goods and services that *could* be produced in a given time period with all available resources and technology. It is, in effect, an economic menu from which one specific combination of goods and services must be selected.

The production possibilities curve puts the basic issue of WHAT to produce in graphic terms. The same choices can be depicted in numerical terms as well. Table 1.1, for example, illustrates specific trade-offs between missile production and home construction. The output mix *A* allocates all resources to home construction, leaving nothing to produce missiles. If missiles are desired, the level of home construction must be cut back. To produce 50 missiles (mix *B*), home construction activity must be cut back to 90. Output mixes *C* through *F* illustrate other possible choices. Notice that every time we increase missile production (moving from *A* to *F*), house construction must be reduced. The question of WHAT to produce boils down to choosing one specific mix of output—a specific combination of missiles and houses.

The Choices Nations Make

No single point on the production possibilities curve is best for all nations at all times. In the United States, the share of total output devoted to "guns" has varied greatly. During World War II, we converted auto plants to produce military vehicles. Clothing manufacturers cut way back on consumer clothing in order to produce more uniforms for the army, navy, and air force.

	Possible Output Combinations					
Output	***A***	***B***	***C***	***D***	***E***	***F***
Missiles	0	50	100	150	200	250
Houses	100	90	75	55	30	0

Table 1.1 Specific Production Possibilities The choice of WHAT to produce eventually boils down to specific goods and services. Here the choices are defined in terms of missiles or houses. More missiles can be produced only if some resources are diverted from home construction. Only one of these output combinations can be produced in a given time period. Selecting that mix is a basic economic issue.

The government also drafted 12 million men to bear arms. By shifting resources from the production of consumer goods to the production of military goods, we were able to move down along the production possibilities curve in Figure 1.1 toward point *X*. By 1944 fully 40 percent of all our output consisted of military goods. Consumer goods were so scarce that everything from butter to golf balls had to be rationed.

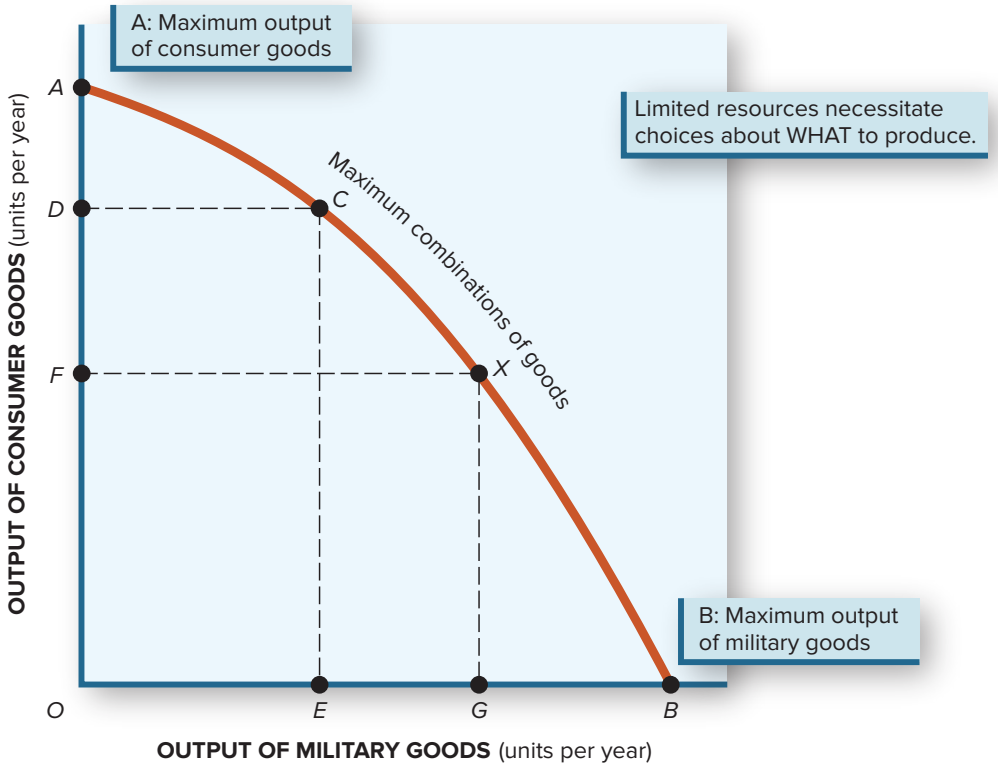


Figure 1.1 A Production Possibilities Curve A production possibilities curve describes the various combinations of final goods or services that could be produced in a given time period with available resources and technology. It represents a menu of output choices.

Point *C* indicates that we could produce a *combination* of *OD* units of consumer goods and the quantity *OE* of military output. To get more military output (e.g., at point *G*), we have to reduce consumer output (from *OD* to *OF*), ending up at point *X* on the curve.

We must decide WHAT to produce (i.e., pick a single point on the production possibilities curve). Our goal is to select the *best* possible mix of output.

Figure 1.2 illustrates that rapid military buildup during World War II. The figure also illustrates how quickly we reallocated factors of production to consumer goods after the war ended. By 1948 less than 4 percent of U.S. output was military goods. We had moved close to point *A* in Figure 1.1.

Peace Dividends

We changed the mix of output dramatically again to fight the Korean War. In 1953 military output absorbed nearly 15 percent of America's total production. That would amount to nearly $2 *trillion* of annual defense spending in today's dollars and output levels. We're not spending anywhere near that kind of military money, however. After the Korean War, the share of U.S. output allocated to the military trended sharply downward. Despite the buildup for the Vietnam War (1966–1968), the share of output devoted to "guns" fell from 15 percent in 1953 to a low of 3 percent in 2001. In the process, the U.S. armed forces were reduced by nearly 600,000 personnel. As those personnel found civilian jobs, they increased consumer output. That increase in nonmilitary output is called the *peace dividend*.

The Cost of War

The 9/11 terrorist attacks on New York City and Washington, DC, moved the mix of output in the opposite direction. Military spending increased by 50 percent in the three years after 9/11. The wars in Iraq and Afghanistan absorbed even more resources. The *economic* cost of those efforts is measured in lost consumer output. The money spent by the government

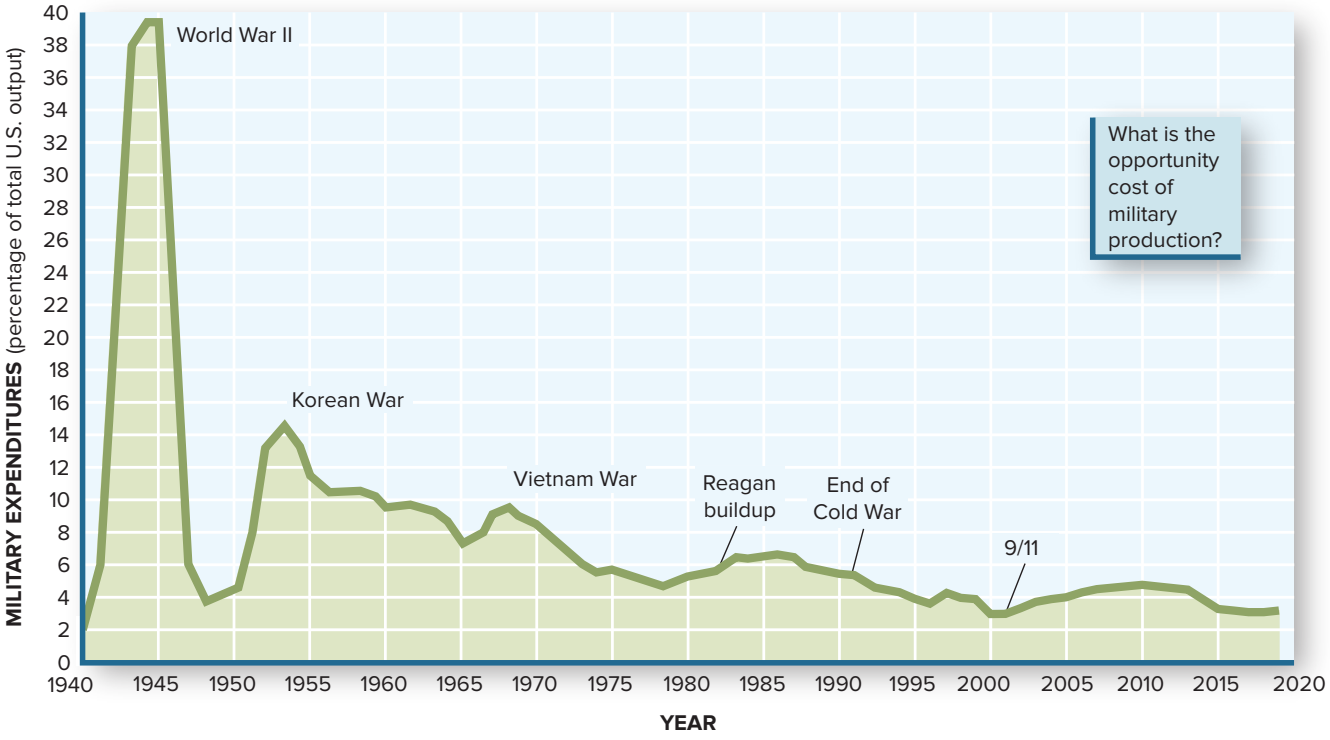


Figure 1.2 Military Share of Total U.S. Output The share of total output devoted to national defense has risen sharply in war years and fallen in times of peace. The defense buildup of the 1980s increased the military share to more than 6 percent of total output. The end of the Cold War reversed that buildup, releasing resources for other uses (the peace dividend). The September 11, 2001, terrorist attacks on New York City and Washington, DC, altered the WHAT choice again, increasing the military's share of total output.

Source: Congressional Research Service.

on war might otherwise have been spent on schools, highways, or other nondefense projects. The National Guard personnel called up for the war would otherwise have stayed home and produced consumer goods (including disaster relief). These costs of war are illustrated in Figure 1.3. Notice how consumer goods output declines (from C_1 to C_2) when military output increases (from M_1 to M_2).

In some countries the opportunity cost of military output seems far too high. North Korea, for example, has the fourth largest army in the world. Yet North Korea is a relatively small country. Consequently it must allocate a huge share of its resources to feed, clothe, and arm its military. As Figure 1.4 illustrates, nearly 20 percent of North Korean output consists of military goods and services. That compares with a military share of only 3.3 percent in the United States and 2.1 percent in China (which has the world's largest army).

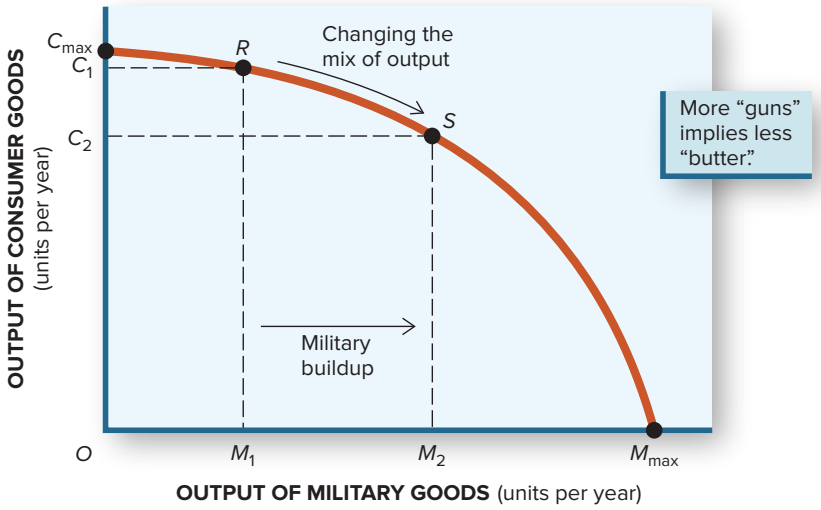


Figure 1.3 The Cost of War An increase in military output absorbs factors of production that could be used to produce consumer goods. The military buildup associated with the move from point *R* to point *S* reduces consumption output from C_1 to C_2. The economic cost of war is measured by the implied reduction in nondefense output ("less butter").

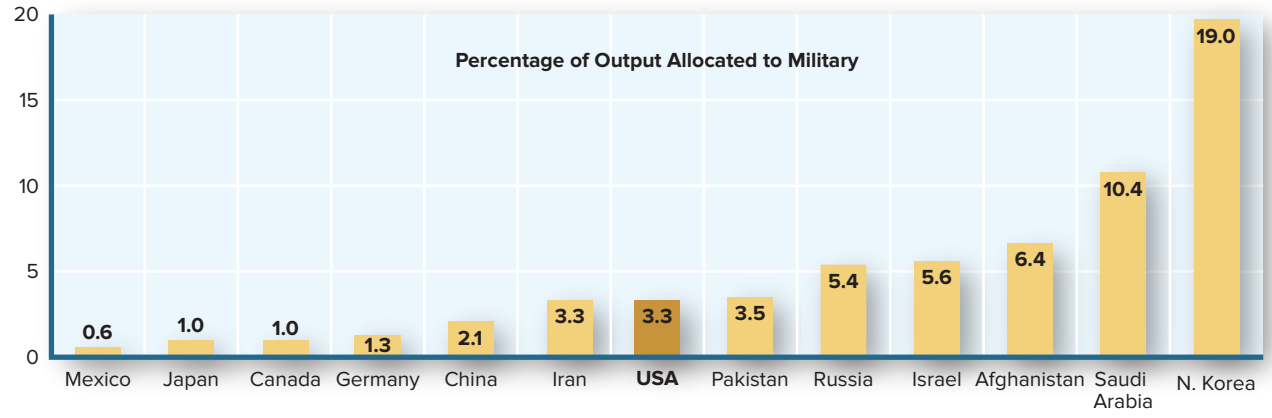


Figure 1.4 The Military Share of Output The share of output allocated to the military indicates the opportunity cost of maintaining an army. North Korea has the highest cost, using nearly 20 percent of its resources for military purposes. Although China's army is twice as large, its military *share* of output is much smaller (2.1 percent).

Source: *The World FactBook,* Central Intelligence Agency, 2015–2018.

North Korea's military has a high price tag. North Korea is a very poor country, with output per capita in the neighborhood of $1,000 per year. That is substantially less than the American standard of living was in 1900 and a tiny fraction of today's U.S. output per capita (around $55,000). Although one-third of North Korea's population lives on farms, the country cannot grow enough food to feed its population. The farm sector needs more machinery, seeds, and fertilizer; better-trained labor; and improved irrigation systems. So long as the military absorbs one-fifth of total output, however, North Korea can't afford to modernize its farm sector. The implied shortfall in food and other consumer goods is the *opportunity cost* of a large military sector (see the News Wire "Opportunity Cost"). In deference to these costs, Kim Jong-un announced in April 2018 that North Korea has achieved it's goal of military security and would begin to devote more resources to food and other consumer production.

NEWS WIRE OPPORTUNITY COST

NORTH KOREA'S ROCKETS DEEPEN FOOD CRISIS

North Korea has spent a lot of money on its nuclear and rocket programs. A single launch of an ICBM missile costs around $1.3 billion. Since taking power in 2011, Kim Jong-un authorized over 20 rocket launches, including ICBMs, beginning in January 2017. Those launches came at a great cost to the Korean people. The cost of just one ICBM launch could have been used to purchase 5 million tons of corn, for example. That would have been of enormous benefit to the Korean people, who have suffered decades of widespread poverty and periodic starvation.

Source: News accounts of December 2012–January 2017.

NOTE: North Korea's inability to feed itself is due in part to its large army and missile program. Resources used for the military aren't available for producing food.

What else might these North Korean women be producing?

The Best Possible Mix

Ultimately the designation of any particular mix of output as "best" rests on the value judgments of a society. A militaristic society would prefer a mix of output closer to point *B* in Figure 1.1. By contrast, Iceland has no military and so produces at point *A*. In general, ***one specific mix of output is optimal for a country***—that is, a mix that represents the *best* possible allocation of resources across competing uses. Locating and producing that *optimal* mix of output is the essence of the WHAT challenge.

The same desire for an optimal mix of output drives your decisions on the use of scarce time. There is only one *best* way to use your time on any given day. If you use your time in that way, you will maximize your well-being. Other uses won't necessarily kill you, but they won't do you as much good.

Economic Growth

The selection of an optimal mix depends in part on how future-oriented one is. If you had no concern for future jobs or income, there would be little point in doing homework now. You might as well play all day if you're that present-oriented. On the other hand, if you value future jobs and income, it makes sense to allocate some present time to studying. Then you'll have more human capital (knowledge and skills) later to pursue job opportunities.

investment
Expenditures on (production of) new plant and equipment (capital) in a given time period, plus changes in business inventories.

The larger society confronts the same choice between present and future consumption. We *could* use all our resources to produce consumer goods this year. If we did, however, there wouldn't be any factors of production available to build machinery, factories, or telecommunications networks. Yet these are the kinds of **investment** that enhance our capacity to produce. If we want the economy to keep growing—and our living standards to rise—we must allocate some of our scarce resources to investment rather than current consumption. The

resultant **economic growth** will expand our production possibilities outward, allowing us to produce *more* goods in future years. The phenomenon of economic growth is illustrated in Figure 1.5 by the outward *shift* of the production-possibilities curve. Such shifts occur when we acquire *more* resources (e.g., more machinery) or *better* technology. Our decision about WHAT to produce must take future growth into account.

economic growth
An increase in output (real GDP); an expansion of production possibilities.

HOW to Produce

The second basic economic question concerns HOW we produce output. Should this class be taught in an auditorium or in small discussion sections? Should it meet twice a week or only once? Should the class be taught online? Should the instructor assign more electronic supplements and homework? Should exams be open book? Should, heaven forbid, this textbook be replaced with online text files? There are numerous ways of teaching a course. Of these many possibilities, one way is presumably best, given the resources and technology available. That best way is HOW we want the course taught. Educational researchers and a good many instructors spend a lot of time trying to figure out the best way of teaching a course.

Should pig farmers be free to breed pigs and to dispose of waste in any way they desire? Or should the government regulate how pigs are produced?

Pig farmers do the same thing. They know they can fatten pigs up with a lot of different grains and other food. They can also vary breeding patterns, light exposure, and heat. They can use more labor in the feeder process or more machinery. Faced with so many choices, pig farmers try to find the *best* way of raising pigs.

The HOW question isn't just an issue of getting more output from available inputs. It also encompasses our use of the environment. Should the waste from pig farms be allowed to contaminate the air, groundwater, or local waterways? Or do we want to keep the water clean for other uses? Humanitarian concerns may also come into play. Should live pigs be processed without any concern for their welfare? Or should the processing be designed to minimize trauma? The HOW question encompasses all such issues. Although people may hold different views on these questions, everyone shares a common goal: ***to find an optimal method of producing goods and services.*** The best possible answer to the HOW question will entail both efficiency in the use of factors of production and adequate safeguards for the environment and other social concerns. Our goal is to find that answer.

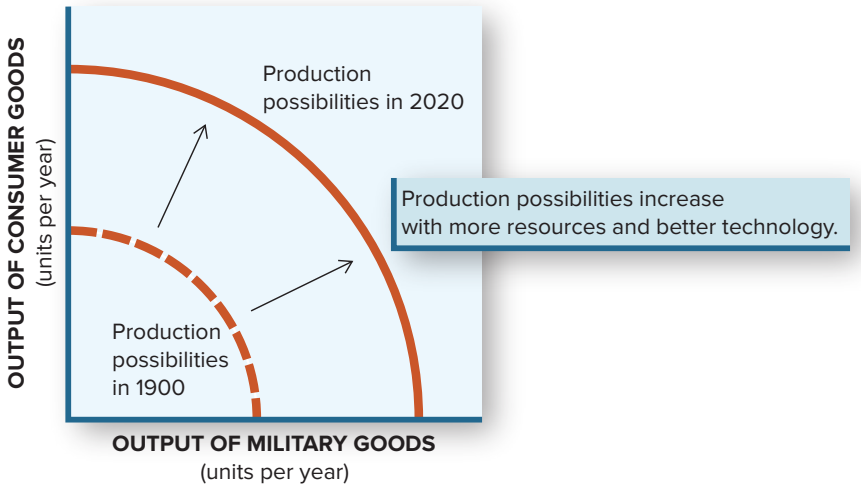


Figure 1.5 Economic Growth Since 1900 the U.S. population has quadrupled. Investment in machinery and buildings has increased our capital stock even faster. These additional factors of production, together with advancing technology, have expanded (shifted outward) our production possibilities.

FOR WHOM to Produce

The third basic economic question every society must confront is FOR WHOM? The answers to the WHAT and HOW questions determine how large an economic pie we'll bake and how we'll bake it. Then we have to slice it up. Should everyone get an equal slice of the pie? Or can some people have big pieces of the pie while others get only crumbs? In other words, ***the FOR WHOM question focuses on how an economy's output is distributed across members of society.***

A pie can be divided up in many ways. Personally, I like a distribution that gives me a big slice even if that leaves less for others. Maybe you feel the same way. Whatever your feelings, however, there is likely to be a lot of disagreement about what distribution is best. Maybe we should just give everyone an equal slice. But should everyone get an equal slice even if some people helped bake the pie while others contributed nothing? The Little Red Hen of the children's fable felt perfectly justified eating all the bread she made herself after her friends and neighbors refused to help sow the seeds, harvest the grain, or bake it. Should such a work-based sense of equity determine how all goods are distributed?

Karl Marx's communist vision of utopia entailed a very different FOR WHOM answer. The communist ideal is "From each according to his ability, to each according to his need." In that vision, all pitch in to bake the pie according to their abilities. Slices of the pie are distributed, however, based on need (hunger, desire) rather than on productive contributions. In a communal utopia there is no direct link between work and consumption.

Incentives

There is a risk entailed in distributing slices of the pie based on need rather than work effort. People who work hard to bake the pie may feel cheated if non-workers get just as large a slice. Worse still, people may decide to exert less effort if they see no tangible reward to working. If that happens, the size of the pie may shrink, and everyone will be worse off.

This is the kind of problem income transfer programs create. Government-paid income transfers (e.g., welfare, unemployment benefits, Social Security) are intended to provide a slice of the pie to people who don't have enough income to satisfy basic needs. As benefits rise, however, the incentive to work diminishes. If people choose welfare checks over paychecks, total output will decline.

The same problem emerges in the tax system. If Paul is heavily taxed to provide welfare benefits to Peter, Paul may decide that hard work and entrepreneurship don't pay. To the extent that taxes discourage work, production, or investment, they shrink the size of the pie that feeds all of us.

The potential trade-offs between taxes, income transfers, and work don't compel us to dismantle all tax and welfare programs. They do emphasize, however, how difficult it is to select the right answer to the FOR WHOM question. The *optimal* distribution of income must satisfy our sense of fairness as well as our desire for more output.

THE MECHANISMS OF CHOICE

By now, two things should be apparent. First, every society has to make choices about WHAT, HOW, and FOR WHOM to produce. Second, those choices are difficult. ***Every choice involves conflicts and trade-offs.*** More of one good implies less of another. A more efficient production process may pollute the environment. Helping the poor may dull work incentives. In every case, society has to weigh the alternatives and try to find the best possible answer to each question.

How does "society" actually make such choices? What are the mechanisms we use to decide WHAT to produce, HOW, and FOR WHOM?

The Political Process

Many of these basic economic decisions are made through the political process. Consider again the decision to increase the military share of output after 9/11. Who made that decision? Not me. Not you. Not the mass of consumers who were streaming through real and virtual malls. No, the decisions on military buildups and builddowns are made in the political arena: the U.S. Congress makes those decisions. Congress also makes decisions about how many interstate highways to build, how many Head Start classes to offer, and how much space exploration to pursue.

Should *all* decisions about WHAT to produce be made in the political arena? Should Congress also decide how much ice cream will be produced and how many bluetooth earbuds? What about essentials like food and shelter? Should decisions about the production of those goods be made in Washington, DC, or should the mix of output be selected some other way?

The Market Mechanism

The market mechanism offers an alternative decision-making process. In a market-driven economy the process of selecting a mix of output is as familiar as grocery shopping. If you desire ice cream and have sufficient income, you simply buy ice cream. Your purchases signal to producers that ice cream is desired. By expressing the *ability and willingness to pay* for ice cream, you are telling ice cream producers that their efforts are going to be rewarded. If enough consumers feel the same way you do—and are able and willing to pay the price of ice cream—ice cream producers will churn out more ice cream.

The same kind of interaction helps determine which crops we grow. There is only so much good farmland available. Should we grow corn or beans? If consumers prefer corn, they will buy more corn and shun the beans. Farmers will get the market's message: They will devote more of their land to corn, cutting back on bean production. In the process, the mix of output will change—moving us closer to the choice consumers have made.

The central actor in this reshuffling of resources and outputs is the **market mechanism**. ***Market sales and prices send a signal to producers about what mix of output consumers want.*** If you want something and have sufficient income, you buy it. If enough people do the same thing, total sales of that product will rise, and perhaps its price will as well. Producers, seeing sales and prices rise, will want to increase production. To do so, they will acquire more resources and use them to change the mix of output. No direct communication between us and the producer is required; we don't need Twitter or Facebook to get our message transmitted. Instead, market sales and prices convey the message and direct the market, much like an "invisible hand."

market mechanism
The use of market prices and sales to signal desired outputs (or resource allocations).

It was this ability of "the market" to select a desirable mix of output that so impressed the eighteenth-century economist Adam Smith. He argued that nations would prosper with less government interference and more reliance on the invisible hand of the marketplace. As he saw it, markets were efficient mechanisms for deciding what goods to produce, how to produce them, and even what wages to pay. Smith's writings (*The Wealth of Nations,* 1776) urged government to pursue a policy of **laissez faire**—leaving the market alone to make basic economic decisions.

laissez faire
The doctrine of "leave it alone," of nonintervention by government in the market mechanism.

Central Planning

Karl Marx saw things differently. In his view, a freewheeling marketplace would cater to the whims of the rich and neglect the needs of the poor. Rich consumers would get all the ice cream, while poor families survived on gruel. Workers would be exploited by industrial barons and great landowners. To "leave it to the market," as Smith had proposed, would encourage exploitation. In the mid-nineteenth century, Karl Marx proposed a radical alternative: Overturn the power of the elite and create a communist state in which everyone's needs would be

fulfilled. Marx's writings (*Das Kapital,* 1867) encouraged communist revolutions and the development of central planning systems. The (people's) government, not the market, would decide what goods were produced, at what prices they were sold, and even who got them.

Central planning is still the principal mechanism of choice in some countries. In North Korea and Cuba, for example, the central planners decide how many cars and how much bread to produce. They then assign workers and other resources to those industries to implement their decisions. They also decide who will get the bread and the cars that are produced. The government also decides who goes to college and what subjects they can study. Private ownership of land and other resources is discouraged, even forbidden. The WHAT, HOW, and FOR WHOM outcomes are all directed by the central government.

Mixed Economies

Few countries still depend so fully on central planners (government) to make basic economic decisions. China, Russia, and other formerly communist nations have turned over many decisions to the market mechanism. Likewise, no nation relies exclusively on markets to fashion economic outcomes. In the United States, for example, we let the market decide how much ice cream will be produced and how many cars. We use the political process, however, to decide how many highways to construct, how many schools to build, and how much military output to produce.

mixed economy
An economy that uses both market and nonmarket signals to allocate goods and resources.

Because most nations use a combination of government directives and market mechanisms to determine economic outcomes, they are called **mixed economies**. There is huge variation in that mix, however. The government-dominated economic systems in North Korea, Cuba, Laos, and Libya are starkly different from the freewheeling economies of Singapore, Bahrain, New Zealand, and the United States.

WHAT ECONOMICS IS ALL ABOUT

An unregulated market might generate too much pollution. Such a market failure requires government intervention.

The different economic systems employed around the world are all intended to give the right answers to the WHAT, HOW, and FOR WHOM questions. It is apparent, however, that they don't always succeed. We have too much poverty and too much pollution. There are often too few jobs and pitifully small paychecks. A third of the world's population still lives in abject poverty.

Economists try to explain how these various outcomes emerge. Why are some nations so much more prosperous than others? What forces cause economic downturns in both rich and poor nations? What causes prices to go up and down so often? How can economies grow without destroying the environment?

Market Failure

In studying these questions, economists recognize that neither markets nor governments always have the right answers. On the contrary, we know that a completely private market economy can give us the *wrong* answers to the WHAT, HOW, and FOR WHOM questions on occasion. A completely free market economy might produce too many luxury cars and too few hospitals. Unregulated producers might destroy the environment. A freewheeling market economy might neglect the needs of the poor. When the market mechanism gives us these kinds of suboptimal answers, we say the market has *failed*. **Market failure** occurs when the market mechanism does not generate the best possible (optimal) answers to the WHAT, HOW, and FOR WHOM questions.

market failure
situation in which the market mechanism generates suboptimal economic outcomes.

Government Failure

When market failure occurs, there is usually a call for the government to "fix" the failure. This may or may not be a good response. Government intervention doesn't always make things better. Indeed, economists warn that government intervention can fail as well. **Government failure** occurs when intervention fails to improve—or actually worsens—economic outcomes.

government failure
Government intervention that fails to improve economic outcomes.

The possibility of government failure is sufficient warning that ***there is no guarantee that the visible hand of government will be any better than the invisible hand of the marketplace.***

Economists try to figure out when markets work well and when they are likely to fail. We also try to predict whether specific government interventions will improve economic outcomes—or make them worse.

Macro versus Micro

The study of economics is typically divided into two parts: macroeconomics and microeconomics. Macroeconomics focuses on the behavior of an entire economy—the big picture. In macroeconomics we study such national goals as full employment, control of inflation, and economic growth, without worrying about the well-being or behavior of specific individuals or groups. The essential concern of **macroeconomics** is to understand and improve the performance of the economy as a whole.

macroeconomics
The study of aggregate economic behavior, of the economy as a whole.

Microeconomics is concerned with the details of this big picture. In microeconomics we focus on the individuals, firms, and government agencies that actually make up the larger economy. Our interest here is in the behavior of individual economic actors. What are their goals? How can they best achieve these goals with their limited resources? How will they respond to various incentives and opportunities?

microeconomics
The study of individual behavior in the economy, of the components of the larger economy.

A primary concern of macroeconomics, for example, is to determine the impact of aggregate consumer spending on total output, employment, and prices. Very little attention is devoted to the actual content of consumer spending or its determinants. Microeconomics, on the other hand, focuses on the specific expenditure decisions of individual consumers and the forces (tastes, prices, incomes) that influence those decisions.

The distinction between macro- and microeconomics is also reflected in discussions of business investment. In macroeconomics we want to know what determines the aggregate rate of business investment and how those expenditures influence the nation's total output, employment, and prices. In microeconomics we focus on the decisions of individual businesses regarding the rate of production, the choice of factors of production, and the pricing of specific goods.

The distinction between macro- and microeconomics is a matter of convenience. In reality, macroeconomic outcomes depend on micro behavior, and micro behavior is affected by macro outcomes. Hence we cannot fully understand how an economy works until we understand how all the participants behave and why they behave as they do. But just as you can drive a car without knowing how its engine is constructed, you can observe how an economy runs without completely disassembling it. In macroeconomics we observe that the car goes faster when the accelerator is depressed and that it slows when the brake is applied. That is all we need to know in most situations. There are times, however, when the car breaks down. When it does, we have to know something more about how the pedals work. This leads us into micro studies. How does each part work? Which ones can or should be fixed?

Theory versus Reality

The distinction between macroeconomics and microeconomics is one of many simplifications we make in studying economic behavior. The economy is much too vast and complex to describe and explain in one course (or one lifetime). Accordingly, we focus on basic relationships while ignoring unnecessary detail. What this means is that we formulate theories, or *models*, of economic behavior and then use those theories to evaluate and design economic policy.

The economic models that economists use to explain market behavior are like maps. To get from New York to Los Angeles, you don't need to know all the details of topography that lie between those two cities. Knowing where the interstate highways are is probably enough. An interstate route map therefore provides enough information to get you to your destination.

ceteris paribus
The assumption that nothing else changes.

The same kind of simplification is used in economic models of consumer behavior. Such models assert that when the price of a good increases, consumers will buy less of it. In reality, however, people *may* buy *more* of a good at increased prices, especially if those high prices create a certain snob appeal or if prices are expected to increase still further. In predicting consumer responses to price increases, we typically ignore such possibilities by *assuming* that the price of the good in question is the *only* thing that changes. This assumption of "other things remaining equal (unchanged)" (in Latin, ***ceteris paribus***) allows us to make straightforward predictions. If instead we described consumer responses to increased prices in any and all circumstances (allowing everything to change at once), every prediction would be accompanied by a book full of exceptions and qualifications. We would look more like lawyers than economists.

Although the assumption of *ceteris paribus* makes it easier to formulate economic theory and policy, it also increases the risk of error. Obviously, if other things do change in significant ways, our predictions (and policies) may fail. But like weather forecasters, we continue to make predictions, knowing that occasional failure is inevitable. In so doing, we are motivated by the conviction that it is better to be approximately right than to be dead wrong.

Politics versus Economics

Politicians cannot afford to be quite so complacent about predictions. Policy decisions must be made every day. And a politician's continued tenure in office may depend on being more than approximately right. Economists contribute to those policy decisions by offering measures of economic impact and predictions of economic behavior. But in the real world, those measures and predictions always contain a substantial margin of error.

Even if the future were known, economic policy could not rely completely on economic theory. There are always political choices to be made. The choice of more consumer goods ("butter") or more military hardware ("guns"), for example, is not an economic decision. Rather it is a sociopolitical decision based in part on communal preferences and in part on economic trade-offs (opportunity costs). The "need" for more butter or more guns must be expressed politically—ends versus means again. Political forces (societal preferences) are a necessary ingredient in economic policy decisions.

Both politics and economics are involved in the continuing debate regarding the merits of a laissez faire approach versus government intervention. The pendulum has swung from laissez faire (Adam Smith) to central government control (Karl Marx) and to an ill-defined middle ground where the government assumes major responsibilities for economic stability (John Maynard Keynes) and for answers to the WHAT, HOW, and FOR WHOM questions. In the 1980s the Reagan administration pushed the pendulum a bit closer to laissez faire by cutting taxes, reducing government regulation, and encouraging market incentives.

President Clinton thought the government should play a more active role in resolving basic economic issues. His "Vision for America" spelled out a bigger role for government in ensuring health care, providing skills training, protecting the environment, and regulating working conditions. In this vision, well-intentioned government officials could correct market failures. President George W. Bush favored less government intervention and more reliance on the market mechanism. President Obama moved the pendulum back: He made it clear that he believed *more* government intervention and *less* market reliance were needed to attain the right WHAT, HOW, and FOR WHOM answers. The pendulum reversed direction again with the election of Donald Trump in 2016. Trump believed that government interference in market decisions made the economy worse off, not better. He dismantled a slew of government regulations and increased incentives for private investment.

The debate over markets versus government persists in part because of gaps in our economic understanding. For over 200 years economists have been arguing about what makes the economy tick. None of the competing theories have performed spectacularly well. Indeed, few

economists have successfully predicted major economic events with any consistency. Even annual forecasts of inflation, unemployment, and output are regularly in error. Worse still, there are never-ending arguments about what caused a major economic event long after it occurred. In fact, economists are still arguing over the causes of not only the Great Recession of 2008–2009 but even the Great Depression of the 1930s! Did government failure or market failure cause and deepen those economic setbacks?

Modest Expectations

In view of all these debates and uncertainties, you should not expect to learn everything there is to know about the economy in this text or course. Our goals are more modest. We want you to develop a fresh perspective on economic behavior and an understanding of basic principles. With this foundation, you should acquire a better view of how the economy works. Daily news reports on economic events should start to make more sense. Political debates on tax, budget, and environmental policies should take on more meaning. You may even develop some insights that you can apply toward running a business or planning a career.

POLICY PERSPECTIVES

IS "FREE" HEALTH CARE REALLY FREE?

Everyone wants more and better health care, and nearly everyone agrees that even the poorest members of society need reliable access to doctors and hospitals. That's why President Obama made health care reform such a high priority in his first presidential year.

Although the political debate over health care reform was intense and multidimensional, the economics of health care are fairly simple. In essence, President Obama wanted to *expand* the health care industry. He wanted to increase access for the millions of Americans who didn't have health insurance and raise the level of service for people with low incomes and preexisting illnesses. He wasn't proposing to *reduce* health care for those who already had adequate care. Thus his reform proposals entailed a net increase in health care services.

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Were health care a free good, everyone would have welcomed President Obama's reforms. But the most fundamental concept in economics is this: ***There is no free lunch.*** Resources used to prepare and serve even a "free" lunch could be used to produce something else. So it is with health care. The resources used to expand health care services could be used to produce something else. The ***opportunity costs*** of expanded health care are the other goods we could have produced (and consumed) with the same resources.

Figure 1.6 illustrates the basic policy dilemma. In 2009 health care services absorbed about 16 percent of total U.S. output. So the *mix* of output resembled point X_1, where H_1 amount of health care is produced and O_1 of other goods. At H_1 millions of Americans had no health insurance and were not receiving adequate care. So, President Obama wanted to *increase* health care access and services. His goal was to increase the quantity of health services from H_1 to H_2.

If health care were a free good, no one would object to raising the quantity of health care from H_1 to H_2. But health care isn't a free good: It absorbs resources that could be used to produce other goods. We can't move the mix of output from X_1 to X_2 (i.e., get more health care without giving up other goods). The production possibilities curve tells us we can get more health care only by reducing the output of other goods (i.e., by moving from the output mix X_1 to the mix X_3). At X_3 we have more health care (H_2) but fewer other goods (O_2) than we had before. That's the policy dilemma. What other goods will be sacrificed and who will absorb the loss?

The Affordable Care Act of 2010 imposed taxes and fees that forced consumers to buy more health care (insurance) and left them with less income to purchase "other goods." President Trump sought to eliminate those taxes and mandates, giving consumers more freedom about how to spend their incomes. Here again, it was a debate about markets versus government. The inevitable trade-off (opportunity cost) that accompanies expanded health care is what makes such decisions about WHAT to produce so difficult.

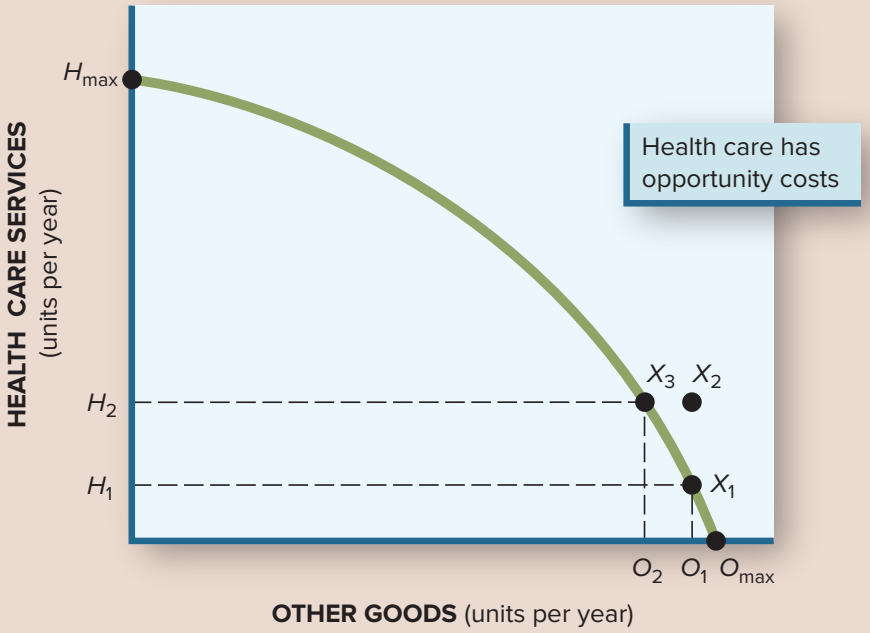


Figure 1.6 No Free Health Care Health care absorbs resources that can be used to produce other goods. Increasing health care services from H_1 to H_2 requires a reduction in the production of other goods from O_1 to O_2. ■

CHAPTER 1 REVIEW

SUMMARY

- Every nation confronts the three basic economic questions of WHAT to produce, HOW, and FOR WHOM. **LO3**
- The need to select a single mix of output (WHAT) is necessitated by our limited capacity to produce. Scarcity results when our wants exceed our resources. **LO1**
- The production possibilities curve illustrates the limits to output dictated by available factors of production and technology. Points on the curve represent the different output mixes that we may choose. **LO1**
- All production entails an opportunity cost: We can produce more of output *A* only if we produce less of output *B*. The implied reduction in output *B* is the opportunity cost of output *A*. **LO2**
- The HOW question focuses on the choice of what inputs to use in production. It also encompasses choices made about environmental protection. **LO3**
- The FOR WHOM question concerns the distribution of output among members of society. **LO3**
- The goal of every society is to select the best possible (optimal) answers to the WHAT, HOW, and FOR WHOM questions. The optimal answers will vary with social values and production capabilities. **LO3**
- The three questions can be answered by the market mechanism, by a system of central planning, or by a

mixed system of market signals and government intervention. **LO4**

- Price signals are the key feature of the market mechanism. Consumers signal their desires for specific goods by paying a price for those goods. Producers respond to the price signal by assembling factors of production to produce the desired output. **LO4**
- Market failure occurs when the market mechanism generates the wrong mix of output, undesirable methods of production, or an inequitable distribution of income. Government intervention may fail, too, however, by not improving (or even worsening) economic outcomes. **LO5**
- The study of economics focuses on the broad question of resource allocation. Macroeconomics is concerned with allocating the resources of an entire economy to achieve broad economic goals (e.g., full employment). Microeconomics focuses on the behavior and goals of individual market participants. **LO3**

TERMS TO REMEMBER

Define the following terms:

economics
opportunity cost
factors of production
scarcity
production possibilities
investment
economic growth
market mechanism
laissez faire
mixed economy
market failure
government failure
macroeconomics
microeconomics
ceteris paribus

QUESTIONS FOR DISCUSSION

1. As rich as America is, how can our resources possibly be "scarce"? **LO1**
2. What opportunity costs did you incur in reading this chapter? **LO2**
3. How would you answer the question in the News Wire "Future Living Standards"? Why? **LO3**
4. How can China's army be twice as large as North Korea's when China spends only 2.1 percent of its output on the military and North Korea spends 19 percent? **LO1**
5. In a purely private market economy, how is the FOR WHOM question answered? Is that optimal? **LO3**
6. Why doesn't North Korea reduce its military and put more resources into food production (News Wire "Opportunity Cost")? What is the optimal mix of "guns" and "butter" for a nation? **LO3**
7. If taxes on the rich were raised to provide more housing for the poor, how would the willingness to work be affected? What would happen to total output? **LO3**
8. What kind of knowledge must central planners possess to manage an economy efficiently? **LO4**
9. **POLICY PERSPECTIVES** Why can't we produce at point X_2 in Figure 1.6? Will we ever get there? **LO5**
10. **POLICY PERSPECTIVES** What was President Obama's goal for the Affordable Care Act? Why didn't President Trump like that policy? **LO2**

PROBLEMS

1. Iceland has no military. (*a*) So, at what point in Figure 1.1 is Iceland producing? (*b*) If Iceland decided to produce the quantity *OE* of military goods, how much consumer output would it have to give up? **LO2**
2. What percentage of total U.S. output consisted of military goods **LO2**
   a. in 1944? (Figure 1.2)
   b. in 2018? (Figure 1.2)

3. Draw a production possibilities curve based on Table 1.1, labeling combinations *A–F.* What is the opportunity cost of increasing missile production **LO2**
   a. from 50 to 100?
   b. from 100 to 150?
4. Assume that it takes four hours of labor time to paint a room and two hours to sand a floor. If 24 hours were spent painting: (*a*) How many rooms could be painted? (*b*) If a decision were made to sand two floors, how many painted rooms would have be given up? *(c)* Illustrate with a production possibilities curve. **LO1**
5. Assume that it takes four hours of labor time to paint a room and two hours to sand a floor. If two workers each spend 24 hours painting: (*a*) How many rooms could be painted? (*b*) If a decision were made to only sand floors, how many floors could be sanded? (*c*) Illustrate with a production possibilities curve. **LO2**
6. North Korea has a population of 26 million people, of whom 1.2 million are in the military. South Korea has an army of 650,000 out of a population of 52 million. What percentage of the population is in the military in **LO2**
   a. North Korea?
   b. South Korea?
7. The table below describes the production possibilities confronting an economy. Using that information: **LO3**
   a. Calculate the opportunity costs of building hospitals.
   b. Draw the production possibilities curve.
   c. Why can't more of both outputs be produced?
   d. Which point on the curve is the most desired one?

Potential Output Combinations	Homeless Shelters	Hospitals
A	20	0
B	17	1
C	13	2
D	7	3
E	0	4

8. In 2018, the dollar value of total output was roughly $40 billion in North Korea and $1,600 billion in South Korea. South Korea devoted 2.9 percent of its output to defense and North Korea devoted 19.0 percent of its output to defense. (*a*) How much does North Korea spend on its military (in dollars)? *(b)* Which nation spends more (in dollars)? **LO3**
9. According to the News Wire "Opportunity Cost," what is the opportunity cost of a single ICBM rocket launch in terms of corn for each of North Korea's 26 million people? **LO4**
10. **POLICY PERSPECTIVES** In Figure 1.6, (*a*) If as much health care as possible is provided, how many other goods will be provided? (*b*) What is the opportunity cost of increasing health care from H_1 to H_2? **LO5**
11. **POLICY PERSPECTIVES** Suppose the following data reflect the production possibilities for providing health care and education: **LO5**

	Units per Year						
Health care	400	370	330	270	190	100	0
Education	0	20	40	50	60	70	80

   a. Graph the production possibilities curve.
   b. If maximum health care is provided, how much education will be provided?
   c. What is the opportunity cost of increasing health care from 100 to 190 units?

Study Time (Hours per Week)	Grade Point Average
16	4.0 (A)
14	3.5 (B+)
12	3.0 (B)
10	2.5 (C+)
8	2.0 (C)
6	1.5 (D+)
4	1.0 (D)
2	0.5 (F+)
0	0 (F)

Table A.1 Hypothetical Relationship of Grades to Study Time These data suggest that grades improve with increased study time.

APPENDIX–USING GRAPHS

Economists like to draw graphs. In fact, we didn't even make it through the first chapter without a few graphs. The purpose of this appendix is to look more closely at the way graphs are drawn and used.

The basic purpose of a graph is to illustrate a relationship between two *variables*. Consider, for example, the relationship between grades and studying. In general, you expect that additional hours of study time will result in higher grades. If true, you should be able to see a distinct relationship between hours of study time and grade point average. In other words, there should be some empirical evidence that study time matters.

Suppose we actually tracked study times and grades for all the students taking this course. The resulting information might resemble the data in Table A.1.

According to the table, students who don't study at all can expect an F in this course. To get a C, the average student apparently spends eight hours a week studying. All those who study 16 hours a week end up with an A in the course.

These relationships between grades and studying can also be illustrated on a graph. Indeed, the whole purpose of a graph is to summarize numerical relationships in a visual way.

We begin to construct a graph by drawing horizontal and vertical boundaries, as in Figure A.1. These boundaries are called the *axes* of the graph. On the vertical axis we measure one of the variables; the other variable is measured on the horizontal axis.

In this case, we shall measure the grade point average on the vertical axis. We start at the *origin* (the intersection of the two axes) and count upward, letting the distance between horizontal lines represent half (0.5) a grade point. Each horizontal line is numbered, up to the maximum grade point average of 4.0.

The number of hours each week spent doing homework is measured on the horizontal axis. We begin at the origin again, and count to the right. The *scale* (numbering) proceeds in increments of 1 hour, up to 20 hours per week.

When both axes have been labeled and measured, we can begin to illustrate the relationship between study time and grades. Consider the typical student who does eight hours of homework per week and has a 2.0 (C) grade point average. We illustrate this relationship by first locating eight hours on the horizontal axis. We then move up from that point a distance of 2.0 grade points, to point *M*. Point *M* tells us that eight hours of study time per week is typically associated with a 2.0 grade point average.

The rest of the information in Table A.1 is drawn (or *plotted*) on the graph in the same way. To illustrate the average grade for people who study 12 hours per week, we move upward from the number 12 on the horizontal axis until we reach the height of 3.0 on the vertical axis. At that intersection, we draw another point (point *N*).

Once we have plotted the various points describing the relationship of study time to grades, we may connect them with a line or curve. This line (curve) is our summary. In this case, the line slopes upward to the right—that is, it has a *positive* slope. This slope indicates that more hours of study time are associated with *higher* grades. Were higher grades associated with *less* study time, the curve in Figure A.1 would have a *negative* slope (downward from left to right)—a puzzling outcome.

Slopes

The upward slope of Figure A.1 not only tells us that more studying raises your grade, it also tells us *by how much* grades rise with study time. According to point *M* in Figure A.1, the average student studies eight hours per week and earns a C (2.0 grade point average). In order to earn a B (3.0 grade point average), a student apparently needs to study an average of 12 hours per week (point *N*). Hence an *increase* of four hours of study time per week is associated with a 1-point *increase* in grade point average. This relationship between *changes* in study time and *changes* in grade point average is expressed by the steepness, or *slope*, of the graph.

The slope of any graph is calculated as

$$\text{Slope} = \frac{\text{vertical distance between two points}}{\text{horizontal distance between two points}}$$

Some people simplify this by saying

$$\text{Slope} = \frac{\text{the rise}}{\text{the run}}$$

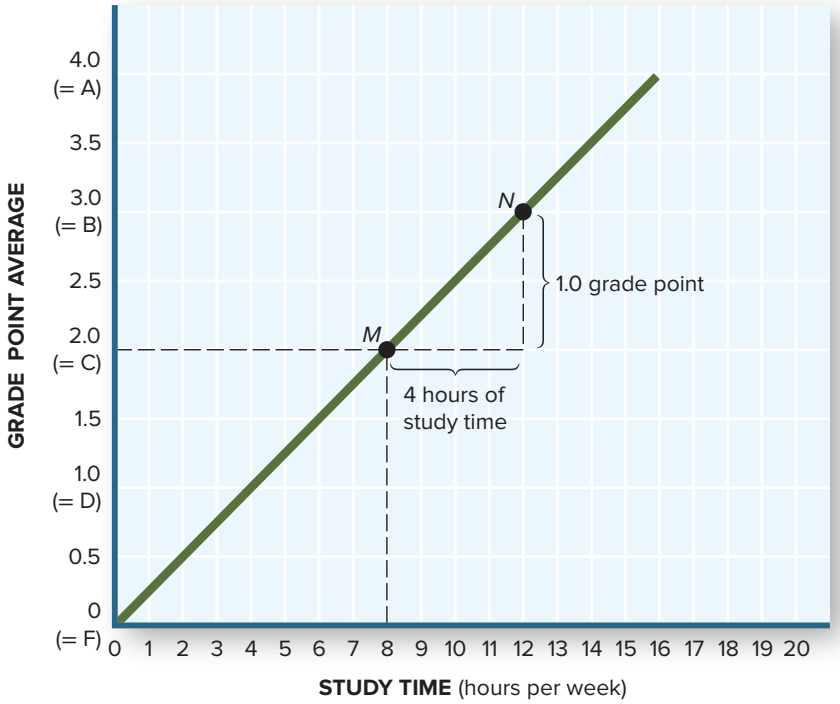


Figure A.1 The Relationship of Grades to Study Time The upward (positive) slope of the curve indicates that additional studying is associated with higher grades. The average student (2.0, or C grade) studies eight hours per week. This is indicated by point *M* on the graph.

In our example, the vertical distance (the "rise") between points *M* and *N* represents a change in grade point average. The horizontal distance (the "run") between these two points represents the change in study time. Hence the slope of the graph between points *M* and *N* is equal to

$$\text{Slope} = \frac{3.0 \text{ grade} - 2.0 \text{ grade}}{12 \text{ hours} - 8 \text{ hours}} = \frac{1 \text{ grade point}}{4 \text{ hours}}$$

In other words, a four-hour increase in study time (from 8 to 12 hours) is associated with a 1-point increase in grade point average (see Figure A.1).

Shifts

The relationship between grades and studying illustrated in Figure A.1 is not inevitable. It is simply a graphical illustration of student experiences, as revealed in our hypothetical survey. The relationship between study time and grades could be quite different.

Suppose that the university decided to raise grading standards, making it more difficult to achieve good grades. To achieve a C, a student now would need to study 12 hours per week, not just 8 (as in Figure A.1). To get a B, you now have to study 16 hours, not the previous norm of only 12 hours per week.

Figure A.2 illustrates the new grading standards. Notice that the new curve lies to the right of the earlier curve. We say that the curve has *shifted* to reflect a change in the relationship between study time and grades. Point *R* indicates that 12 hours of study time now "produces" a C, not a B (point *N* on the old curve). Students who now study only four hours per week (point *S*) will fail. Under the old grading policy, they could have at least gotten a D. ***When a curve shifts, the underlying relationship between the two variables has changed.***

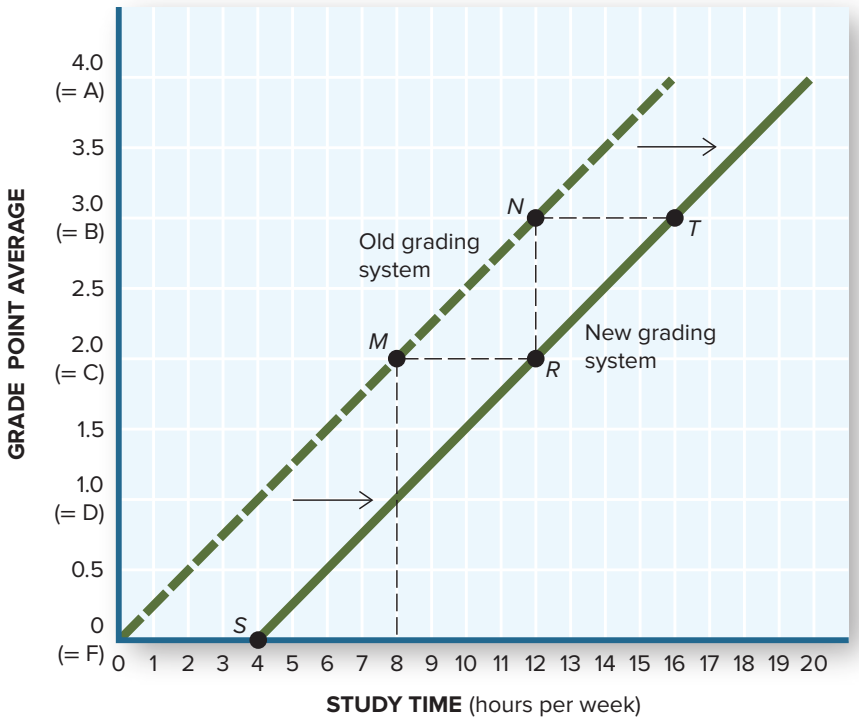


Figure A.2 A Shift When a relationship between two variables changes, the entire curve *shifts*. In this case a tougher grading policy alters the relationship between study time and grades. To get a C, one must now study 12 hours per week (point *R*), not just 8 hours (point *M*).

A shift may also change the slope of the curve. In Figure A.2, the new grading curve is parallel to the old one; it therefore has the same slope. Under either the new grading policy or the old one, a four-hour increase in study time leads to a 1-point increase in grades. Therefore, the slope of both curves in Figure A.2 is

$$\text{Slope} - \frac{\text{vertical change}}{\text{horizontal change}} = \frac{1}{4}$$

This, too, may change, however. Figure A.3 illustrates such a possibility. In this case, zero study time still results in an F. But now the payoff for additional studying is reduced. Now it takes six hours of study time to get a D (1.0 grade point), not four hours as before. Likewise, another four hours of study time (to a total of 10) raises the grade by only two-thirds of a point.

It takes six hours to raise the grade a full point. The slope of the new line is therefore

$$\text{Slope} = \frac{\text{vertical change}}{\text{horizontal change}} = \frac{1}{6}$$

The new curve in Figure A.3 has a smaller slope than the original curve and so lies below it. What all this means is that it now takes a greater effort to *improve* your grade.

Linear versus Nonlinear Curves

In Figures A.1–A.3, the relationship between grades and studying is represented by a straight line—that is, a *linear* curve. A distinguishing feature of linear curves is that they have the same (constant) slope throughout. In Figure A.1, it appears that *every* four-hour increase in study time is associated with a 1-point increase in average grades. In Figure A.3, it appears that every six-hour increase in study time leads to a 1-point increase in grades.

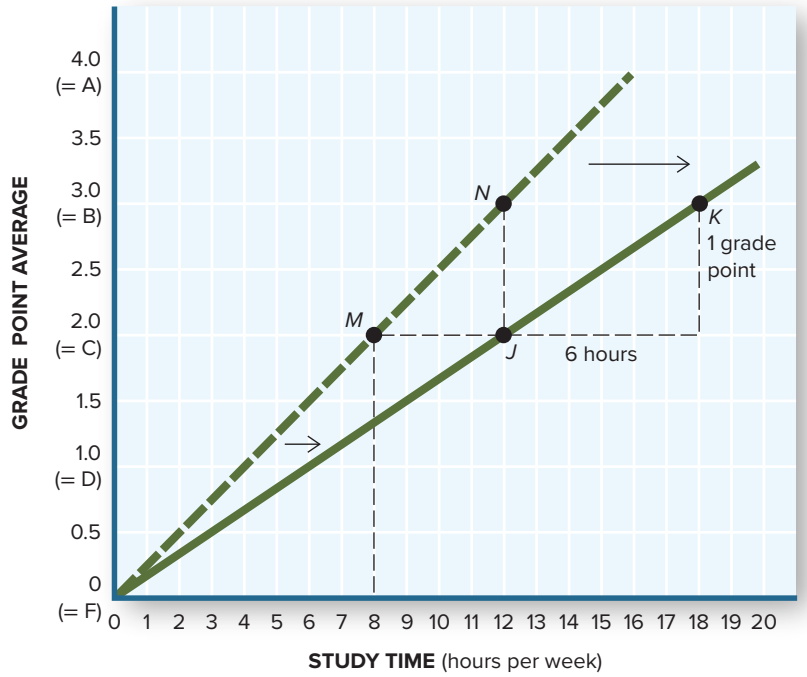


Figure A.3 A Change in Slope When a curve shifts, it may change its slope as well. In this case, a new grading policy makes each higher grade more difficult to achieve. To raise a C to a B, for example, one must study six additional hours (compare points *J* and *K*). Earlier it took only four hours to move up the grade scale a full point. The slope of the line has declined from 0.25 (= 1 ÷ 4) to 0.17 (= 1 ÷ 6).

In reality, the relationship between studying and grades may not be linear. Higher grades may be more difficult to attain. You may be able to raise a C to a B by studying six hours more per week. But it may be harder to raise a B to an A. According to Figure A.4, it takes an additional *eight* hours of studying to raise a B to an A. Thus the relationship between study time and grades is *nonlinear* in Figure A.4; the slope of the curve *changes* as study time increases. In this case, the slope decreases as study time increases. Grades continue to improve, but not so fast, as more and more time is devoted to homework. You may know the feeling.

Causation

Figure A.4 does not itself guarantee that your grade point average will rise if you study four more hours per week. In fact, the graph drawn in Figure A.4 does not prove that additional study ever results in higher grades. The graph is only a summary of empirical observations. It says nothing about cause and effect. It could be that students who study a lot are smarter to begin with. If so, then less able students might not get higher grades if they studied harder. In other words, the *cause* of higher grades is debatable. At best, the empirical relationship summarized in the graph may be used to support a particular theory (e.g., that it pays to study more). Graphs, like tables, charts, and other statistical media, rarely tell their own stories; rather, they must be *interpreted* in terms of some underlying theory or expectation. That's when the real fun starts.

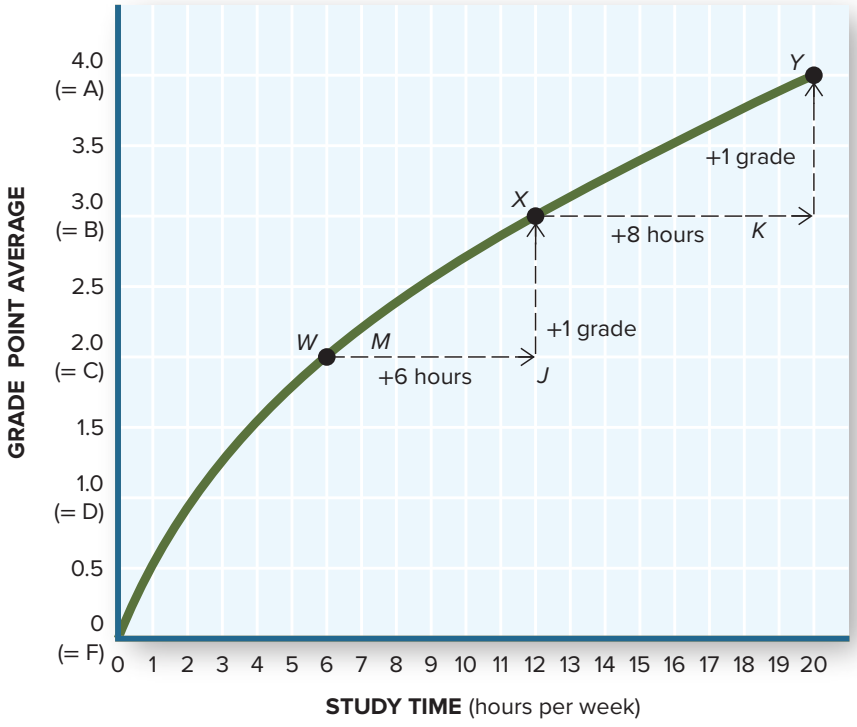
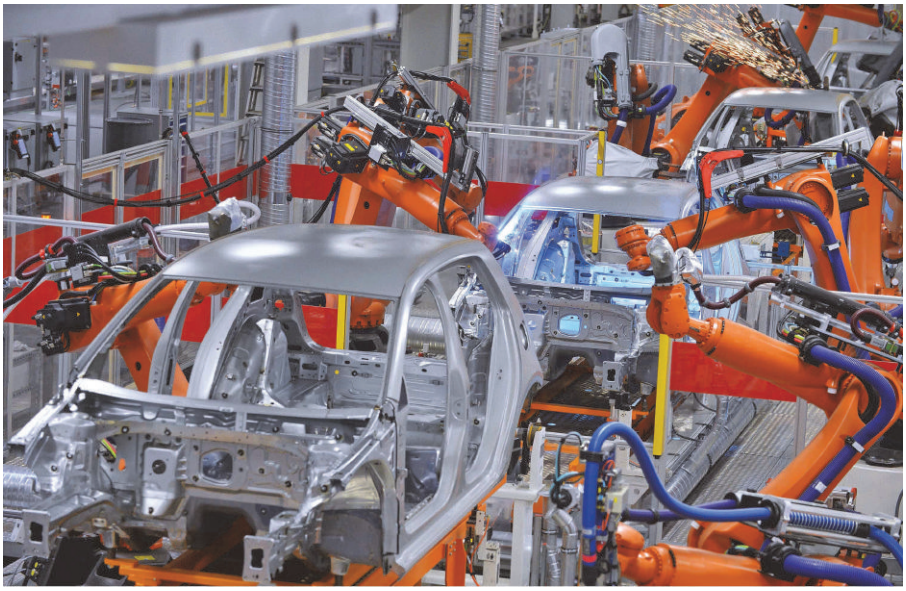


Figure A.4 A Nonlinear Relationship Straight lines have a constant slope, implying a constant relationship between the two variables. But the relationship (and slope) may vary. In this case it takes six extra hours of study to raise a C (point *W*) to a B (point *X*) but eight extra hours to raise a B to an A (point *Y*). The slope is decreasing as we move up the curve.

CHAPTER TWO

The U.S. Economy



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LEARNING OBJECTIVES

After reading this chapter, you should be able to:

1. Explain how an economy's size is measured.
2. Describe the absolute and relative size of the U.S. economy.
3. Explain why the U.S. economy can produce so much.
4. Recount how the mix of U.S. output has changed over time.
5. Describe how (un)equally incomes are distributed.

We are surrounded by the economy but never really see it. We see only fragments, never the entirety. We see boutiques at the mall, never total retail sales. We visit virtual stores in cyberspace but can't begin to describe the dimensions of e-commerce. We pump gas at the service station but have no notion of how many millions of barrels of oil are consumed each day. We know every detail on our paychecks but don't have a clue about how much income the entire workforce earns. Most of us have no idea how our own income stacks up against that of the average U.S. household, much less that of earlier generations or other nations. Such details simply aren't a part of our daily agendas. For most people, the "economy" is just a vague reference to a mass of meaningless statistics.

The intent of this chapter is to provide a more user-friendly picture of the U.S. economy. This profile of the economy is organized around the three core questions of WHAT, HOW, and FOR WHOM. Our interest here is to see how these questions are answered at present in the United States—that is,

- WHAT goods and services does the United States produce?
- HOW is that output produced?
- FOR WHOM is the output produced?

We focus on the big picture without going into too much statistical detail. Along the way, we'll see how the U.S. economy stacks up against other nations.

Output	Amount
Measuring output	
. . . in physical terms	
Oranges	6 billion
Disposable razors	3 billion
Video games	70 million
Total	?
. . . in monetary terms	
6 billion oranges @ 20¢ each	$1.2 billion
3 billion razors @ 30¢ each	0.9 billion
70 million games @ $30 each	2.1 billion
Total	$4.2 billion

Table 2.1 Measuring Output It is impossible to add up all output when it is counted in *physical terms*. Accordingly, total output is measured in *monetary terms*, with each good or service valued at its market price. GDP refers to the total market value of all goods and services produced in a given time period. According to the numbers in this table, the total *value* of the oranges, razors, and video games produced is $4.2 billion.

WHAT AMERICA PRODUCES

In Chapter 1 we used the two-dimensional production possibilities curve to describe WHAT output combinations can be produced. In reality, the mix of output includes so many different products that we could never fit them on a graph. We can, however, sketch what the U.S. mix of output looks like and how it has changed over the years.

How Much Output

The first challenge in describing the actual output of an economy is to somehow add up the millions of different products produced each year into a meaningful summary. The production possibilities curve in Chapter 1 did this in *physical* terms for only two products (see Figure 1.1). We ended up at a specific mix of output with precise quantities of two goods. In principle we could list all of the millions of products produced each year. But such a list would be longer than this textbook and a lot less useful. We need a summary measure of how much is produced.

The top panel of Table 2.1 illustrates the problem of obtaining a summary measure of output. Even if we produced only three products—oranges, disposable razors, and video games—there is no obvious way of summarizing total output in *physical* terms. Should we count *units* of output? In that case oranges would appear to be the most important good produced. Should we count the *weight* of different products? In that case video game software would not count at all. Should we tally their *sizes*? Clearly *physical* measures of output aren't easy to aggregate.

If we use monetary *value* instead of physical units to compute total output, the accounting chore is much easier. In a market economy, every product commands a specific price. Hence the value of each product can be observed easily. ***By multiplying the physical output of each good by its price, we can determine the total value of each good produced.*** Notice in the bottom panel of Table 2.1 how easily the separate values for the output of oranges, razors, and video games can be added up. The resultant sum ($4.2 billion, in this case) is a measure of the *value of* total output.