Tenth Edition

Essentials of ECONOMICS

N. GREGORY MANKIW

Essentials of Economics: a Guided Tour

Introduction

1 Ten Principles of Economics — The study of economics is guided by a few big ideas.

2 Thinking Like an Economist — Economists view the world as both scientists and policymakers.

3 Interdependence and the Gains from Trade — The theory of comparative advantage explains how people benefit from economic interdependence.

How Markets Work

4 The Market Forces of Supply and Demand
5 Elasticity and Its Application
— How does the economy coordinate interdependent economic actors? Through the market forces of supply and demand.

6 Supply, Demand, and Government Policies — The tools of supply and demand are put to work to examine the effects of various government policies.

Markets and Welfare

7 Consumers, Producers, and the Efficiency of Markets
8 Application: The Costs of Taxation
9 Application: International Trade
— Why is the equilibrium of supply and demand desirable for society as a whole? The concepts of consumer and producer surplus explain the efficiency of markets, the costs of taxation, and the benefits of international trade.

The Economics of the Public Sector

10 Externalities
11 Public Goods and Common Resources
— Market outcomes are not always efficient, and governments can sometimes remedy market failure.

Firm Behavior and the Organization of Industry

12 The Costs of Production
13 Firms in Competitive Markets
— The theory of the firm sheds light on the decisions that lie behind supply in competitive markets.

14 Monopoly — Firms with market power can cause market outcomes to be inefficient.

The Data of Macroeconomics

15 Measuring a Nation's Income

16 Measuring the Cost of Living

The overall quantity of production and the overall price level are used to monitor developments in the economy as a whole.

The Real Economy in the Long Run

17 Production and Growth

18 Saving, Investment, and the Financial System

19 The Basic Tools of Finance

20 Unemployment

These chapters describe the forces that in the long run determine key real variables, including GDP growth, saving, investment, real interest rates, and unemployment.

Money and Prices in the Long Run

21 The Monetary System

22 Money Growth and Inflation

The monetary system is crucial in determining the long-run behavior of the price level, the inflation rate, and other nominal variables.

Short-Run Economic Fluctuations

23 Aggregate Demand and Aggregate Supply

24 The Influence of Monetary and Fiscal Policy on Aggregate Demand

The model of aggregate demand and aggregate supply explains short-run economic fluctuations, the short-run effects of monetary and fiscal policy, and the short-run linkage between real and nominal variables.

Suggestions for Summer Reading

If you enjoyed the economics course that you just finished, you might like to read more about economic issues in the following books.

Abhijit V. Banerjee and Esther Duflo

Good Economics for Hard Times

(New York: PublicAffairs, 2019)

Two prominent economists—winners of the Nobel prize in 2019—offer their ideas about how to build a better world.

Yoram Bauman and Grady Klein

The Cartoon Introduction to Economics

(New York: Hill and Wang, 2010)

Basic economic principles, with humor.

Bryan Caplan

The Myth of the Rational Voter: Why Democracies Choose Bad Policies

(Princeton, NJ: Princeton University Press, 2008)

An economist asks why elected leaders often fail to follow the policies that economists recommend.

Kimberly Clausing

Open: The Progressive Case for Free Trade, Immigration, and Global Capital

(Cambridge, MA: Harvard University Press, 2019)

An economist explains why Americans benefit from interacting with the rest of the world.

Avinash K. Dixit and Barry J. Nalebuff

The Art of Strategy: A Game Theorist's Guide to Success in Business and Life

(New York: Norton, 2008)

This introduction to game theory discusses how all people—from arrested criminals to corporate executives—should, and do, make strategic decisions.

Mihir Desai

The Wisdom of Finance: Discovering Humanity in the World of Risk and Return

(Boston: Houghton Mifflin Harcourt, 2017)

A charming look at how the insights of finance inform our lives.

William Easterly

The Tyranny of Experts: Economists, Dictators, and the Forgotten Rights of the Poor

(New York: Basic Books, 2013)

A former World Bank economist examines the many attempts to help the world's poorest nations and why these attempts have often failed.

Milton Friedman

Capitalism and Freedom

(Chicago: University of Chicago Press, 1962)

One of the most important economists of the 20th century argues that society should rely less on the government and more on the free market.

Robert L. Heilbroner

The Worldly Philosophers

(New York: Touchstone, 1953, revised 1999)

A classic introduction to the lives, times, and ideas of the great economic thinkers, including Adam Smith, David Ricardo, and John Maynard Keynes.

Steven E. Landsburg

The Armchair Economist: Economics and Everyday Life

(New York: Free Press, 2012)

Why does popcorn cost so much at movie theaters? Steven Landsburg discusses this and other puzzles of economic life.

Steven D. Levitt and Stephen J. Dubner

Freakonomics: A Rogue Economist Explores the Hidden Side of Everything

(New York: Morrow, 2005)

Economic principles and clever data analysis applied to a wide range of offbeat topics, including drug dealing, online dating, and sumo wrestling.

Roger Lowenstein

America's Bank: The Epic Struggle to Create the Federal Reserve

(New York: Penguin Press, 2015)

A history of the founding of one of the most important policymaking institutions in the United States.

Annie Lowrey

Give People Money: How a Universal Basic Income Would End Poverty, Revolutionize Work, and Remake the World

(New York: Crown, 2018)

The case for a substantial rethinking of the social safety net.

Burton G. Malkiel

A Random Walk Down Wall Street: The Time-Tested Strategy for Successful Investing

(New York: Norton, 2019)

This introduction to stocks, bonds, and financial economics is not a "get rich quick" book, but it might help you get rich slowly.

Deirdre McCloskey and Art Carden

Leave Me Alone and I'll Make You Rich: How the Bourgeois Deal Enriched the World

(Chicago: University of Chicago Press, 2020)

An overview of economic history that asks why most modern societies have, over the past two centuries, escaped the grinding poverty that previously characterized most of human existence.

John McMillan

Reinventing the Bazaar: A Natural History of Markets

(New York: Norton, 2002)

A deep and nuanced, yet still very readable, analysis of how society can make the best use of market mechanisms.

Branko Milanovic

Capitalism, Alone: The Future of the System that Rules the World

(Cambridge, MA: Harvard University Press, 2019)

A look at how capitalism manifests itself in different ways in different countries.

Sendhil Mullainathan and Eldar Shafir

Scarcity: Why Having Too Little Means So Much

(New York: Times Books, 2013)

An economist and psychologist team up to examine the causes and consequences of our limited cognitive abilities.

Sylvia Nasar

Grand Pursuit: The Story of Economic Genius

(New York: Simon and Schuster, 2011)

A sweeping narrative that tells the story of economic discovery.

William D. Nordhaus

The Spirit of Green: The Economics of Collisions and Contagions in a Crowded World

(Princeton, NJ: Princeton University Press, 2021)

The 2018 Nobel laureate in economics examines how to best address critical externalities, such as the carbon emissions that lead to global climate change.

Roger W. Spencer and David A. Macpherson

Lives of the Laureates

(Cambridge, MA: MIT Press, 2014)

Twenty-three winners of the Nobel Prize in Economics offer autobiographical essays about their lives and work.

Tenth Edition

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N. GREGORY MANKIW

HARVARD UNIVERSITY

Australia • Brazil • Mexico • Singapore • United Kingdom • United States

Cengage

***Essentials of Economics,* 10e**
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To Catherine, Nicholas, and Peter,
my other contributions to the next generation

About the Author

JORDI CABRÉ

N. Gregory Mankiw is the Robert M. Beren Professor of Economics at Harvard University. As a student, he studied economics at Princeton University and MIT. As a teacher, he has taught macroeconomics, microeconomics, statistics, and principles of economics. He even spent one summer long ago as a sailing instructor on Long Beach Island.

Professor Mankiw is a prolific writer and regular participant in academic and policy debates. His work has been published in scholarly journals such as the *American Economic Review*, *Journal of Political Economy*, and *Quarterly Journal of Economics* and in more popular forums, such as the *New York Times* and *The Wall Street Journal*. He is also the author of the best-selling intermediate-level textbook *Macroeconomics* (Worth Publishers).

In addition to his teaching, research, and writing, Professor Mankiw has been a research associate of the National Bureau of Economic Research, a member of the Brookings Panel on Economic Activity, an adviser to the Congressional Budget Office and the Federal Reserve Banks of Boston and New York, a trustee of the Urban Institute and the Economic Club of New York, and a member of the ETS test development committee for the Advanced Placement exam in economics. From 2003 to 2005, he served as chairman of the President's Council of Economic Advisers.

Preface: To the Instructor

During my 20-year career as a student, the course that excited me most was the two-semester sequence on the principles of economics that I took during my first year in college. It is no exaggeration to say that it changed my life.

I had grown up in a family that often discussed politics over the dinner table. The pros and cons of various solutions to society's problems generated fervent debate. But in school, I had been drawn to the sciences. While politics seemed vague, rambling, and subjective, science was analytic, systematic, and objective. Political debate continued without end, but scientific research made progress.

My freshman course on the principles of economics opened my eyes to a new way of thinking. Economics combines the virtues of politics and science. It is, truly, a social science. Its subject matter is society—how people choose to lead their lives and how they interact with one another—but it approaches the subject with the dispassion of a science. By bringing the methods of science to the questions of politics, economics aims to make progress on the challenges that all societies face.

I wrote this book with the hope that I could convey some of the excitement about economics that I felt as a student in my first economics course. Economics is a subject in which a little knowledge goes a long way. (The same cannot be said, for instance, of the study of physics or the Chinese language.) Economists have a unique worldview, much of which can be taught in one or two semesters. My goal in this book is to transmit this way of thinking to the widest possible audience and to convince readers that it illuminates much about their lives and the world around them.

I believe that everyone should study the fundamental ideas that economics has to offer. One purpose of general education is to teach people about the world and thereby make them better citizens. The study of economics, as much as any discipline, serves this goal. Writing an economics textbook is, therefore, a great honor and a great responsibility. It is one way that economists can help promote better government and a more prosperous future. As the great economist Paul Samuelson put it, "I don't care who writes a nation's laws, or crafts its advanced treaties, if I can write its economics textbooks."

What's New in the Tenth Edition?

Economics aims to understand the world in which we live. Most chapters of this book include Case Studies that illustrate how the principles of economics can be applied. In the News boxes offer excerpts from newspapers, magazines, and online news sources to show how economic ideas shed light on current issues facing society. After students finish their first course in economics, they should think about news reports from a new perspective and with greater insight. To keep the study of economics fresh and relevant for each new cohort of students, I update each edition to keep pace with the ever-changing world.

The new applications in this tenth edition are too numerous to list in their entirety, but here is a sample of the topics covered (and the chapters in which they appear):

- Shortages during the coronavirus pandemic renewed the debate over whether it is fair for businesses to increase prices during a crisis. (Chapter 4)
- The future of the ride-share market hinges on the elasticities of supply and demand. (Chapter 5)
- The minimum wage remains a contentious topic. (Chapter 6)
- A carbon tax is a versatile tool to combat global climate change. (Chapter 10)
- Putting a price on road use gets renewed attention as the United States embarks on building new infrastructure. (Chapter 11)
- The Biden administration looked to expand the scope of antitrust policy. (Chapter 14)
- Research has shed light on how the aftermath of the slave trade affects modern Africa. (Chapter 17)
- The four-decade decline in real interest rates is puzzling. (Chapter 18)
- Women are generally better investors than men. (Chapter 19)
- New research has examined the use of efficiency wages. (Chapter 20)
- The recession caused by the coronavirus pandemic was unusual in several ways. (Chapter 23)

As always, I have carefully gone through every chapter to refine the book's coverage and pedagogy. There are numerous changes, large and small, to ensure that the book is clear, accurate, and up-to-date.

All the changes that I made, and the many others that I considered, were evaluated in light of the benefits of brevity. Like most things studied in economics, a student's time is a scarce resource. I always keep in mind a dictum from the novelist Robertson Davies: "One of the most important things about writing is to boil it down and not bore the hell out of everybody."

How Is This Book Organized?

This book is organized to make economics as student-friendly as possible. What follows is a whirlwind tour, which will, I hope, give instructors some sense of how the pieces fit together.

Introductory Material

Chapter 1, "Ten Principles of Economics," introduces students to the economist's view of the world. It previews the big ideas that recur in economics, such as opportunity cost, marginal decision making, the role of incentives, the gains from trade, and the efficiency of market allocations. Throughout the book, I refer regularly to the **Ten Principles of Economics** in Chapter 1 to remind students that these ideas are the foundation for all economics.

Chapter 2, "Thinking Like an Economist," examines how economists approach their subject. It discusses the role of assumptions in developing a theory and introduces the concept of an economic model. It also explores the role of economists in making policy. This chapter's appendix offers a brief refresher course on how graphs are used as well as how they can be abused.

Chapter 3, "Interdependence and the Gains from Trade," presents the theory of comparative advantage. This theory explains why individuals trade with their

neighbors and why nations trade with other nations. Much of economics is about how market forces coordinate many individual production and consumption decisions. As a starting point for this analysis, students see in this chapter why specialization, interdependence, and trade can benefit everyone.

The Fundamental Tools of Supply and Demand

The next three chapters introduce the basic tools of supply and demand. Chapter 4, "The Market Forces of Supply and Demand," develops the supply curve, the demand curve, and the notion of market equilibrium. Chapter 5, "Elasticity and Its Application," introduces the concept of elasticity and uses it to analyze events in three different markets. Chapter 6, "Supply, Demand, and Government Policies," uses these tools to examine price controls, such as rent-control and minimum-wage laws, and tax incidence.

Chapter 7, "Consumers, Producers, and the Efficiency of Markets," extends the analysis of supply and demand using the concepts of consumer surplus and producer surplus. It begins by developing the link between consumers' willingness to pay and the demand curve and the link between producers' costs of production and the supply curve. It then shows that the market equilibrium maximizes the sum of the producer and consumer surplus. Thus, students learn early about the efficiency of market allocations.

The next two chapters apply the concepts of producer and consumer surplus to policy questions. Chapter 8, "Application: The Costs of Taxation," shows why taxation results in deadweight losses and what determines the size of those losses. Chapter 9, "Application: International Trade," considers who wins and who loses from international trade and presents the debate over protectionist trade policies.

More Microeconomics

Having examined why market allocations are often desirable, the book then considers how the government can sometimes improve on them. Chapter 10, "Externalities," explains how external effects such as pollution can render market outcomes inefficient and discusses the possible public and private solutions to those inefficiencies. Chapter 11, "Public Goods and Common Resources," considers the problems that arise when goods, such as national defense, have no market price.

The next three chapters examine firm behavior and industrial organization. Chapter 12, "The Costs of Production," discusses what to include in a firm's costs, and it introduces cost curves. Chapter 13, "Firms in Competitive Markets," analyzes the behavior of price-taking firms and derives the market supply curve. Chapter 14, "Monopoly," discusses the behavior of a firm that is the sole seller in its market. It examines the inefficiency of monopoly pricing, the possible policy responses, and the attempts by monopolies to price discriminate.

Macroeconomics

My overall approach to teaching macroeconomics is to examine the economy in the long run (when prices are flexible) before examining the economy in the short run (when prices are sticky). I believe that this organization simplifies learning macroeconomics for several reasons. First, the classical assumption of price flexibility is more closely linked to the basic lessons of supply and demand, which students have already mastered. Second, the classical dichotomy allows the study of the long run to be broken up into several easily digested pieces. Third, because the business cycle represents a transitory deviation from the economy's long-run

growth path, studying the transitory deviations is more natural after the long-run equilibrium is understood. Fourth, the macroeconomic theory of the long run is less controversial among economists than is the macroeconomic theory of the short run. For these reasons, most upper-level courses in macroeconomics now follow this long-run-before-short-run approach; my goal is to offer introductory students the same advantage.

I start the coverage of macroeconomics with issues of measurement. Chapter 15, "Measuring a Nation's Income," discusses the meaning of gross domestic product and related statistics from the national income accounts. Chapter 16, "Measuring the Cost of Living," examines the measurement and use of the consumer price index.

The next four chapters describe the behavior of the real economy in the long run. Chapter 17, "Production and Growth," examines the determinants of the large variation in living standards over time and across countries. Chapter 18, "Saving, Investment, and the Financial System," discusses the types of financial institutions in our economy and examines their role in allocating resources. Chapter 19, "The Basic Tools of Finance," introduces present value, risk management, and asset pricing. Chapter 20, "Unemployment," considers the long-run determinants of the unemployment rate, including job search, minimum-wage laws, the market power of unions, and efficiency wages.

Having described the long-run behavior of the real economy, the book then turns to the long-run behavior of money and prices. Chapter 21, "The Monetary System," introduces the economist's concept of money and the role of the central bank in controlling the quantity of money. Chapter 22, "Money Growth and Inflation," develops the classical theory of inflation and discusses the costs that inflation imposes on a society.

After developing the long-run theory of the economy in Chapters 17 through 22, the book turns to explaining short-run fluctuations around the long-run trend. Chapter 23, "Aggregate Demand and Aggregate Supply," begins with some facts about the business cycle and then introduces the model of aggregate demand and aggregate supply. Chapter 24, "The Influence of Monetary and Fiscal Policy on Aggregate Demand," explains how policymakers can use the tools at their disposal to shift the aggregate-demand curve and perhaps reduce the severity of economic fluctuations.

Learning Tools

The purpose of this book is to help students learn the fundamental lessons of economics and to show how they can apply these lessons to their lives and the world in which they live. Toward that end, I have used various learning tools that recur throughout the book.

Case Studies

Economic theory is useful and interesting only if it can be applied to understanding actual events and policies. This book, therefore, contains numerous case studies that apply the theory that has just been developed.

In the News Boxes

One benefit that students gain from studying economics is a new perspective and greater understanding of news from around the world. To highlight this benefit, I have included excerpts from many newspaper and magazine articles, some of which are

opinion columns written by prominent economists. These articles, together with my brief introductions, show how basic economic theory can be applied. Most of these boxes are new to this edition. Each news article ends with "Questions to Discuss," which can be used to start a dialogue in the classroom.

FYI Boxes

These boxes provide additional material "for your information." Some of them offer a glimpse into the history of economic thought. Others clarify technical issues. Still others discuss supplementary topics that instructors might choose to either discuss or skip in their lectures.

Ask the Experts Boxes

This feature summarizes results from the IGM Economic Experts Panel, an ongoing survey of several dozen prominent economists. Every few weeks, these experts are offered a statement and then asked whether they agree with it, disagree with it, or are uncertain about it. The survey results appear in the chapters near the coverage of the relevant topic. They give students a sense of when economists are united, when they are divided, and when they just don't know what to think.

Definitions of Key Concepts

When key concepts are introduced in the chapter, they are presented in **blue** typeface. In addition, their definitions are placed in the margins. This treatment should aid students in learning and reviewing the material.

Quick Quizzes

After each major section in a chapter, students are offered a brief multiple-choice Quick Quiz to check their comprehension of what they have just learned. If students cannot readily answer these quizzes, they should stop and review the material before continuing. The answers to all Quick Quizzes are available at the end of each chapter.

Chapter in a Nutshell

Each chapter concludes with a brief summary that reminds students of the most important lessons they have learned. Later in their study, it offers an efficient way to review for exams.

List of Key Concepts

A list of key concepts at the end of each chapter offers students a way to test their understanding of the new terms that have been introduced. Page references are included, so students can review the terms they do not understand.

Questions for Review

Located at the end of each chapter, questions for review cover the chapter's primary lessons. Students can use these questions to check their comprehension and prepare for exams.

Problems and Applications

Each chapter also contains a variety of problems and applications that ask students to apply the material they have learned. Some instructors may use these questions for homework assignments. Others may use them as a starting point for classroom discussions.

Alternative Versions of the Book

The book you are now holding is one of five versions of this text that are available for introducing students to economics. Cengage and I offer this menu of books because instructors differ in how much time they have and what topics they choose to cover. Here is a brief description of each:

- *Principles of Economics*. This complete version of the book contains all 38 chapters. It is designed for two-semester introductory courses that cover both microeconomics and macroeconomics.
- *Principles of Microeconomics.* This version contains 24 chapters and is designed for one-semester courses in introductory microeconomics.
- *Principles of Macroeconomics*. This version contains 24 chapters and is designed for one-semester courses in introductory macroeconomics. It contains a full development of the theory of supply and demand.
- *Brief Principles of Macroeconomics.* This shortened macro version of 19 chapters contains only one chapter on the basics of supply and demand. It is designed for instructors who want to jump to the core topics of macroeconomics more quickly.
- *Essentials of Economics.* This version of the book contains 24 chapters. It is designed for one-semester survey courses that cover the basics of both microeconomics and macroeconomics.

Table 1 shows which chapters are included in each book. Instructors who want more information about these alternative versions should contact their local Cengage representative.

Supplements

Cengage offers various supplements for instructors and students who use this book. These resources make teaching the principles of economics easy for the instructor and learning them easy for the student. David R. Hakes of the University of Northern Iowa, a dedicated teacher and economist, supervised the development of the supplements for this edition. A complete list of available supplements follows this Preface.

Optional Online Chapter on the Keynesian Cross

I have written a brief chapter on the Keynesian Cross (sometimes called the income-expenditure model) that complements the material on aggregate demand and aggregate supply. Instructors who want to teach this model can add this chapter to their students' e-books for no additional cost.

Translations and Adaptations

I am delighted that versions of this book are (or will soon be) available in many of the world's languages. Currently scheduled translations include Azeri, Chinese (in both standard and simplified characters), Croatian, Czech, Dutch, French, Georgian, German, Greek, Indonesian, Italian, Japanese, Korean, Macedonian, Montenegrin, Portuguese, Romanian, Russian, Serbian, and Spanish. In addition, adaptations of the book for Australian, Canadian, European, and New Zealand students are also available. Instructors who would like more information about these books should contact Cengage.

Table 1

The Five Versions of This Book

	Principles of Economics	Principles of Microeconomics	Principles of Macroeconomics	Brief Principles of Macroeconomics	Essentials of Economics
Ten Principles of Economics	1	1	1	1	1
Thinking Like an Economist	2	2	2	2	2
Interdependence and the Gains from Trade	3	3	3	3	3
The Market Forces of Supply and Demand	4	4	4	4	4
Elasticity and Its Application	5	5	5		5
Supply, Demand, and Government Policies	6	6	6		6
Consumers, Producers, and the Efficiency of Markets	7	7	7		7
Application: The Costs of Taxation	8	8	8		8
Application: International Trade	9	9	9		9
Externalities	10	10			10
Public Goods and Common Resources	11	11			11
The Economics of Healthcare	12	12			
The Design of the Tax System	13	13			
The Costs of Production	14	14			12
Firms in Competitive Markets	15	15			13
Monopoly	16	16			14
Monopolistic Competition	17	17			
Oligopoly	18	18			
The Markets for the Factors of Production	19	19			
Earnings and Discrimination	20	20			
Income Inequality and Poverty	21	21			
The Theory of Consumer Choice	22	22			
Frontiers of Microeconomics	23	23			
Measuring a Nation's Income	24		10	5	15
Measuring the Cost of Living	25		11	6	16
Production and Growth	26		12	7	17
Saving, Investment, and the Financial System	27		13	8	18
The Basic Tools of Finance	28		14	9	19
Unemployment	29		15	10	20
The Monetary System	30		16	11	21
Money Growth and Inflation	31		17	12	22
Open-Economy Macroeconomics: Basic Concepts	32		18	13	
A Macroeconomic Theory of the Open Economy	33		19	14	
Aggregate Demand and Aggregate Supply	34		20	15	23
The Influence of Monetary and Fiscal Policy on Aggregate Demand	35		21	16	24
The Short-Run Trade-off between Inflation and Unemployment	36		22	17	
Six Debates over Macroeconomic Policy	37		23	18	
Appendix: How Economists Use Data	38	24	24	19	

Acknowledgments

In writing this book, I benefited from the input of many talented people. Indeed, the list of people who have contributed to this project is so long, and their contributions so valuable, that it seems an injustice that only a single name appears on the cover.

Let me begin with my colleagues in the economics profession. The many editions of this text and its supplemental materials have benefited enormously from their input. In reviews and surveys, they have offered suggestions, identified challenges, and shared ideas from their own classroom experience. I am indebted to them for the perspectives they have brought to the text. Unfortunately, the list has become too long to thank those who contributed to previous editions, even though students reading the current edition are still benefiting from their insights.

Most important in this process has been David Hakes (University of Northern Iowa). David has served as a reliable sounding board for ideas and a hardworking partner with me in putting together the superb package of supplements.

A special thanks to my friend Jeff Sommer. For many years, Jeff was my editor at the *New York Times*. For this edition, he graciously read through the entire book, offering numerous suggestions for improvement. I am deeply grateful for his input.

The publishing team who worked on the book improved it tremendously. Jane Tufts, developmental editor, provided truly spectacular editing—as she always does. Joe Sabatino, economics Product Director, and Christopher Rader, Senior Product Manager, did a splendid job of overseeing the many people involved in such a large project. Colleen Farmer, Allison Janneck, and Anita Verma, Senior Content Managers, were crucial in managing the whole project and putting together an excellent team to revise the supplements and, with Pradhiba Kannaiyan, project manager at MPS Limited, had the patience and dedication necessary to turn my manuscript into this book. Erin Griffin, Senior Designer, gave this book its clean, friendly look and designed the wonderful cover. Tiffany Lee, copyeditor, refined my prose, and Vikas Makkar, indexer, prepared a careful and thorough index. John Carey, Executive Marketing Manager, worked long hours getting the word out to potential users of this book. The rest of the Cengage team has, as always, been consistently professional, enthusiastic, and dedicated.

We have a top team of veterans who have worked across multiple editions producing the supplements that accompany this book. Working with those at Cengage, the following have been relentless in making sure that the suite of ancillary materials is unmatched in both quantity and quality. No other text comes close.

PowerPoint: Andreea Chiritescu (Eastern Illinois University)

Test Bank: Shannon Aucoin, Eugenia Belova, and Alex Lewis (in-house Subject Matter Experts)

Instructor manual: David Hakes (University of Northern Iowa)

I am also grateful to Sarah Lao and Nathan Sun, two star undergraduates at Harvard, who helped me check the page proofs for this edition.

As always, I must thank my "in-house" editor Deborah Mankiw. As the first reader of most things I write, she continued to offer just the right mix of criticism and encouragement.

Finally, I should mention my three children, Catherine, Nicholas, and Peter. Their contribution to this book was putting up with a father spending too many hours in his study. The four of us have much in common—not least of which is our love of ice cream (which becomes apparent in Chapter 4).

N. Gregory Mankiw
May 2022

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Chapter

1

Ten Principles of Economics

The word **economy** comes from the Greek word **oikonomos**, which means "one who manages a household." At first, the connection between households and economies may seem obscure. But in fact, they have much in common.

No matter how you picture a modern household, its members face endless decisions. Somehow, they must decide which members do which tasks and what each receives in return. Who cooks dinner? Who gets some extra dessert? Who cleans the bathroom? Who gets to drive the car? Whether a household's income is high, low, or somewhere in between, its resources (time, dessert, car mileage) must be allocated among alternative uses.

Like a household, a society faces countless decisions. It must find some way to decide what jobs will be done and who will do them. Society needs people to grow food, make clothing, and design software. Once society has allocated people (as well as land, buildings, and machines) to various jobs, it must distribute the goods and services they produce. It must decide who will eat potatoes and who will eat caviar, who will live in a grand manor and who will live in a fifth-floor walk-up.

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scarcity
the limited nature of society's resources

These decisions are important because resources are scarce. **Scarcity** means that society has limited resources and, therefore, cannot produce all the goods and services people want. Just as members of a household cannot always get their desires satisfied, individuals in a society cannot always attain the standard of living to which they might aspire.

economics
the study of how society manages its scarce resources

Economics is the study of how society manages its scarce resources. In most societies, resources are allocated through the combined choices of millions of households and businesses. Economists examine how people make these choices: how much they work, what they buy, how much they save, how they invest their savings, and so on. Economists also study how people interact with one another. For instance, economists examine how buyers and sellers together determine the price at which a good is sold and the quantity that is sold. Finally, economists analyze the forces and trends that affect the overall economy, including the growth in average income, the fraction of the population that cannot find work, and the rate at which prices are rising.

Economics covers a wide range of topics and encompasses many approaches, but it is unified by several central ideas. This chapter discusses **Ten Principles of Economics**. Don't worry if you don't understand them all at first or if you aren't completely convinced that they are sensible or important. These ideas will be explored more fully in later chapters. This introduction to the ten principles will give you a sense of what economics is all about. Consider this chapter a preview of coming attractions.

1-1 How People Make Decisions

There is no mystery about what an economy is. Whether it encompasses Los Angeles, the United States, or the entire planet, an economy is just a group of people dealing with one another as they go about their lives. Because the behavior of an economy reflects the behavior of the individuals within it, the first four principles concern individual decision making.

1-1a Principle 1: People Face Trade-Offs

"There ain't no such thing as a free lunch." Grammar aside, this old saying contains much truth. To get one thing you want, you usually have to give up another thing you want. Making decisions requires trading off one goal for another.

Consider Selena, a student who is deciding how to use her most valuable resource—time. Selena can spend all her time studying economics, all her time studying psychology, or divide her time between the two. For every hour she devotes to one subject, she gives up an hour she could have used studying the other. And for every hour spent studying, she gives up an hour that could have been spent napping, bike riding, playing video games, or working at a job for some extra spending money.

Consider Selena's parents, who are deciding how to use the family income. They can spend it on food, clothing, or Selena's tuition. Or they can save some of their income for retirement or a future family vacation. When they allocate a dollar to one of these goods, they have one less dollar to spend on another.

As a society, people face other trade-offs. One classic trade-off is between "guns and butter." The more a society spends on the military, the less it can spend on consumer goods. Another critical trade-off is between a clean environment and the level of income. Laws that require firms to reduce pollution may raise the cost of

producing goods and services. Because of these higher costs, the firms are likely to earn smaller profits, pay lower wages, charge higher prices, or do some combination of these three things. While pollution regulations yield a cleaner environment and the improved health that comes with it, they may reduce the incomes of the regulated firms' owners, workers, and customers.

Another societal trade-off is between efficiency and equality. **Efficiency** means that society is getting the greatest benefits from its scarce resources. **Equality** means that those benefits are distributed uniformly among society's members. In other words, efficiency refers to the size of the economic pie, while equality refers to how evenly the pie is sliced.

efficiency
the property of society getting the most it can from its scarce resources

equality
the property of distributing economic prosperity uniformly among the members of society

These two goals can conflict. Consider, for instance, government policies aimed at reducing inequality. Some of these policies, such as welfare or unemployment insurance, help the members of society most in need. Others, such as the personal income tax, require the financially successful to contribute more than others to support the government. These policies increase equality but may decrease efficiency. When the government redistributes income from the rich to the poor, it reduces the reward for hard work for people at all income levels. As a result, people may work less and produce fewer goods and services. In other words, when the government cuts the economic pie into more equal slices, the pie sometimes shrinks.

Recognizing that people face trade-offs does not tell us what decisions are best. A student should not abandon the study of psychology just because doing so would free up time for studying economics. Society should not live with pollution just because environmental regulations might reduce our material standard of living. The government should not neglect the poor just because helping them would distort work incentives. Yet people will make better choices if they understand the options available to them. Our study of economics, therefore, starts by acknowledging life's trade-offs.

1-1b Principle 2: The Cost of Something Is What You Give Up to Get It

Because people face trade-offs, they need to compare the costs and benefits of alternative decisions. In many cases, however, the costs are not as obvious as they might first appear.

Consider the decision to attend college. The main benefits are intellectual enrichment and a lifetime of better job opportunities. But what are the costs? You might be tempted to add up the money spent on tuition, books, room, and board. Yet this total does not truly represent what you give up to spend a year in college.

This calculation has two problems. First, it includes some things that are not really costs of going to college. Even if you quit school, you need a place to sleep and food to eat. Room and board are college costs only to the extent that they exceed the cost of living and eating at home or in your apartment. Second, this calculation ignores the largest cost of going to college—your time. When you listen to lectures, read books, and write papers, you can't spend that time working and earning money. For most students, the earnings they forgo to attend school are the largest cost of their education.

The **opportunity cost** of an item is what you give up to get it. When making decisions, it's smart to take opportunity costs into account, and people often do. College athletes who can earn millions dropping out of school and playing professional sports understand that their opportunity cost of attending college is high. Not surprisingly, they sometimes decide that the benefit of a college education is not worth the cost.

opportunity cost
whatever must be given up to obtain some item

1-1c Principle 3: Rational People Think at the Margin

rational people
people who systematically and purposefully do the best they can to achieve their objectives

Economists often assume that people are rational. **Rational people** systematically and purposefully do the best they can to achieve their goals, given the available opportunities. As you study economics, you will encounter firms that decide how many workers to hire and how much product to make and sell to maximize profits. You will meet people who decide how much to work and what goods and services to buy to achieve the highest possible level of satisfaction. To be sure, human behavior is complex and sometimes deviates from rationality. But the assumption that people do the best they can is, economists have found, a good starting point to explain the decisions that people make.

Rational decision makers know that many issues in life are not black and white but involve shades of gray. At dinnertime, you don't ask yourself, "Should I fast or eat like a pig?" You are more likely to ask, "Should I take that extra spoonful of mashed potatoes?" When exams roll around, your decision is probably not between blowing them off and studying 24 hours a day but whether to spend an extra hour reviewing your notes instead of hanging out with friends. Economists use the term **marginal change** to describe an incremental adjustment to an existing plan of action. Keep in mind that **margin** means "edge," so marginal changes are small adjustments around the edges of what you are doing. Rational people make decisions by comparing **marginal benefits** and **marginal costs**.

marginal change
an incremental adjustment to a plan of action

For example, suppose you are deciding whether to watch a movie tonight. You pay $30 a month for a streaming service that gives you unlimited access to its film library, and you typically watch five movies a month. What cost should you consider when deciding whether to stream another movie? The answer might seem to be $30/5, or $6, the **average** cost of a movie. More relevant for your decision, however, is the **marginal** cost—the extra money that you have to pay if you stream another film. Here, the marginal cost is zero because you pay $30 regardless of how many movies you stream. In other words, at the margin, streaming a movie is free. The only cost of watching a movie tonight is the time it takes away from other activities, such as working at a job or (better yet) reading this textbook.

Thinking at the margin is also useful for business decisions. Consider an airline deciding how much to charge passengers who fly standby. Suppose that flying a 200-seat plane across the United States costs the airline $100,000. The average cost of each seat is $500 ($100,000/200). You might think that the airline should never sell a ticket for less than $500. But imagine that a plane is about to take off with ten empty seats, and Stanley, a standby passenger, is at the gate and willing to pay $300 for a seat. Should the airline sell him the ticket? Yes, it should. If the plane has empty seats, the cost of adding an extra passenger is tiny. The **average** cost of flying a passenger is $500, but the **marginal** cost is merely the cost of the can of soda Stanley will consume and the small bit of jet fuel needed to carry his weight. As long as Stanley pays more than the marginal cost, selling him the ticket is profitable. A rational airline can benefit from thinking at the margin.

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Many movie streaming services set the marginal cost of a movie equal to zero.

Marginal analysis explains some otherwise puzzling phenomena. For example, why is water so cheap while diamonds are so expensive? You might think it should be the other way around: Humans need water to survive, but diamonds merely glitter. Yet people are willing to pay much more for a diamond than for a cup of water. Economists have figured this out. A person's willingness to pay for a good is based on the marginal benefit that an extra unit of the good would yield. The marginal benefit, in turn, depends on how many units a person already has. Water is essential but plentiful, so the marginal benefit of an extra

cup is small. By contrast, no one needs diamonds to survive, but because they are so rare, the marginal benefit of an extra gem is large.

A rational decision maker takes an action if and only if the action's marginal benefit exceeds its marginal cost. This principle explains why people use streaming services as much as they do, why airlines sell tickets below average cost, and why people pay more for diamonds than for water. It can take a while to get used to the logic of marginal thinking, but the study of economics will give you ample opportunity to practice.

1-1d Principle 4: People Respond to Incentives

An **incentive** is something that induces a person to act, such as the prospect of a punishment or reward. People respond to incentives if they make decisions by comparing costs and benefits. Incentives play a central role in economics. One economist went so far as to say that the entire field could be summarized as simply, "People respond to incentives. The rest is commentary."

incentive
something that induces a person to act

Incentives are key to analyzing how markets work. For example, when the price of apples rises, people decide to eat fewer apples. At the same time, apple orchards decide to hire more workers and harvest more apples. In other words, a higher price provides an incentive for buyers to consume less and for sellers to produce more. As we will see, the influence of prices on the behavior of consumers and producers is crucial to how a market economy allocates scarce resources.

Public policymakers need to pay attention to incentives: Many policies change the costs or benefits that people face and, as a result, alter their behavior. A tax on gasoline, for instance, encourages people to drive more fuel-efficient cars and shift to electric ones. That is one reason many people drive electric cars in Norway, where gas taxes are high, and why big SUVs are so popular in the United States, where gas taxes are low. A higher gas tax also encourages people to carpool, take public transportation, ride bikes, and live closer to work.

When policymakers fail to consider incentives, the policies they enact may have unintended consequences. For example, consider auto safety. Today, all cars have seat belts, but this wasn't true 60 years ago. In 1965, Ralph Nader's book *Unsafe at Any Speed* generated much public concern over auto safety. Congress responded with laws requiring seat belts as standard equipment on new cars.

How does a seat belt law affect safety? The direct effect is obvious: When a person wears a seat belt, the likelihood of surviving an auto accident rises. But that's not the end of the story. The law also affects behavior by altering incentives. The relevant behavior here is the speed and care with which drivers operate their cars. Driving slowly and carefully is costly because it uses the driver's time and energy. When deciding how to drive, rational people compare, perhaps unconsciously, the marginal benefit from safer driving with the marginal cost. They drive more slowly and carefully when the benefit of increased safety is high. For example, when road conditions are icy, people drive more attentively and at lower speeds than they do when road conditions are clear.

Consider how a seat belt law alters a driver's cost–benefit calculation. Buckling up makes accidents less costly by reducing the risk of injury or death. It is as if road conditions had improved: When conditions are safer, people drive faster and less carefully. That may be fine for motorists, whose risk of injury in an accident is reduced because of seat belts. But if faster, less careful driving leads to more accidents, the seat belt law adversely affects pedestrians, who are more likely to be in an accident but (unlike drivers) don't benefit from added protection.

This discussion of incentives and seat belts isn't idle speculation. In a classic 1975 study, the economist Sam Peltzman tested the theory and found that auto-safety

laws have had many of these effects. According to Peltzman, these laws give rise not only to fewer deaths per accident but also to more accidents. He concluded that the net result is little change in driver deaths and an increase in pedestrian deaths.

Peltzman's analysis of auto safety is an offbeat and controversial example of the principle that people respond to incentives. When analyzing any policy, it is important to consider not only the direct effects but also the indirect effects that work through incentives. If the policy alters incentives, people may change their behavior.

Quick**Quiz**

1. Economics is best defined as the study of
   a. how society manages its scarce resources.
   b. how to run a business most profitably.
   c. how to predict inflation, unemployment, and stock prices.
   d. how the government can protect people from unchecked self-interest.
2. Your opportunity cost of going to a movie is
   a. the price of the ticket.
   b. the price of the ticket plus the cost of any soda and popcorn you buy at the theater.
   c. the total cash expenditure needed to go to the movie plus the value of your time.
   d. zero, as long as you enjoy the movie and consider it a worthwhile use of time and money.
3. A marginal change is one that
   a. is not important for public policy.
   b. incrementally alters an existing plan.
   c. makes an outcome inefficient.
   d. does not influence incentives.
4. Because people respond to incentives,
   a. policymakers can alter outcomes by changing punishments or rewards.
   b. policies can have unintended consequences.
   c. society faces a trade-off between efficiency and equality.
   d. All of the above are correct.

Answers are at the end of the chapter.

1-2 How People Interact

The first four principles discussed how individuals make decisions. The next three concern how people interact with one another.

1-2a Principle 5: Trade Can Make Everyone Better Off

You may have heard on the news that China is the United States' competitor in the world economy. In some ways, this is true. Chinese and U.S. companies compete for customers in the markets for clothing, toys, solar panels, automobile tires, and many other items.

Yet it is easy to be misled when thinking about competition among countries. Trade between the United States and China is not like a sports contest in which one side wins and the other side loses. The opposite is true: Trade between two countries can make each country better off. Even when trade in the world economy is competitive, it can lead to a win–win outcome for the countries involved.

To see why, consider how trade affects a family. When family members look for jobs, they compete against the members of other families who are looking for jobs. Families also compete with one another when they go shopping because each wants to buy the best goods at the lowest prices. In a sense, each family in an economy competes with all other families.

Despite this competition, a family would not be better off isolating itself from other families. If it did, it would need to grow its own food, sew its own clothes, and build its own home. Clearly, a family gains much from being able to trade with others. Trade allows everyone to specialize in the activities they do best, whether it is farming, sewing, or home building. By trading with others, people can buy a greater variety of goods and services at a lower cost.

Like families, countries benefit from trading with one another. Trade allows countries to specialize in what they do best and to enjoy a greater variety of goods and services. The Chinese, as well as the French, Brazilians, and Nigerians, are as much the United States' partners in the world economy as they are its competitors.

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"For $5 a week you can watch baseball without being nagged to cut the grass!"

1-2b Principle 6: Markets Are Usually a Good Way to Organize Economic Activity

The collapse of Communism in the Soviet Union and Eastern Europe in the late 1980s and early 1990s was one of the last century's transformative events. For the most part, countries in the Soviet bloc operated on the premise that government officials were in the best position to allocate the economy's scarce resources. These central planners decided what goods and services were produced, how much was produced, and who produced and consumed them. The theory behind central planning was that the government needed to organize economic activity to ensure the well-being of the country and of like-minded nations.

Most countries that once had centrally planned economies have now shifted toward market economies. In a **market economy**, the decisions of a central planner are replaced by those of millions of firms and households. Firms decide whom to hire and what to make. Households decide where to work and what to buy with their incomes. These firms and households interact in the marketplace, where prices and self-interest guide their decisions.

market economy
an economy that allocates resources through the decentralized decisions of many firms and households as they interact in markets for goods and services

At first glance, the success of market economies may seem puzzling because no one appears to be looking out for the well-being of society as a whole. Competitive markets contain many buyers and sellers of numerous goods and services, all of them interested primarily in their own well-being. Yet despite decentralized decision making and self-interested decision makers, market economies have proven remarkably successful in organizing economic activity to promote prosperity.

In his 1776 book, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith made the most famous observation in all of economics: Firms and households in competitive markets act as if they are guided by an "invisible hand" that leads them to desirable outcomes. One of the chief goals of this book is to understand how this invisible hand works its magic.

As you study economics, you will learn that prices are the instrument with which the invisible hand directs economic activity. In a competitive market, sellers look at the price when deciding how much to supply, and buyers look at the price when deciding how much to demand. As a result of their decisions, the price reflects both the sellers' costs of production and the value of the good to the buyers. Smith's great insight was that prices adjust to guide market participants to reach outcomes that, in many cases, maximize the well-being of society as a whole.

Smith's insight has an important corollary: When a government prevents prices from adjusting to supply and demand, it impedes the invisible hand's ability to coordinate the decisions of the firms and households that make up an economy. This corollary explains the adverse effect of most taxes on the allocation of resources:

FYI

Adam Smith and the Invisible Hand

It may be only a coincidence that Adam Smith's great book *The Wealth of Nations* was published in 1776, the exact year in which American revolutionaries signed the Declaration of Independence. But the two documents share a point of view that was prevalent at the time: Individuals are usually best left to their own devices, without the heavy hand of government directing their actions. This philosophy provides the intellectual foundation for the market economy and, more generally, for a free society.

Why do decentralized market economies work reasonably well? Is it because people can be trusted to treat one another with love, kindness, and generosity? Not at all. Here is Adam Smith's description of how people interact in a market economy:

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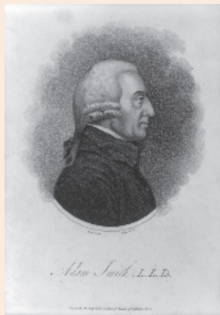

Adam Smith

> Man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only. He will be more likely to prevail if he can interest their self-love in his favour, and show them that it is for their own advantage to do for him what he requires of them. . . . Give me that which I want, and you shall have this which you want, is the meaning of every such offer; and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of.
>
> It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages. Nobody but a beggar chooses to depend chiefly upon the benevolence of his fellow-citizens. . . .
>
> Every individual . . . neither intends to promote the public interest, nor knows how much he is promoting it. . . . He intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.

Smith is saying that participants in the economy are motivated by self-interest and that the "invisible hand" of the marketplace guides them into promoting general economic well-being.

Many of Smith's insights remain at the center of modern economics. The coming chapters will express Smith's conclusions more precisely and analyze more fully the strengths and weaknesses of the market's invisible hand. ■

Taxes distort prices and the decisions of firms and households. It also explains the problems caused by policies that dictate prices, such as rent control. And it explains the economic failure of Communist countries, where prices were set not in the marketplace but by central planners. These planners lacked the overwhelming amount of complex and ever-changing information about producers' costs and consumers' tastes, which, in a market economy, is reflected in prices. Central planners failed because they tried to run the economy with one hand tied behind their backs—the invisible hand of the marketplace.

Case Study

Adam Smith Would Have Loved Uber

You may have never lived in a centrally planned economy, but if you have tried to hail a cab in a major city, you have likely experienced a highly regulated market. In many cities, the local government imposes strict controls in the market for taxis. The rules usually go well beyond the regulation of insurance and safety. For example, the government may limit entry

into the market by approving only a certain number of taxi medallions or permits. It may determine the prices that taxis are allowed to charge. The government uses its police powers—that is, the threat of fines or jail time—to keep unauthorized drivers off the streets and prevent drivers from charging unauthorized prices.

In 2009, however, this highly controlled market was invaded by a disruptive force: Uber, a company that provides a smartphone app to connect passengers and drivers. Because Uber cars do not roam the streets looking for taxi-hailing pedestrians, they are technically not taxis and so are not subject to the same regulations. But they offer a similar service. Indeed, rides from Uber—and from Uber's competitors that have since entered many markets—are often more convenient. On a cold, rainy day, who wants to wait by the side of the road for an empty cab to drive by? It is more pleasant to remain inside, use a smartphone to arrange a ride, and stay warm and dry until the car arrives.

RICHARD LEVINE/ALAMY STOCK PHOTO

Technology can improve this market.

Uber cars often charge less than taxis, but not always. Uber's prices rise significantly when there is a surge in demand, such as during a sudden rainstorm or late on New Year's Eve, when numerous tipsy partygoers are looking for a safe way to get home. By contrast, regulated taxis are typically prevented from surge pricing.

Not everyone is fond of Uber. Drivers of traditional taxis complain that this new competition reduces their income. This is hardly a surprise: Suppliers of goods and services often dislike new competitors. But vigorous competition among producers makes a market work well for consumers.

That is why economists embraced Uber's entry into the market. A 2014 survey of several dozen prominent economists asked whether car services such as Uber increased consumer well-being. Every single economist said "Yes." The economists were also asked whether surge pricing increased consumer well-being. "Yes," said 85 percent of them. Surge pricing makes consumers pay more at times, but because Uber drivers respond to incentives, it also increases the quantity of car services supplied when they are most needed. Surge pricing also helps allocate the services to those consumers who value them most highly and reduces the costs of searching and waiting for a car.

If Adam Smith were alive today, he would surely have a ride-sharing app on his phone. ●

1-2c Principle 7: Governments Can Sometimes Improve Market Outcomes

If the invisible hand is so great, what is left for a government to do in an economy? One purpose of studying economics is to refine your view about the proper role and scope of government policy.

One reason we need government is that the invisible hand can work its magic only if the government enforces the rules and maintains the institutions that are key to a market economy. Most importantly, market economies need institutions to enforce **property rights** so individuals can own and control scarce resources. Farmers won't grow food if they expect their crop to be stolen, restaurants won't serve meals if many customers leave before paying, and film companies won't produce movies if too many people pirate copies. Market participants rely on government-provided police and courts to enforce their rights, and the invisible hand works well only if the legal system does.

property rights
the ability of an individual to own and exercise control over scarce resources

Another reason we need government is that the invisible hand, while powerful, is not omnipotent. There are two broad rationales for a government to intervene in the economy and change the allocation of resources that people would choose on