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PRINCIPLES OF ECONOMICS

FRANK • BERNANKE • ANTONOVICS • HEFFETZ



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EIGHTH EDITION



PRINCIPLES OF ECONOMICS

Eighth Edition

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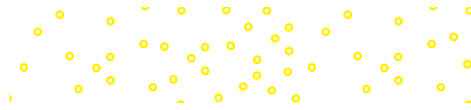
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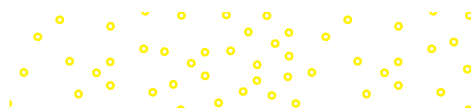
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DEDICATION

For Ellen

R. H. F.

For Anna

B. S. B.

For Fiona and Henry

K. A.

For Katrina, Eleanor, Daniel, and Amalia

O. H.



ABOUT THE AUTHORS

ROBERT H. FRANK



Courtesy of Robert H. Frank

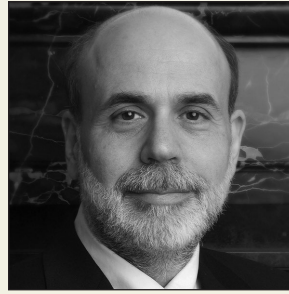
Robert H. Frank is the H. J. Louis Professor of Management and Professor of Economics, emeritus, at Cornell's Johnson School of Management, where he taught from 1972 to 2020. After receiving his B.S. from Georgia Tech in 1966, he taught math and science for two years as a Peace Corps Volunteer in rural Nepal. He received his M.A. in statistics in 1971 and

his Ph.D. in economics in 1972 from The University of California at Berkeley. He also holds honorary doctorate degrees from the University of St. Gallen and Dalhousie University. During leaves of absence from Cornell, he has served as chief economist for the Civil Aeronautics Board (1978–1980), a Fellow at the Center for Advanced Study in the Behavioral Sciences (1992–1993), Professor of American Civilization at l'Ecole des Hautes Etudes en Sciences Sociales in Paris (2000–2001), and the Peter and Charlotte Schoenfeld Visiting Faculty Fellow at the NYU Stern School of Business in 2008–2009. His papers have appeared in the *American Economic Review*, *Econometrica*, the *Journal of Political Economy*, and other leading professional journals, and for more than two decades, his economics columns appeared regularly in *The New York Times*.

Professor Frank is the author of a best-selling intermediate economics textbook—*Microeconomics and Behavior*, Tenth Edition (McGraw Hill, 2021). His research has focused on rivalry and cooperation in economic and social behavior. His books on these themes include *Choosing the Right Pond* (Oxford, 1985), *Passions Within Reason* (W. W. Norton, 1988), *What Price the Moral High Ground?* (Princeton, 2004), *Falling Behind* (University of California Press, 2007), *The Economic Naturalist* (Basic Books, 2007), *The Economic Naturalist's Field Guide* (Basic Books, 2009), *The Darwin Economy* (Princeton, 2011), *Success and Luck* (Princeton, 2016), and *Under the Influence* (Princeton, 2020), which have been translated into 24 languages. *The Winner-Take-All Society* (The Free Press, 1995), co-authored with Philip Cook, received a Critic's Choice Award, was named a Notable Book of the Year by *The New York Times*, and was included in *BusinessWeek's* list of the 10 best books of 1995. *Luxury Fever* (The Free Press, 1999) was named to the *Knight-Ridder* Best Books list for 1999.

Professor Frank is a co-recipient of the 2004 Leontief Prize for Advancing the Frontiers of Economic Thought. He was awarded the Johnson School's Stephen Russell Distinguished Teaching Award in 2004, 2010, 2012, and 2018, and the School's Apple Distinguished Teaching Award in 2005. His introductory microeconomics course has graduated more than 7,000 enthusiastic economic naturalists over the years.

BEN S. BERNANKE



Courtesy of Ben S. Bernanke

Professor Bernanke received his B.A. in economics from Harvard University in 1975 and his Ph.D. in economics from MIT in 1979. He taught at the Stanford Graduate School of Business from 1979 to 1985 and moved to Princeton University in 1985, where he was named the Howard Harrison and Gabrielle Snyder Beck Professor of Economics and Public Affairs and where he

served as chair of the Economics Department. Professor Bernanke is currently a Distinguished Fellow in Residence with the Economic Studies Program at the Brookings Institution.

Professor Bernanke was sworn in on February 1, 2006, as chair and a member of the Board of Governors of the Federal Reserve System; his second term expired January 31, 2014. Professor Bernanke also served as chair of the Federal Open Market Committee, the Fed's principal monetary policymaking body. Professor Bernanke was also chair of the President's Council of Economic Advisers from June 2005 to January 2006.

Professor Bernanke's intermediate textbook, with Andrew Abel and Dean Croushore, *Macroeconomics*, Ninth Edition (Addison-Wesley, 2017), is a best seller in its field. He has authored numerous scholarly publications in macroeconomics, macroeconomic history, and finance. He has done significant research on the causes of the Great Depression, the role of financial markets and institutions in the business cycle, and measurement of the effects of monetary policy on the economy.

Professor Bernanke has held a Guggenheim Fellowship and a Sloan Fellowship, and he is a Fellow of the Econometric Society and of the American Academy of Arts and Sciences. He served as the director of the Monetary Economics Program of the National Bureau of Economic Research (NBER) and as a member of the NBER's Business Cycle Dating Committee. From 2001 to 2004 he served as editor of the *American Economic Review*, and as president of the American Economic Association in 2019. Professor Bernanke's work with civic and professional groups includes having served two terms as a member of the Montgomery Township (New Jersey) Board of Education.

KATE ANTONOVICS



Courtesy of Kate Antonovics

Professor Antonovics received her B.A. from Brown University in 1993 and her Ph.D. in economics from the University of Wisconsin in 2000. Shortly thereafter, she joined the faculty in the Economics Department at the University of California, San Diego. Professor

Antonovics is also currently serving as the Provost of UC San Diego's Seventh College.

Professor Antonovics is known for her excellence in teaching and her innovative use of technology in the classroom. Her popular introductory-level microeconomics courses have regularly enrolled over 900 students each fall. She also teaches labor economics at both the undergraduate and graduate level. She has received numerous teaching awards, including the UCSD Department of Economics award for Best Undergraduate Teaching, the UCSD Academic Senate Distinguished Teaching Award, and the UCSD Chancellor's Associates Faculty Excellence Award in Undergraduate Teaching.

Professor Antonovics's research has focused on racial discrimination, gender discrimination, affirmative action, intergenerational income mobility, learning, and wage dynamics. Her papers have appeared in the *American Economic Review*, the *Review of Economics and Statistics*, the *Journal of Labor Economics*, and the *Journal of Human Resources*. She is a member of both the American Economic Association and the Society of Labor Economists.

ORI HEFFETZ



Courtesy of Ori Heffetz

Professor Heffetz received his B.A. in physics and philosophy from Tel Aviv University in 1999 and his Ph.D. in economics from Princeton University in 2005. He is an Associate Professor of Economics at the Samuel Curtis Johnson Graduate School of Management at Cornell University, and at the Economics Department at the Hebrew University of Jerusalem.

Bringing the real world into the classroom, Professor Heffetz has created a unique macroeconomics course that introduces basic concepts and tools from economic theory and applies them to current news and global events. His popular classes are taken by hundreds of students every year on Cornell's Ithaca and New York City campuses and via live videoconferencing in dozens of cities across the United States, Canada, and Latin America.

Professor Heffetz's research studies the social and cultural aspects of economic behavior, focusing on the mechanisms that drive consumers' choices and on the links between economic choices, individual well-being, and policymaking. He has published scholarly work on household consumption patterns, individual economic decision making, and survey methodology and measurement. He was a visiting researcher at the Bank of Israel during 2011, is currently a Research Associate at the National Bureau of Economic Research (NBER), and serves on the editorial board of *Social Choice and Welfare*.

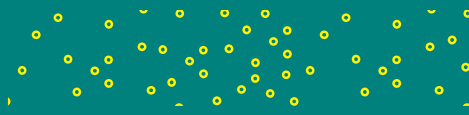
FOCUSED ON SEVEN CORE PRINCIPLES TO PRODUCE ECONOMIC NATURALISTS THROUGH ACTIVE LEARNING

Our eighth edition arrives in the midst of some of the most dramatic upheavals ever witnessed, both in the economy generally and in higher education in particular. The COVID-19 pandemic has produced levels of unemployment not seen since the Great Depression and has created dramatic changes in the ways we teach across educational institutions at every level.

These developments have reinforced our confidence in the instructional philosophy that motivated us to produce our first edition—the need to strip away clutter and focus more intensively on central concepts. This approach, we believe, is especially well suited for the new environment.

In earlier editions, we noted that although many millions of dollars are spent each year on introductory economics instruction in American colleges and universities, the return on this investment has been disturbingly low. Studies have shown, for example, that several months after having taken a principles of economics course, former students are no better able to answer simple economics questions than others who never even took the course. Most students, it seems, leave our introductory courses without having learned even the most important basic economic principles. Such dismal performance, never defensible, has become even more difficult to justify in the face of looming resource shortages in higher education.

The problem, in our view, has almost always been that courses try to teach students far too much. In the process, really important ideas get little more coverage than minor ones, and everything ends up going by in a blur. The human brain tends to ignore new information unless it comes up repeatedly. That's hardly surprising, since only a tiny fraction of the terabytes of information that bombard us each day is likely to be relevant for anything we care about. Only when something comes up a third or fourth time does the brain start laying down new circuits for dealing with it. Yet when planning their lectures, many instructors ask themselves, "How much can I cover today?" And because modern electronic media enable them to click through upwards of 100 PowerPoint slides in an hour, they feel they better serve their students when they put more information before them. But that's not the way



learning works. Professors should instead be asking, “How much can my students absorb?”

Our approach to this text was inspired by our conviction that students will learn far more if we attempt to cover much less. Our basic premise is that a small number of basic principles do most of the heavy lifting in economics, and that if we focus narrowly and repeatedly on those principles, students can actually master them in just a single semester. The enthusiastic reactions of users of previous editions of our textbook affirm the validity of this premise. Avoiding excessive reliance on formal mathematical derivations, we present concepts intuitively through examples drawn from familiar contexts. We rely throughout on a well-articulated list of seven Core Principles, which we reinforce repeatedly by illustrating and applying each principle in numerous contexts. We ask students periodically to apply these principles themselves to answer related questions, exercises, and problems.

Another distinguishing feature of this text is its explicit recognition of the pedagogical challenge posed by the broad variance in students’ quantitative backgrounds and in instructor preferences about the optimal level of mathematical detail for the course. We confront this challenge by relegating more detailed mathematical treatment of selected topics to chapter appendices. For example, Chapter 5, *Demand*, emphasizes the key intuition that underpins utility maximization, and relegates the formal presentation of indifference curves and budget constraints to the appendix, allowing instructors the freedom to choose the approach that best suits their needs. Similarly, Chapter 25, *Spending and Output in the Short Run*, uses diagrams and numerical examples to convey the main ideas behind the basic Keynesian model (the “Keynesian cross”), saving a more general algebraic analysis to Appendix A and a derivation of the multiplier formula to Appendix B—again providing flexibility to instructors. Many adopters have cited this additional flexibility as a reason for having chosen our book.

Throughout the body of the text, however, our principal focus is not on quantitative detail, but rather on students to become “economic naturalists,” people who employ basic economic principles to understand and explain what they observe in the world around them. An economic naturalist understands, for example, that infant safety seats are required in cars but not in airplanes because the marginal cost of space to accommodate these seats is typically zero in cars but often hundreds of dollars in airplanes. Scores of such examples are sprinkled throughout the book. Each one, we believe, poses a question that should make any curious person eager to learn the answer. These examples stimulate interest while teaching students to see each feature of their economic landscape as the reflection of one or more of the Core Principles. Students talk about these examples with their friends and families.

Learning economics is like learning a language. In each case, there is no substitution for actually speaking. By inducing students to speak economics, The Economic Naturalist examples serve this purpose.

For those who would like to learn more about the role of examples in learning economics, Bob Frank’s lecture on this topic is posted on YouTube’s “Authors@Google” series (www.youtube.com/watch?v=QalNVxeIKKE), or search “Authors@Google Robert Frank”.

KEY THEMES AND FEATURES

Emphasis on Seven Core Principles

Because a few Core Principles do most of the work in economics, focusing almost exclusively on these principles ensures that students leave the course with a deep mastery of them. In contrast, traditional encyclopedic texts so overwhelm students with detail that they often leave the course with little useful working knowledge at all.

1. **The Scarcity Principle:** Although we have boundless needs and wants, the resources available to us are limited. So having more of one good thing usually means having less of another.
2. **The Cost-Benefit Principle:** An individual (or a firm or a society) should take an action if, and only if, the extra benefits from taking the action are at least as great as the extra costs.
3. **The Incentive Principle:** A person (or a firm or a society) is more likely to take an action if its benefit rises, and less likely to take it if its cost rises. In short, incentives matter.
4. **The Principle of Comparative Advantage:** Everyone does best when each concentrates on the activity for which his or her opportunity cost is lowest.
5. **The Principle of Increasing Opportunity Cost:** In expanding the production of any good, first employ those resources with the lowest opportunity cost, and only afterward turn to resources with higher opportunity costs.
6. **The Efficiency Principle:** Efficiency is an important social goal because when the economic pie grows larger, everyone can have a larger slice.
7. **The Equilibrium Principle:** A market in equilibrium leaves no unexploited opportunities for individuals but may not exploit all gains achievable through collective action.

Economic Naturalism

Our ultimate goal is to produce economic naturalists—people who see each human action as the result of an implicit or

explicit cost-benefit calculation. The economic naturalist sees mundane details of ordinary existence in a new light and becomes actively engaged in the attempt to understand them. Some representative examples:

In Micro:

- Why do movie theaters offer discount tickets to students?
- Why do we often see convenience stores located on adjacent street corners?
- Why do supermarket checkout lines all tend to be roughly the same length?

In Macro:

- Why does the average Argentine hold more U.S. dollars than the average U.S. citizen?
- Why does news of inflation hurt the stock market?
- Why do almost all countries provide free public education?

Economic Naturalist Video Series: We are very excited to offer an expanded video series based on Economic Naturalist examples. A series of videos covering some of our favorite micro- and macro-focused examples can be used as part of classroom presentations or assigned for homework along with accompanying questions within McGraw Hill Connect®. These fascinating, fun, and thought-provoking applications of economics in everyday life encourage students to think like an economist. Refer to the distinguishing features pages of the preface for additional information. You can view one of these dynamic videos here: <http://econeveryday.com/why-do-cooked-rotisserie-chickens-cost-less-than-fresh-uncooked-chickens/>.

Active Learning Stressed

The only way to learn to hit an overhead smash in tennis is through repeated practice. The same is true for learning economics. Accordingly, we consistently introduce new ideas in the context of simple examples and then follow them with applications showing how they work in familiar settings. At frequent intervals, we pose self-tests that both test and reinforce the understanding of these ideas. The end-of-chapter questions and problems are carefully crafted to help students internalize and extend basic concepts and are available within Connect as assignable content so that instructors can require students to engage with this material. Experience with earlier editions confirms that this approach really does prepare students to apply basic economic principles to solve economic puzzles drawn from the real world.

Learning Glass Lecture Videos: A collection of brief instructional videos featuring the authors Kate Antonovics and

Ori Heffetz utilize learning glass technology to provide students with an overview of important economic concepts. Perfect for an introduction to basic concepts before coming to class, or as a quick review, these videos, with accompanying questions, can be assigned within Connect or used as part of classroom discussion.

Both The Economic Naturalist and Learning Glass videos and accompanying multiple-choice questions that test students' understanding of the principles illustrated in the videos have become valued tools for instructors who incorporate elements of the flipped-classroom approach in their teaching, or those who are relying more heavily on other forms of remote learning.

Modern Microeconomics

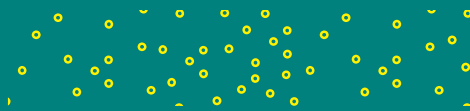
Economic surplus is more fully developed here than in any other text. This concept underlies the argument for economic efficiency as an important social goal. Rather than speak of trade-offs between efficiency and other goals, we stress that maximizing economic surplus facilitates the achievement of *all* goals.

One of the biggest hurdles to the fruitful application of cost-benefit thinking is to recognize and measure the relevant costs and benefits. Common decision pitfalls identified by 2002 Nobel laureate Daniel Kahneman and others—such as the tendency to ignore implicit costs, the tendency not to ignore sunk costs, and the tendency to confuse average and marginal costs and benefits—are introduced in Chapter 1, *Thinking Like an Economist*, and discussed repeatedly in subsequent chapters.

There is perhaps no more exciting toolkit for the economic naturalist than a few principles of elementary game theory. In Chapter 9, *Games and Strategic Behavior*, we show how these principles enable students to answer a variety of strategic questions that arise in the marketplace and everyday life. In new Chapter 10, *An Introduction to Behavioral Economics*, we survey many of the most exciting developments in what has become the economics profession's most vibrant new field. We believe that the insights of Nobel laureate Ronald Coase are indispensable for understanding a host of familiar laws, customs, and social norms. In Chapter 11, *Externalities, Property Rights, and the Environment*, we show how such devices function to minimize misallocations that result from externalities.

Modern Macroeconomics

Both the Great Recession and the COVID-19 pandemic have renewed interest in cyclical fluctuations without challenging the importance of such long-run issues as growth, productivity, the evolution of real wages, and capital formation. Our treatment of these issues is organized as follows:



- A five-chapter treatment of *long-run issues*, followed by a modern treatment of *short-term fluctuations and stabilization policy*, emphasizes the important distinction between short- and long-run behavior of the economy.
- *Designed to allow for flexible treatment of topics*, these chapters are written so that short-run material (Chapters 24–27) can be used before long-run material (Chapters 19–23) with no loss of continuity.
- The analysis of aggregate demand and aggregate supply relates output to inflation, rather than to the price level, sidestepping the necessity of a separate derivation of the link between the output gap and inflation. The discussion of monetary policy has two parts. It starts with a standard supply and demand analysis of the market for money that is centered on the short-run interest rate. It then introduces the new tools of monetary policy, such as quantitative easing and forward guidance, that have been so important since 2008, and that again took center stage in the 2020 response to the pandemic.
- This book places a heavy emphasis on *globalization*, starting with an analysis of its effects on real wage inequality and progressing to such issues as the costs and benefits of—and the likely winners and losers from—trade, the causes and effects of protectionism, the role of capital flows in domestic capital formation, the link between exchange rates and monetary policy, and the sources of speculative attacks on currencies.

CHANGES IN THE EIGHTH EDITION

Changes Common to All Chapters

In all chapters, the narrative has been tightened. Many of the examples have been updated, with a focus on student-centered examples that connect to current topics such as the COVID-19 pandemic and the rise of the gig economy. The examples, self-tests, and end-of-chapter material from the previous edition have been redesigned to provide more clarity and ease of use. Data have been updated throughout.

Chapter-by-Chapter Changes

Chapter 1

- Updated student-centered examples, such as Netflix, wireless keyboards, dogwalking, and Jeff Bezos
- New and updated end-of-chapter problems that reinforce the chapter’s learning objectives
- Updated appendix on working with equations, graphs, and tables based on electric scooter rentals

Chapter 2

- Updated student-centered examples, such as interior designer Kelly Wearstler
- Updated section on comparative advantage and outsourcing, including updates related to the United States–Mexico–Canada Agreement
- New end-of-chapter problem related to outsourcing

Chapter 3

- Updated student-centered examples, such as digital versus print ads and Marvel Studio films
- New Economic Naturalist, “Why was there a shortage of toilet paper during the COVID-19 pandemic?”
- Three new end-of-chapter questions that reinforce the chapter’s learning objectives, including a question related to the drop in crude oil prices during the coronavirus pandemic

Chapter 4

- Minor updates only

Chapter 5

- Updated student-centered examples, such as LeBron James
- New Economic Naturalist, “Why would Jeff Bezos live in a smaller house in Manhattan than in Medina, Washington?”

Chapter 6

- Minor updates only

Chapter 7

- Minor updates only

Chapter 8

- Updated student-centered examples, such as Instagram, electric scooter rentals, iTunes, HBO, Netflix, and cable Internet
- Updated end-of-chapter problems

Chapter 9

- Updated student-centered examples, such as the Ford Mustang and Chevrolet Camaro

Chapter 10

- New Economic Naturalist, “Why have attempts to privatize Social Security proved so politically unpopular in the United States?”
- New Economic Naturalist, “If prosperous voters would be happier if they spent less on positional goods and lived in environments with more generously funded public sectors, why haven’t they elected politicians who would deliver what they want?”
- Updated the discussion of relative position

Chapter 11

- Updated student-centered examples, such as roommate conflicts
- Updated information on carbon taxes, including mention of the Paris Agreement
- Updated end-of-chapter questions

Chapter 12

- Updated student-centered examples, such as the gig economy and apps like Uber and Lyft
- Updated discussion of the Affordable Care Act

Chapter 13

- Updated student-centered examples, such as Serena Williams and Taylor Swift
- Updated discussion of welfare benefits and in-kind transfers
- New end-of-chapter question related to income redistribution

Chapter 14

- Updated student-centered examples, such as video streaming services like Netflix

Chapter 15

- Revised Economic Naturalist that discusses the U.S.-China trade war that started in 2018, highlighting that there is more to trade than the exchange of goods and services and its supply and demand analysis in this chapter; also covers issues such as intellectual property and national security

Chapter 16

- Updated discussion of growth that reflects higher Internet and cell phone penetration
- Updated discussion of recessions and expansions that mentions the COVID-19 economic disruptions

Chapter 17

- Updated discussion of the correlation between per capita GDP and health outcomes such as life expectancy that now mentions that within high-income countries, the relationship can even reverse, with examples of data from the U.S., Canada, and Japan

Chapter 18

- Updated discussion of the development of real wages for production workers and for highly paid baseball players over time that is now linked together, in the context of a new discussion about increasing wage inequalities between the highest- and lowest-paid U.S. workers

Chapter 19

- Updated examples, data, and figures

Chapter 20

- Clarification throughout the chapter of the difference between trends in *average* incomes and trends in income inequality
- Updated discussion of globalization that now includes recent developments, including the political opposition to the Trans-Pacific Partnership trade agreement and the Trump administration's resistance to increased economic integration of the U.S. with China
- New Economic Naturalist, "Can technology hurt workers?," that includes what was previously a paragraph on workers' resistance to new technology (with anecdotes on Ned Ludd and the tale of John Henry); the new EN highlights workers' concerns about automation, robotics, and artificial intelligence (AI)
- New Economic Naturalist, "How did the COVID-19 pandemic affect the demand for U.S. jobs," that discusses the different effects the epidemic is having on different jobs in different sectors
- New discussion of European labor markets that highlights the deregulation in southern Europe following the global financial crisis and that, on some metrics, Europe's labor market does better than the U.S. labor market

Chapter 21

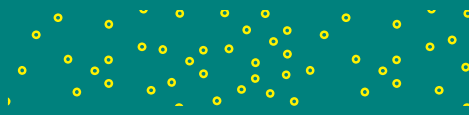
- Updates related to the COVID-19 economic downturn that include the discussion of U.S. household saving early in the chapter and the discussion of the U.S. government deficit later in the chapter
- New Economic Naturalist, "Why have real interest rates declined globally in recent decades?," that discusses the combination of higher global saving and lower global investment that helps explain the downward trend in real interest rates

Chapter 22

- New discussion of the Fed's role in stabilizing financial markets and as lender of last resort, which took center stage in recent episodes of financial panic; the discussion covers Section 13(3) landing during the 2008 and 2020 crises

Chapter 23

- Updates related to recent U.S.-China trade frictions, in the discussion of the saving rate and the trade deficit



- Updates related to the COVID-19 pandemic and financial markets

Chapter 24

- Updates related to the COVID-19 downturn
- Revised Economic Naturalist 24.3 that includes discussion of the gig economy in the context of the natural rate of unemployment in the U.S.

Chapter 25

- Revised Economic Naturalist 25.5 that discusses the U.S. government's response to the COVID-19 pandemic and covers details of the Coronavirus Aid, Relief, and Economic Security (CARES) Act of 2020 and their economic rationale
- Other COVID-19-related updates

Chapter 26

- Updates related to COVID-19: in the context of banks' excess reserves, in the context of the Fed's quick cuts of the federal funds rate, in the context of quantitative easing (QE) and the Fed's special landing in 2020, and in the context of the Fed's return to forward guidance in 2020; the chapter highlights the unprecedented speed and severity of the pandemic's economic hit, and therefore the unprecedented speed and size of the policy response
- Revisions throughout the chapter that reflect recent developments in thinking about QE, forward guidance, and other methods; when introduced in 2008, these methods were viewed as "unconventional" and "temporary"; the chapter now observes that such methods are increasingly recognized as a "new normal"

Chapter 27

- Updates to The Economic Naturalist 27.5, "Can inflation be too low?," to cover the Fed's unprecedented response to COVID-19

Chapter 28

- New The Economic Naturalist 28.2, "What is a safe haven currency?," (such as the U.S. dollar, the Swiss franc, and the Japanese yen), and how they tend to appreciate in periods of uncertainty; includes specific examples from the 2008 global financial crisis and the 2020 global coronavirus crisis
- Updated The Economic Naturalist 28.4 that covers the IMF's COVID-19-related landing in early 2020

A NOTE ON THE WRITING OF THIS EDITION

Ben Bernanke was sworn in on February 1, 2006, as chair and a member of the Board of Governors of the Federal Reserve System, a position to which he was reappointed in January 2010. From June 2005 until January 2006, he served as chair of the President's Council of Economic Advisers. These positions have allowed him to play an active role in making U.S. economic policy, but the rules of government service have restricted his ability to participate in the preparation of previous editions. Since his second term as chair of the Federal Reserve has completed, we are happy that Ben is actively involved in the revision of the macro portion of this edition.

ACKNOWLEDGMENTS

Our thanks first and foremost go to our portfolio director, Anke Weekes, and our product developer, Christina Kouvelis. Anke encouraged us to think deeply about how to improve the book and helped us transform our ideas into concrete changes. Christina shepherded us through the revision process with intelligence, sound advice, and good humor. We are grateful as well to the production team, whose professionalism (and patience) was outstanding: Christine Vaughan, content project manager; Keri Johnson, assessment project manager; Matt Diamond, lead designer; and all of those who worked on the production team to turn our manuscript into the text you see now. Finally, we also thank Bobby Pearson, marketing manager, for getting our message into the wider world.

Special thanks to Per Norander, University of North Carolina at Charlotte, for his energy, creativity, and help in refining the assessment material in Connect; Sukanya Kemp, University of Akron, for her detailed accuracy check of the learning glass and economic naturalist videos; Alvin Angeles and team at the University of California, San Diego, for their efforts in the production and editing of the learning glass videos; and Kevin Bertotti and the team at ITVK for their creativity in transforming Economic Naturalist examples into dynamic and engaging video vignettes.

Finally, our sincere thanks to the following teachers and colleagues, whose thorough reviews and thoughtful suggestions led to innumerable substantive improvements to *Principles of Economics*, 8/e.

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Andres Jauregui, *Columbus State University*
David W. Johnson, *University of Wisconsin-Madison*
Derek Johnson, *University of Connecticut*
Sukanya Kemp, *University of Akron*
Brian Kench, *University of Tampa*
Fredric R. Kolb, *University of Wisconsin-Eau Claire*
Daniel D. Kuester, *Kansas State University*
Valerie Lacarte, *American University*
Donald J. Liu, *University of Minnesota-Twin Cities*
Brian Lynch, *Lake Land College*
Christine Malakar, *Lorain Community College*
Ida Mirzaie, *The Ohio State University*
Thuy Lan Nguyen, *Santa Clara University*
Jelena Nikolic, *Northeastern University*
Anthony A. Noce, *State University of New York (SUNY)-Plattsburgh*
Diego Nocetti, *Clarkson University*
Stephanie Owings, *Fort Lewis College*
Dishant Pandya, *Spalding University*
Martin Pereyra, *University of Missouri*
Tony Pizelo, *Northwest University*
Ratha Ramoo, *Diablo Valley College*
Thomas Rhoads, *Towson University*
Bill Robinson, *University of Nevada-Las Vegas*
Brian Rosario, *University of California-Davis*
Elyce Rotella, *Indiana University*
Jeffrey Rubin, *Rutgers University*
Naveen Sarna, *Northern Virginia Community College*
Henry Schneider, *Queen's University*
Sumati Srinivas, *Radford University*
Thomas Stevens, *University of Massachusetts*
Carolyn Fabian Stumph, *Indiana University and Purdue University-Fort Wayne*
Albert Sumell, *Youngstown State University*
Markland Tuttle, *Sam Houston State University*
David Vera, *California State University-Fresno*
Nancy Virts, *California State University-Northridge*
Gilbert J. Werema, *Texas Woman's University*
Elizabeth Wheaton, *Southern Methodist University*
Amanda Wilsker, *Georgia Gwinnett College*
William C. Wood, *James Madison University*

DISTINGUISHING FEATURES

ECONOMIC NATURALIST EXAMPLES


Each Economic Naturalist example starts with a question to spark curiosity and interest in learning an answer. These examples fuel interest while teaching students to see economics in the world around them. Videos of select and new Economic Naturalist examples are denoted in the margin of the material to which they pertain and they are housed within Connect. A full list of Economic Naturalist examples and videos can be found in the following pages.



The Economic Naturalist 8.3

Why might an appliance retailer instruct its clerks to hammer dents into the sides of its stoves and refrigerators?

connect
▶ Visit your instructor's Connect course and access your eBook to view this video.




Why might an appliance retailer hammer dents into the sides of its stoves and refrigerators?

The Sears "Scratch 'n' Dent Sale" is another example of how retailers use quality differentials to segregate buyers according to their reservation prices. Many Sears stores hold an annual sale in which they display appliances with minor scratches and blemishes in the parking lot at deep discounts. People who don't care much about price are unlikely to turn out for these events, but those with very low reservation prices often get up early to be first in line. Indeed, these sales have proven so popular that it might even be in a retailer's interest to put dents in some of its sale items deliberately.

ECONOMIC NATURALISM

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▶ Visit your instructor's Connect course and access your eBook to view this video.



Why does the light come on when you open the refrigerator door but not when you open the freezer?

With the rudiments of the cost-benefit framework under your belt, you are now in a position to become an "economic naturalist," someone who uses insights from economics to help make sense of observations from everyday life. People who have studied biology are able to observe and marvel at many details of nature that would otherwise have escaped their notice. For example, on a walk in the woods in early April, the novice may see only trees. In contrast, the biology student notices many different species of trees and understands why some are already in leaf while others still lie dormant. Likewise, the novice may notice that in some animal species males are much larger than females, but the biology student knows that pattern occurs only in species in which males take several mates. Natural selection favors larger males in those species because their greater size

NUMBERED EXAMPLES

Throughout the text, numbered and titled examples are referenced and called out to further illustrate concepts. Our engaging questions and examples from everyday life highlight how each human action is the result of an implicit or explicit cost-benefit calculation.

EXAMPLE 1.1 Comparing Costs and Benefits

Should you walk downtown to save \$10 on a \$25 wireless keyboard?

Imagine you are about to buy a \$25 wireless keyboard at the nearby campus store when a friend tells you that the same keyboard is on sale at a downtown store for only \$15. If the downtown store is a 30-minute walk away, where should you buy the keyboard?

Cost-Benefit >>>

The Cost-Benefit Principle tells us that you should buy it downtown if the benefit of doing so exceeds the cost. The benefit of taking any action is the dollar value of everything you gain by taking it. Here, the benefit of buying downtown is exactly \$10, because that's the amount you'll save on the price of the keyboard. The cost of taking any action is the dollar value of everything you give up by taking it. Here, the cost of buying downtown is the dollar value you assign to the time and trouble it takes to make the trip. But how do we estimate that value?

One way is to perform the following hypothetical auction. Imagine that a stranger has offered to pay you to do an errand that involves the same walk downtown (perhaps to drop off a package for her at the post office). If she offered you a payment of, say, \$1,000, would you accept? If so, we know that your cost of walking downtown and back must be less than \$1,000. Now imagine her offer being reduced in small increments until you finally refuse the last offer. For example, if you'd agree to walk downtown and back for \$9 but not for \$8.99, then your cost of making the trip is \$9. In this case, you should buy the keyboard downtown because the \$10 you'll save (your benefit) is greater than your \$9 cost of making the trip.

But suppose your cost of making the trip had been greater than \$10. In that case, your best bet would have been to buy the keyboard from the nearby campus store. Confronted with this choice, different people may choose differently, depending on how costly they think it is to make the trip downtown. But although there is no uniquely correct choice, most people who are asked what they would do in this situation say they would buy the keyboard downtown.

Scarcity >>>

EXCHANGE AND OPPORTUNITY COST

The Scarcity Principle (see Chapter 1, *Thinking Like an Economist*) reminds us that the opportunity cost of spending more time on any one activity is having less time available to spend on others. As the following example makes clear, this principle helps explain why everyone can do better by concentrating on those activities at which he or she performs best relative to others.

CORE PRINCIPLES

There are seven Core Principles that we focus on to ensure student mastery. Throughout the text, these principles are called out and are denoted by an icon in the margin. Again, the seven Core Principles are: scarcity, cost-benefit, incentive, comparative advantage, increasing opportunity cost, efficiency, and equilibrium.

SELF-TESTS

These self-test questions in the body of the chapter enable students to determine whether the preceding material has been understood and reinforce understanding before reading further. Detailed answers to the self-test questions are found at the end of each chapter.



SELF-TEST 3.1

In Figure 3.1, what is the marginal buyer's reservation price when the quantity of pizza sold is 10,000 slices per day? For the same demand curve, what will be the quantity of pizza demanded at a price of \$2.50 per slice?

RECAP

MARKET EQUILIBRIUM

Market equilibrium, the situation in which all buyers and sellers are satisfied with their respective quantities at the market price, occurs at the intersection of the supply and demand curves. The corresponding price and quantity are called the *equilibrium price* and the *equilibrium quantity*.

Unless prevented by regulation, prices and quantities are driven toward their equilibrium values by the actions of buyers and sellers. If the price is initially too high, so that there is excess supply, frustrated sellers will cut their price in order to sell more. If the price is initially too low, so that there is excess demand, competition among buyers drives the price upward. This process continues until equilibrium is reached.

RECAP

Sprinkled throughout each chapter are Recap boxes that underscore and summarize the importance of the preceding material and key concept takeaways.

WORKED PROBLEM VIDEOS

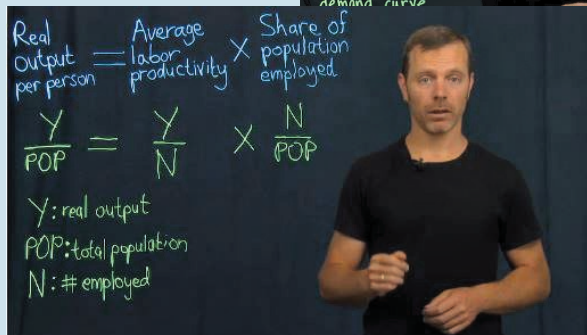
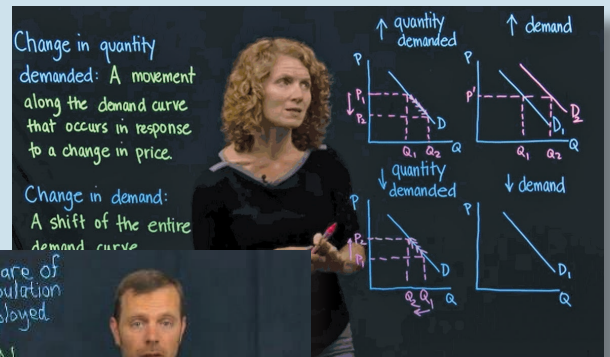
Brief videos work through end-of-chapter problems to aid in student understanding of core economic concepts and offer assistance with more challenging material. The videos are available as hints within Connect.

To earn extra money in the summer, you grow tomatoes and sell them at a local farmers' market for 30 cents per pound. By adding compost to your garden, you can increase your yield as shown in the table below. If compost costs 50 cents per pound and your goal is to make as much profit as possible, how many pounds of compost should you add?

Pounds of compost	Pounds of tomatoes	Additional pounds of tomatoes	Additional revenue (or marginal benefit)
	100		
1	120	20	\$6.00 ✓
2	125	5	\$1.50 ✓
3	128		
4	130		
5	131		
6	131.5		

LEARNING GLASS VIDEOS

Dozens of lecture videos featuring authors Kate Antonovics and Ori Heffetz utilize learning glass technology to provide you with an overview of important concepts. These videos can be accessed as resources within SmartBook® or as assignable content via McGraw Hill Connect®



ECONOMIC NATURALIST VIDEO SERIES

Asymmetric Information: Why do “almost new” used cars sell for so much less than brand new ones?

Behavioral Economics: Why do real estate agents often show clients two nearly identical houses, even though one is both cheaper and in better condition than the other?

Commercial Banking: Why can it be more expensive to transfer funds between banks electronically than it is to send a check through the mail?

Comparative Advantage: iPhones: Designed in California, but assembled in China

Cost Benefit 1: Why does the light come on when you open the refrigerator door but not when you open the freezer?

Cost Benefit 2: Why are child safety seats required in automobiles but not in airplanes?

Discount Pricing: Why might an appliance retailer hammer dents into the sides of its stoves and refrigerators?

Economy Strength and Currency Value: Does a strong currency imply a strong economy?

Elasticity: Why do people buy the same amount of salt as before even when the price of salt doubles?

Human Capital: Why do almost all countries provide free education?

Incentive Problems and Inefficiency: Why does the practice of check splitting cause people to spend more at restaurants?

Inflation and Cost of Living: Do official inflation figures overstate actual increases in our living costs?

Inflation: Can inflation be too low?

Marginal Product of Labor: Why do female models earn so much more than male models?

Menu Costs: Will new technologies eliminate menu costs?

Money and Its Uses: Is there such a thing as private, or communicably traded, money?

Monopolistic Competition: Why do we often see convenience stores located on adjacent street corners?

Prisoner’s Dilemma: Why do people shout at parties?

Production Costs: Why are brown eggs more expensive than white ones?

Saving: Why do American households save so little while Chinese households save so much?

Sources of Increasing Inequality: Why have the salaries of top earners been growing so much faster than everyone else’s?

Supply and Demand: Why are rotisserie chickens less expensive than fresh chickens?

Tariffs: Why do consumers in the United States often pay more than double the world price for sugar?

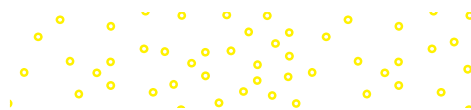
The Demand for Money: Why does the average Argentine citizen hold more U.S. dollars than the average U.S. citizen?

The Invisible Hand: Why do supermarket checkout lines all tend to be roughly the same length?

The Law of Demand: Why are smaller automobile engines more common in Europe than in the United States?

The Optimal Amount of Information: Why might a patient be more likely to receive an expensive magnetic resonance imaging (MRI) exam for a sore knee if covered under a conventional health insurance rather than a health maintenance organization (HMO) plan?

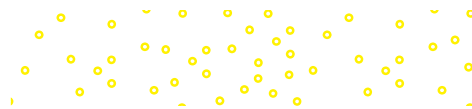
The Tragedy of the Commons and Property Rights: Why do blackberries in public parks get picked before they’re completely ripe?



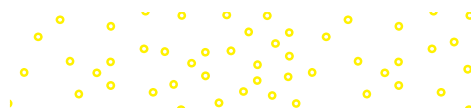
ECONOMIC NATURALIST EXAMPLES

- 1.1 Why do many hardware manufacturers include more than \$1,000 worth of “free” software with a computer selling for only slightly more than that?
- 1.2 Why don’t auto manufacturers make cars without heaters?
- 1.3 Why do the keypad buttons on drive-up automated teller machines have Braille dots?
- 2.1 Where have all the .400 hitters gone?
- 2.2 What happened to the U.S. lead in the television market?
- 2.3 If trade among nations is so beneficial, why are free-trade agreements so controversial?
- 2.4 Is PBS economics reporter Paul Solman’s job a likely candidate for outsourcing?
- 3.1 When the federal government implements a large pay increase for its employees, why do rents for apartments located near Washington Metro stations go up relative to rents for apartments located far away from Metro stations?
- 3.2 Why do major term papers go through so many more revisions today than in the 1970s?
- 3.3 Why do the prices of some goods, like airline tickets to Europe, go up during the months of heaviest consumption, while others, like sweet corn, go down?
- 3.4 Why was there a shortage of toilet paper during the COVID-19 pandemic?
- 4.1 Will a higher tax on cigarettes curb teenage smoking?
- 4.2 Why was the luxury tax on yachts such a disaster?
- 4.3 Why are gasoline prices so much more volatile than car prices?
- 5.1 Why does California experience chronic water shortages?
- 5.2 Why would Jeff Bezos live in a smaller house in Manhattan than in Medina, Washington?
- 5.3 Why did people turn to four-cylinder cars in the 1970s, only to shift back to six- and eight-cylinder cars in the 1990s?
- 5.4 Why are automobile engines smaller in England than in the United States?
- 5.5 Why are waiting lines longer in poorer neighborhoods?
- 6.1 When recycling is left to private market forces, why are many more aluminum beverage containers recycled than glass ones?
- 7.1 Why do supermarket checkout lines all tend to be roughly the same length?
- 7.2 Are there “too many” smart people working as corporate earnings forecasters?
- 8.1 Why does Intel sell the overwhelming majority of all microprocessors used in personal computers?
- 8.2 Why do many movie theaters offer discount tickets to students?
- 8.3 Why might an appliance retailer instruct its clerks to hammer dents into the sides of its stoves and refrigerators?
- 9.1 Why are cartel agreements notoriously unstable?
- 9.2 How did Congress unwittingly solve the television advertising dilemma confronting cigarette producers?
- 9.3 Why do people shout at parties?
- 9.4 Why do we often see convenience stores located on adjacent street corners?
- 10.1 Why did the American Olympic swimmer Shirley Babashoff, who set one world record and six national records at the 1976 Olympics, refuse to appear on the cover of *Sports Illustrated*?
- 10.2 Why would people pay thousands of dollars to attend a weight-loss camp that will feed them only 1,500 calories per day?
- 10.3 Why was Obamacare difficult to enact and harder still to repeal?
- 10.4 Why have attempts to privatize Social Security proved so politically unpopular in the United States?
- 10.5 If prosperous voters would be happier if they spent less on positional goods and lived in environments with more generously funded public sectors, why haven’t they elected politicians who would deliver what they want?
- 11.1 What is the purpose of free speech laws?
- 11.2 Why do many states have laws requiring students to be vaccinated against childhood illnesses?
- 11.3 Why does the government subsidize private property owners to plant trees on their hillsides?
- 11.4 Why do blackberries in public parks get picked too soon?
- 11.5 Why are shared milkshakes consumed too quickly?
- 11.6 Why do football players take anabolic steroids?
- 12.1 Why is finding a knowledgeable salesclerk often difficult?
- 12.2 Why did Rivergate Books, the last bookstore in Lambertville, New Jersey, go out of business?
- 12.3 Why do firms insert the phrase “As advertised on TV” when they advertise their products in magazines and social media?
- 12.4 Why do many companies care so much about elite educational credentials?
- 12.5 Why do many clients seem to prefer lawyers who wear expensive suits?
- 12.6 Why do males under 25 years of age pay more than other drivers for auto insurance?
- 12.7 Why do opponents of the death penalty often remain silent?
- 12.8 Why do proponents of legalized drugs remain silent?
- 13.1 If unionized firms have to pay more, how do they manage to survive in the face of competition from their nonunionized counterparts?
- 13.2 Why do some ad copywriters earn more than others?
- 13.3 Why does Taylor Swift earn many millions more than singers with only slightly less talent?





- 14.1 Why don't most married couples contribute equally to joint purchases?
- 14.2 Why do television networks favor *NFL Sunday Night Football* over *Masterpiece*?
- 14.3 Why does check-splitting make the total restaurant bill higher?
- 14.4 Why do legislators often support one another's pork barrel spending programs?
- 15.1 What is the China trade shock?
- 15.2 Why did the U.S. start a Trade War with China?
- 15.3 What is fast track authority?
- 17.1 Can nominal and real GDP ever move in different directions?
- 17.2 Why do people work fewer hours today than their great-grandparents did?
- 17.3 Why do far fewer children complete high school in poor countries than in rich countries?
- 18.1 Every few years, there is a well-publicized battle in Congress over whether the minimum wage should be raised. Why do these heated legislative debates recur so regularly?
- 19.1 Why did West Germany and Japan recover so successfully from the devastation of World War II?
- 19.2 Why did U.S. labor productivity grow so rapidly in the late 1990s?
- 19.3 Why did medieval China stagnate economically?
- 19.4 Why do almost all countries provide free public education?
- 20.1 Can new technology hurt workers?
- 20.2 How did the COVID-19 pandemic affect the demand for U.S. jobs?
- 21.1 How did many American households increase their wealth in the 1990s and 2000s while saving very little?
- 21.2 Why do Chinese households save so much?
- 21.3 Why do U.S. households save so little?
- 21.4 Why have real interest rates declined globally in recent decades?
- 22.1 From Ithaca Hours to Bitcoin: what is private money, communally created money, and open-source money?
- 22.2 Why did the banking panics of 1930–1933 reduce the national money supply?
- 23.1 What happens to national economies during banking crises?
- 23.2 Why did the U.S. stock market rise sharply and fall sharply in the 1990s and again in the 2000s?
- 23.3 Why is the U.S. trade deficit so large?
- 24.1 Do economic fluctuations affect presidential elections?
- 24.2 How was the 2007 recession called?
- 24.3 Why has the natural rate of unemployment in the United States declined?
- 24.4 Why did the Federal Reserve act to slow down the economy in 1999 and 2000?
- 25.1 Will new technologies eliminate menu costs?
- 25.2 How did the decline in U.S. stock market values from 2000–2002 affect consumption spending?
- 25.3 What caused the 2007–2009 recession in the United States?
- 25.4 Does military spending stimulate the economy?
- 25.5 Why did the federal government temporarily cut taxes in 2001, 2009, and 2020?
- 26.1 Why does the average Argentine hold more U.S. dollars than the average U.S. citizen?
- 26.2 How did the Fed respond to recession and the terrorist attacks in 2001?
- 26.3 Why did the Fed raise interest rates 17 times in a row between 2004 and 2006?
- 26.4 Why does news of inflation hurt the stock market?
- 26.5 Should the Federal Reserve respond to changes in asset prices?
- 26.6 What is the Taylor rule?
- 27.1 How did inflation get started in the United States in the 1960s?
- 27.2 Why did oil price increases cause U.S. inflation to escalate in the 1970s but not in the 2000s and 2010s?
- 27.3 Why was the United States able to experience rapid growth and low inflation in the latter part of the 1990s?
- 27.4 How was inflation conquered in the 1980s?
- 27.5 Can inflation be too low?
- 28.1 Does a strong currency imply a strong economy?
- 28.2 What is a safe haven currency?
- 28.3 Why did the dollar appreciate nearly 50 percent in the first half of the 1980s and nearly 40 percent in the second half of the 1990s?
- 28.4 What were the causes and consequences of the East Asian crisis of 1997–1998?
- 28.5 What is the IMF, and how has its mission evolved over the years?
- 28.6 How did policy mistakes contribute to the Great Depression?
- 28.7 Why have 19 European countries adopted a common currency?



The following ancillaries are available for quick download and convenient access via the Instructor Resource material available through McGraw Hill Connect®.

Solutions Manual

Prepared by the authors with assistance from Per Norander, University of North Carolina at Charlotte, this manual provides detailed answers to the end-of-chapter review questions and problems.

Test Bank

The test bank has been carefully revised and reviewed for accuracy. Thousands of questions have been categorized by chapter learning objectives, AACSB learning categories, Bloom's Taxonomy objectives, and level of difficulty.

Test Builder in Connect

Available within Connect, Test Builder is a cloud-based tool that enables instructors to format tests that can be printed or administered within an LMS. Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download.

Test Builder allows you to:

- access all test bank content from a particular title.
- easily pinpoint the most relevant content through robust filtering options.
- manipulate the order of questions or scramble questions and/or answers.
- pin questions to a specific location within a test.
- determine your preferred treatment of algorithmic questions.
- choose the layout and spacing.
- add instructions and configure default settings.

Test Builder provides a secure interface for better protection of content and allows for just-in-time updates to flow directly into assessments.

PowerPoints

Presentation slides contain a detailed, chapter-by-chapter review of the important ideas presented in the textbook, accompanied by animated graphs and slide notes. You can edit, print, or rearrange the slides to fit the needs of your course.

Customizable Micro Lecture Notes

One of the biggest hurdles to an instructor considering changing textbooks is the prospect of having to prepare new lecture notes and slides. For the microeconomics chapters, this hurdle no longer exists. A full set of lecture notes for Principles of Microeconomics, prepared by Bob Frank for his award-winning introductory microeconomics course at Cornell University, is available as Microsoft Word files that instructors are welcome to customize as they see fit. The challenge for any instructor is to reinforce the lessons of the text in lectures without generating student unrest by merely repeating what's in the book. These lecture notes address that challenge by constructing examples that run parallel to those presented in the book, yet are different from them in interesting contextual ways.

Writing Assignment

Available within McGraw Hill Connect® and McGraw Hill Connect® Master, the Writing Assignment tool delivers a learning experience to help students improve their written communication skills and conceptual understanding. As an instructor you can assign, monitor, grade, and provide feedback on writing more efficiently and effectively.

Remote Proctoring & Browser-Locking Capabilities

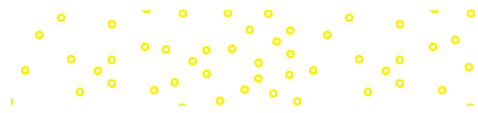


New remote proctoring and browser-locking capabilities, hosted by Proctorio within Connect, provide control of the assessment environment by enabling security options and verifying the identity of the student.

Seamlessly integrated within Connect, these services allow instructors to control students' assessment experience by restricting browser activity, recording students' activity, and verifying students are doing their own work.

Instant and detailed reporting gives instructors an at-a-glance view of potential academic integrity concerns, thereby avoiding personal bias and supporting evidence-based claims.

FOR MORE INFORMATION ABOUT CONNECT AND ITS AVAILABLE RESOURCES, REFER TO THE PAGES THAT FOLLOW.



Connect Economics Asset Alignment with Bloom's Taxonomy

Principles of Economics, 8e

We Take Students Higher

As a learning science company we create content that supports higher order thinking skills. Within Connect®, we tag assessments accordingly so you can filter your search, assign it, and receive reporting on it. These content asset types can be associated with one or more levels of Bloom's Taxonomy.

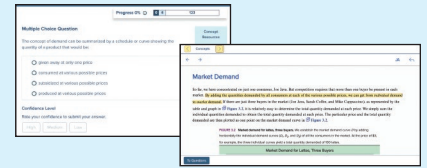
The chart below shows a few of the key assignable economics assets with *McGraw Hill Connect* aligned with Bloom's Taxonomy. Take your students higher by assigning a variety of applications, moving them from simple memorization to concept application.

	SmartBook 2.0	ECON Adaptive Math Prep	Videos	Exercises	Interactive Graphs	Application-Based Activities	Econ Everyday Current Events Blog*	Writing Assignment Plus
Higher Order Thinking Skills	CREATE							✓
	EVALUATE					✓	✓	✓
	ANALYZE			✓	✓	✓	✓	✓
	APPLY	✓	✓	✓	✓	✓	✓	✓
	UNDERSTAND	✓	✓	✓	✓	✓	✓	✓
Lower Order Thinking Skills	REMEMBER	✓	✓	✓	✓	✓	✓	✓

* Outside of Connect.

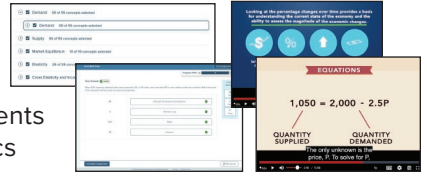
SmartBook 2.0

Adaptively aids students to study more efficiently by highlighting where in the chapter to focus, asking review questions and pointing them to passages in the text until they understand. Assignable and assessable.



ECON Adaptive Math Prep

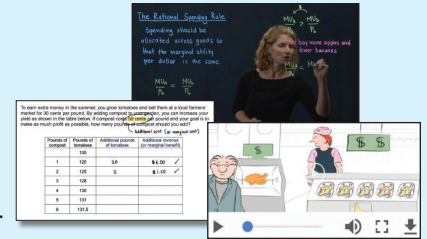
Math preparedness assignments help students refresh important prerequisite topics necessary to be successful in economics. New Adaptive Math Prep Tool provides students just-in-time math remediation that are prerequisite to success in Principles of Economics courses and adapt to each student.



Videos

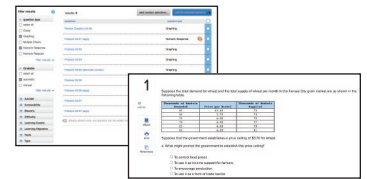
Worked examples and real-world application videos help students learn economics.

Learning Glass videos reinforcing challenging topics featuring the authors and innovative learning glass technology. **Economic Naturalist videos** bring examples to life showing interesting applications of economic concepts. **Worked Problem videos** work through select end-of-chapter questions for extra help and guidance through challenging material.



Exercises

Exercises with algorithmic variations provide ample opportunities for students to practice and hone quantitative skills. Graphing Exercises provide opportunities for students to draw, interact with, manipulate, and analyze graphs.



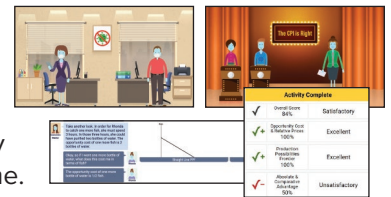
Interactive Graphs

Interactive Graphs provide visual displays of real data and economic concepts for students to manipulate. All graphs are accompanied by assignable assessment questions and feedback to guide students through the experience of learning to read and interpret graphs and data.



Application-Based Activities

Immersive real-life scenarios engage students and put them in the role of everyday economists. Students practice their economic thinking and problem-solving skills as they apply course concepts and see the implications of their decisions as they go. Each activity is designed as a 15-minute experience, unless students eagerly replay for a better outcome.



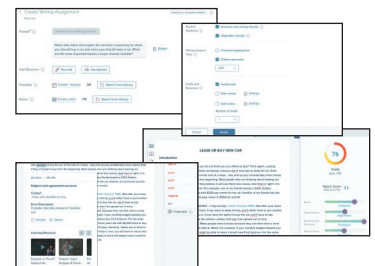
ECON Everyday Current Events Blog*

Our Econ Everyday blog saves instructors time bringing current, student-centered content into their course all semester long. Short articles, written for principles-level students, is tagged by topic to bring currency into your course. We also provide discussion questions to help you drive the conversation forward. Visit www.econeveryday.com and subscribe for updates. (*Outside of Connect.)



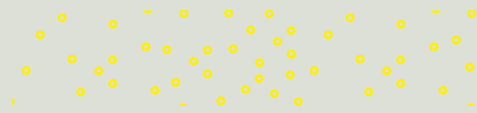
Writing Assignment Plus

Writing Assignment Plus delivers a learning experience that helps students improve their written communication skills and conceptual understanding. Faculty can assign, monitor, grade, and provide feedback on writing projects efficiently. Built-in grammar and writing review helps students improve writing quality while an originality check helps students correct central plagiarism before submission. End result? Improved workplace skills of writing in critical thinking.





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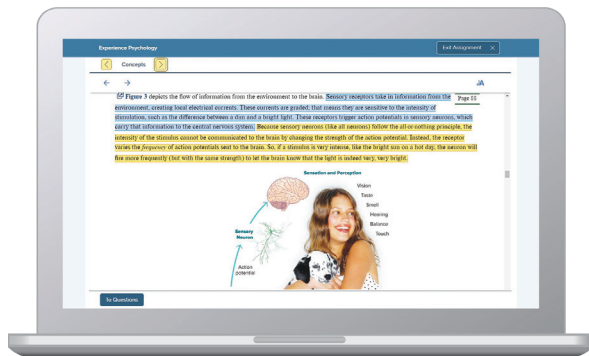
Instructors: Student Success Starts with You

Tools to enhance your unique voice

Want to build your own course? No problem. Prefer to use our turnkey, prebuilt course? Easy. Want to make changes throughout the semester? Sure. And you'll save time with Connect's auto-grading too.

65%

Less Time Grading



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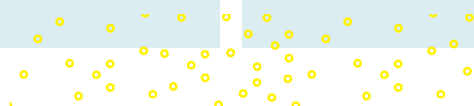
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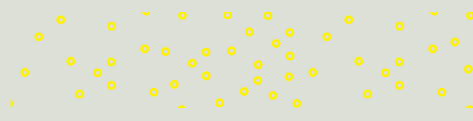
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COMPARISON GUIDE FOR FRANK, BERNANKE, ANTONOVICS, AND HEFFETZ PRODUCTS

Principles of Economics provides enhanced coverage, offers more topics, and more mathematical rigor. *Principles of Economics: A Streamlined Approach* is a stripped down version of the big book featuring core content with a less is more approach. See which product is right for you!

Comparison Guide							
Principles of Economics, 8th edition				Principles of Economics: A Streamlined Approach, 4th edition			
Chapter Title	Econ 8e	Micro 8e	Macro 8e	Chapter Title	Streamlined 4e Econ	Streamlined 4e Micro	Streamlined 4e Macro
Thinking Like an Economist	1	1	1	Thinking Like An Economist	1	1	1
Comparative Advantage	2	2	2				
Supply and Demand	3	3	3	Supply and Demand	2	2	2
Elasticity	4	4		Demand and Elasticity	3	3	
Demand	5	5					
Perfectly Competitive Supply	6	6		Perfectly Competitive Supply	4	4	
Efficiency, Exchange, and the Invisible Hand in Action	7	7		Efficiency, Exchange, and the Invisible Hand in Action	5	5	
Monopoly, Oligopoly, and Monopolistic Competition	8	8		Monopoly, Oligopoly, and Monopolistic Competition	6	6	
Games and Strategic Behavior	9	9		Games and Strategic Behavior	7	7	
An Introduction to Behavioral Economics	10	10		An Introduction to Behavioral Economics (NEW)	8	8	
Externalities, Property Rights, and the Environment	11	11		Externalities and Property Rights	9	9	
The Economics of Information	12	12		Using Economics to Make Better Policy Decisions	10	10	
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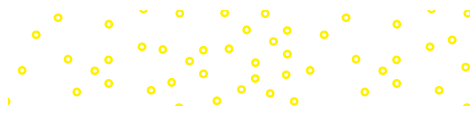
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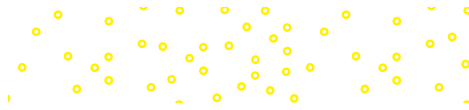
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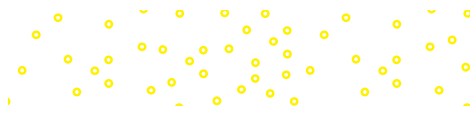
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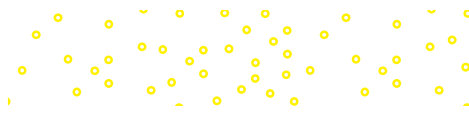
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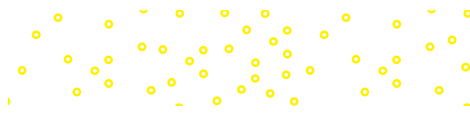
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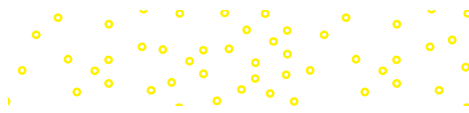
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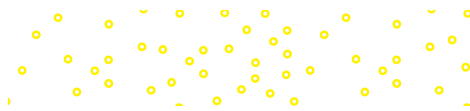
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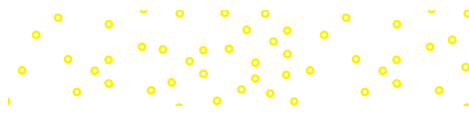
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Thinking Like an Economist



Nick Doleing/Cultura/Corbis

People often make bad decisions because they fail to compare the relevant costs and benefits.

How many students are in your introductory economics class? Some classes have just 20 or so. Others average 35, 100, or 200 students. At some schools, introductory economics classes may have as many as 2,000 students. What size is best?

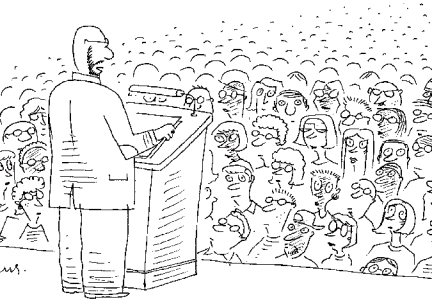
If cost were no object, the best size might be a single student. Think about it: the whole course, all term long, with just you and your professor! Everything could be custom-tailored to your own background and ability. You could cover the material at just the right pace. The tutorial format also would promote close communication and personal trust between you and your professor. And your grade would depend more heavily on what you actually learned than on your luck when taking multiple-choice exams. Let's suppose, for the sake of discussion, that students have been shown to learn best in the tutorial format.

Why, then, do so many introductory classes still have hundreds of students? The simple reason is that costs *do* matter. They matter not just to the university administrators who must build classrooms and pay faculty salaries, but also to *you*. The direct cost of providing you with your own personal introductory economics course might easily top \$50,000. *Someone* has to pay these costs. In private universities, a large share of the cost would be recovered directly from higher tuition payments. In state universities, the burden

LEARNING OBJECTIVES

After reading this chapter, you should be able to:

- LO1** Explain and apply the *Scarcity Principle*, which says that having more of any good thing necessarily requires having less of something else.
- LO2** Explain and apply the *Cost-Benefit Principle*, which says that an action should be taken if, but only if, its benefit is at least as great as its cost.
- LO3** Discuss three important pitfalls that occur when applying the *Cost-Benefit Principle* inconsistently.
- LO4** Explain and apply the *Incentive Principle*, which says that if you want to predict people's behavior, a good place to start is by examining their incentives.



Are small classes “better” than large ones?

economics the study of how people make choices under conditions of scarcity and of the results of those choices for society

Scarcity



would be split between higher tuition payments and higher tax payments. But, in either case, the course would be unaffordable for most students.

With larger classes, of course, the cost per student goes down. For example, an introductory economics course with 300 students might cost as little as \$200 per student. But a class that large could easily compromise the quality of the learning environment. Compared to the custom tutorial format, however, it would be dramatically more affordable.

In choosing what size introductory economics course to offer, then, university administrators confront a classic economic trade-off. In making the class larger, they risk lowering the quality of instruction—a bad thing. At the same time, they reduce costs and hence the tuition students must pay—a good thing.

In this chapter, we’ll introduce three simple principles that will help you understand and explain patterns of behavior you observe in the world around you. These principles also will help you avoid three pitfalls that plague decision makers in everyday life.

ECONOMICS: STUDYING CHOICE IN A WORLD OF SCARCITY

Even in rich societies like the United States, *scarcity* is a fundamental fact of life. There is never enough time, money, or energy to do everything we want to do or have everything we’d like to have. **Economics** is the study of how people make choices under conditions of scarcity and of the results of those choices for society.

In the class-size example just discussed, a motivated economics student might definitely prefer to be in a class of 20 rather than a class of 100, everything else being equal. But other things, of course, are not equal. Students can enjoy the benefits of having smaller classes, but only at the price of having less money for other activities. The student’s choice inevitably will come down to the relative importance of competing activities.

That such trade-offs are widespread and important is one of the core principles of economics. We call it the *Scarcity Principle* because the simple fact of scarcity makes trade-offs necessary. Another name for the scarcity principle is the *No-Free-Lunch Principle* (which comes from the observation that even lunches that are given to you are never really free—somebody, somehow, always has to pay for them).

The Scarcity Principle (also called the No-Free-Lunch Principle): Although we have boundless needs and wants, the resources available to us are limited. So having more of one good thing usually means having less of another.

Inherent in the idea of a trade-off is the fact that choice involves compromise between competing interests. Economists resolve such trade-offs by using cost-benefit analysis, which is based on the disarmingly simple principle that an action should be taken if, and only if, its benefits exceed its costs. We call this statement the *Cost-Benefit Principle*, and it, too, is one of the core principles of economics:

Cost-Benefit



The Cost-Benefit Principle: An individual (or a firm or a society) should take an action if, and only if, the extra benefits from taking the action are at least as great as the extra costs.

With the Cost-Benefit Principle in mind, let’s think about our class-size question again. Imagine that classrooms come in only two sizes—100-seat lecture halls and 20-seat classrooms—and that your university currently offers introductory economics courses to classes of 100 students. Question: Should administrators reduce the class size to 20 students? Answer: Reduce if, and only if, the value of the improvement in instruction outweighs its additional cost.

This rule sounds simple. But to apply it we need some way to measure the relevant costs and benefits, a task that’s often difficult in practice. If we make a few

simplifying assumptions, however, we can see how the analysis might work. On the cost side, the primary expense of reducing class size from 100 to 20 is that we'll now need five professors instead of just one. We'll also need five smaller classrooms rather than a single big one, and this too may add slightly to the expense of the move. Let's suppose that classes with 20 cost \$1,000 per student more than those with 100. Should administrators switch to the smaller class size? If they apply the Cost-Benefit Principle, they will realize that *doing so makes sense only if the value of attending the smaller class is at least \$1,000 per student greater than the value of attending the larger class.*

Would you (or your family) be willing to pay an extra \$1,000 for a smaller class? If not, and if other students feel the same way, then sticking with the larger class size makes sense. But if you and others would be willing to pay the extra tuition, then reducing the class size makes good economic sense.

Notice that the "best" class size, from an economic point of view, will generally not be the same as the "best" size from the point of view of an educational psychologist. That's because the economic definition of "best" takes into account both the benefits *and* the costs of different class sizes. The psychologist ignores costs and looks only at the learning benefits of different class sizes.

In practice, of course, different people feel differently about the value of smaller classes. People with high incomes, for example, tend to be willing to pay more for the advantage. That helps explain why average class size is smaller, and tuition higher, at private schools whose students come predominantly from high-income families.

The cost-benefit framework for thinking about the class-size problem also suggests a possible reason for the gradual increase in average class size that has been taking place in American colleges and universities. During the last 30 years, professors' salaries have risen sharply, making smaller classes more costly. During the same period, median family income—and hence the willingness to pay for smaller classes—has remained roughly constant. When the cost of offering smaller classes goes up but willingness to pay for smaller classes does not, universities shift to larger class sizes.

Scarcity and the trade-offs that result also apply to resources other than money. Jeff Bezos is one of the richest people on Earth. His wealth is estimated at more than \$180 billion. That's more than the combined wealth of the poorest 54 percent of Americans. Bezos could buy more houses, cars, vacations, and other consumer goods than he could possibly use. Yet he, like the rest of us, has only 24 hours each day and a limited amount of energy. So even he confronts trade-offs. Any activity he pursues—whether it be building his business empire or redecorating his mansion—uses up time and energy that he could otherwise spend on other things. Indeed, someone once calculated that the value of Bezos's time is so great that pausing to pick up a \$100 bill from the sidewalk simply wouldn't be worth his while.



Cost-Benefit



Chip Somdevilla/Getty Images

If Jeff Bezos saw a \$100 bill lying on the sidewalk, would it be worth his time to pick it up?

APPLYING THE COST-BENEFIT PRINCIPLE

In studying choice under scarcity, we'll usually begin with the premise that people are **rational**, which means they have well-defined goals and try to fulfill them as best they can. The Cost-Benefit Principle is a fundamental tool for the study of how rational people make choices.

As in the class-size example, often the only real difficulty in applying the cost-benefit rule is to come up with reasonable measures of the relevant benefits and costs. Only in rare instances will exact dollar measures be conveniently available. But the cost-benefit framework can lend structure to your thinking even when no relevant market data are available.

To illustrate how we proceed in such cases, the following example asks you to decide whether to perform an action whose cost is described only in vague, qualitative terms.

rational person someone with well-defined goals who tries to fulfill those goals as best he or she can

EXAMPLE 1.1

Comparing Costs and Benefits

Should you walk downtown to save \$10 on a \$25 wireless keyboard?

Imagine you are about to buy a \$25 wireless keyboard at the nearby campus store when a friend tells you that the same keyboard is on sale at a downtown store for only \$15. If the downtown store is a 30-minute walk away, where should you buy the keyboard?

Cost-Benefit



The Cost-Benefit Principle tells us that you should buy it downtown if the benefit of doing so exceeds the cost. The benefit of taking any action is the dollar value of everything you gain by taking it. Here, the benefit of buying downtown is exactly \$10, because that's the amount you'll save on the price of the keyboard. The cost of taking any action is the dollar value of everything you give up by taking it. Here, the cost of buying downtown is the dollar value you assign to the time and trouble it takes to make the trip. But how do we estimate that value?

One way is to perform the following hypothetical auction. Imagine that a stranger has offered to pay you to do an errand that involves the same walk downtown (perhaps to drop off a package for her at the post office). If she offered you a payment of, say, \$1,000, would you accept? If so, we know that your cost of walking downtown and back must be less than \$1,000. Now imagine her offer being reduced in small increments until you finally refuse the last offer. For example, if you'd agree to walk downtown and back for \$9 but not for \$8.99, then your cost of making the trip is \$9. In this case, you should buy the keyboard downtown because the \$10 you'll save (your benefit) is greater than your \$9 cost of making the trip.

But suppose your cost of making the trip had been greater than \$10. In that case, your best bet would have been to buy the keyboard from the nearby campus store. Confronted with this choice, different people may choose differently, depending on how costly they think it is to make the trip downtown. But although there is no uniquely correct choice, most people who are asked what they would do in this situation say they would buy the keyboard downtown.

ECONOMIC SURPLUS

Suppose that in Example 1.1 your "cost" of making the trip downtown was \$9. Compared to the alternative of buying the keyboard at the campus store, buying it downtown resulted in an **economic surplus** of \$1, the difference between the benefit of making the trip and its cost. In general, your goal as an economic decision maker is to choose those actions that generate the largest possible economic surplus. This means taking all actions that yield a positive total economic surplus, which is just another way of restating the Cost-Benefit Principle.

Note that the fact that your best choice was to buy the keyboard downtown doesn't imply that you *enjoy* making the trip, any more than choosing a large class means that you prefer large classes to small ones. It simply means that the trip is less unpleasant than the prospect of paying \$10 extra for the keyboard. Once again, you've faced a trade-off. In this case, the choice was between a cheaper keyboard and the free time gained by avoiding the trip.

OPPORTUNITY COST

Of course, your mental auction could have produced a different outcome. Suppose, for example, that the time required for the trip is the only time you have left to study for a difficult test the next day. Or suppose you are watching one of your favorite shows on Netflix, or that you are tired and would love a short nap. In such cases, we say that the **opportunity cost** of making the trip—that is, the value of what you must sacrifice to walk downtown and back—is high and you are more likely to decide against making the trip.

economic surplus the benefit of taking an action minus its cost

Cost-Benefit



opportunity cost the value of what must be forgone to undertake an activity

Strictly speaking, your opportunity cost of engaging in an activity is the value of everything you must sacrifice to engage in it. For instance, if seeing a movie requires not only that you buy a \$10 ticket, but also that you give up a \$20 dogwalking job that you would have been willing to do for free, then the opportunity cost of seeing the film is \$30.

Under this definition, *all* costs—both implicit and explicit—are opportunity costs. Unless otherwise stated, we will adhere to this strict definition.

We must warn you, however, that some economists use the term *opportunity cost* to refer only to the implicit value of opportunities forgone. Thus, in the example just discussed, these economists wouldn't include the \$10 ticket price when calculating the opportunity cost of seeing the film. But virtually all economists would agree that your opportunity cost of not doing the dogwalking job is \$20.

In the previous example, if watching another hour of your favorite show on Netflix is the most valuable opportunity that conflicts with the trip downtown, the opportunity cost of making the trip is the dollar value you place on pursuing that opportunity. It is the largest amount you'd be willing to pay to avoid watching your show at another time. Note that the opportunity cost of making the trip is not the combined value of *all* possible activities you could have pursued, but only the value of your *best* alternative—the one you would have chosen had you not made the trip.

Throughout the text we'll pose self-tests like the one that follows. You'll find that pausing to answer them will help you to master key concepts in economics. Because doing these self-tests isn't very costly (indeed, many students report that they're actually fun), the Cost-Benefit Principle indicates that it's well worth your while to do them.



Cost-Benefit



SELF-TEST 1.1

You would again save \$10 by buying the wireless keyboard downtown rather than at the campus store, but your cost of making the trip is now \$12, not \$9. By how much would your economic surplus be smaller if you bought the keyboard downtown rather than at the campus store?

THE ROLE OF ECONOMIC MODELS

Economists use the Cost-Benefit Principle as an abstract model of how an idealized rational individual would choose among competing alternatives. (By “abstract model” we mean a simplified description that captures the essential elements of a situation and allows us to analyze them in a logical way.) A computer model of a complex phenomenon like climate change, which must ignore many details and includes only the major forces at work, is an example of an abstract model.

Noneconomists are sometimes harshly critical of the economist's cost-benefit model on the grounds that people in the real world never conduct hypothetical mental auctions before deciding whether to make trips downtown. But this criticism betrays a fundamental misunderstanding of how abstract models can help explain and predict human behavior. Economists know perfectly well that people don't conduct hypothetical mental auctions when they make simple decisions. All the Cost-Benefit Principle really says is that a rational decision is one that is explicitly or implicitly based on a weighing of costs and benefits.

Most of us make sensible decisions most of the time, without being consciously aware that we are weighing costs and benefits, just as most people ride a bike without being consciously aware of what keeps them from falling. Through trial and error, we gradually learn what kinds of choices tend to work best in different contexts, just as bicycle riders internalize the relevant laws of physics, usually without being conscious of them.

Even so, learning the explicit principles of cost-benefit analysis can help us make better decisions, just as knowing about physics can help in learning to ride a bicycle. For instance, when a young economist was teaching his oldest son to ride a bike, he followed

the time-honored tradition of running alongside the bike and holding onto his son, then giving him a push and hoping for the best. After several hours and painfully skinned elbows and knees, his son finally got it. A year later, someone pointed out that the trick to riding a bike is to turn slightly in whichever direction the bike is leaning. Of course! The economist passed this information along to his second son, who learned to ride almost instantly. Just as knowing a little physics can help you learn to ride a bike, knowing a little economics can help you make better decisions.

RECAP ↑

COST-BENEFIT ANALYSIS

Scarcity is a basic fact of economic life. Because of it, having more of one good thing almost always means having less of another (the *scarcity principle*). The *Cost-Benefit Principle* holds that an individual (or a firm or a society) should take an action if, and only if, the extra benefit from taking the action is at least as great as the extra cost. The benefit of taking any action minus the cost of taking the action is called the *economic surplus* from that action. Hence, the Cost-Benefit Principle suggests that we take only those actions that create additional economic surplus.

THREE IMPORTANT DECISION PITFALLS¹

Rational people will apply the Cost-Benefit Principle most of the time, although probably in an intuitive and approximate way, rather than through explicit and precise calculation. Knowing that rational people tend to compare costs and benefits enables economists to predict their likely behavior. As noted earlier, for example, we can predict that students from wealthy families are more likely than others to attend colleges that offer small classes. (Again, while the cost of small classes is the same for all families, their benefit, as measured by what people are willing to pay for them, tends to be higher for wealthier families.)

Yet researchers have identified situations in which people tend to apply the Cost-Benefit Principle inconsistently. In these situations, the Cost-Benefit Principle may not predict behavior accurately. But it proves helpful in another way, by identifying specific strategies for avoiding bad decisions.

PITFALL 1: MEASURING COSTS AND BENEFITS AS PROPORTIONS RATHER THAN ABSOLUTE DOLLAR AMOUNTS

As the next example makes clear, even people who seem to know they should weigh the pros and cons of the actions they are contemplating sometimes don't have a clear sense of how to measure the relevant costs and benefits.

EXAMPLE 1.2
Comparing Costs and Benefits
Should you walk downtown to save \$10 on a \$2,020 laptop computer?

You are about to buy a \$2,020 laptop computer at the nearby campus store when a friend tells you that the same computer is on sale at a downtown store for only \$2,010. If the downtown store is half an hour's walk away, where should you buy the computer?

¹The examples in this section are inspired by the pioneering research of Daniel Kahneman and the late Amos Tversky. Kahneman was awarded the 2002 Nobel Prize in Economics for his efforts to integrate insights from psychology into economics. You can read more about this work in Kahneman's brilliant 2011 book, *Thinking Fast and Slow* (New York: Macmillan).

Assuming that the laptop is light enough to carry without effort, the structure of this example is exactly the same as that of Example 1.1. The only difference is that the price of the laptop is dramatically higher than the price of the wireless keyboard. As before, the benefit of buying downtown is the dollar amount you'll save, namely, \$10. And because it's exactly the same trip, its cost also must be the same as before. So if you are perfectly rational, you should make the same decision in both cases. Yet when people are asked what they would do in these situations, the overwhelming majority say they'd walk downtown to buy the keyboard but would buy the laptop at the campus store. When asked to explain, most of them say something like, "The trip was worth it for the keyboard because you save 40 percent, but not worth it for the laptop because you save only \$10 out of \$2,020."

This is faulty reasoning. The benefit of the trip downtown is not the *proportion* you save on the original price. Rather, it is the *absolute dollar amount* you save. The benefit of walking downtown to buy the laptop is \$10, exactly the same as for the wireless keyboard. And because the cost of the trip must also be the same in both cases, the economic surplus from making both trips must be exactly the same. That means that a rational decision maker would make the same decision in both cases. Yet, as noted, most people choose differently.

The pattern of faulty reasoning in the decision just discussed is one of several decision pitfalls to which people are often prone. In the discussion that follows, we will identify two additional decision pitfalls. In some cases, people ignore costs or benefits that they ought to take into account. On other occasions they are influenced by costs or benefits that are irrelevant.

✓ SELF-TEST 1.2

Which is more valuable: saving \$100 on a \$2,000 plane ticket to Tokyo or saving \$90 on a \$200 plane ticket to Chicago?

PITFALL 2: IGNORING IMPLICIT COSTS

Sherlock Holmes, Arthur Conan Doyle's legendary detective, was successful because he saw details that most others overlooked. In *Silver Blaze*, Holmes is called on to investigate the theft of an expensive racehorse from its stable. A Scotland Yard inspector assigned to the case asks Holmes whether some particular aspect of the crime requires further study. "Yes," Holmes replies, and describes "the curious incident of the dog in the nighttime." "The dog did nothing in the nighttime,"² responds the puzzled inspector. But, as Holmes realized, that was precisely the problem! The watchdog's failure to bark when *Silver Blaze* was stolen meant that the watchdog knew the thief. This clue ultimately proved the key to unraveling the mystery.

Just as we often don't notice when a dog fails to bark, many of us tend to overlook the implicit value of activities that fail to happen. As discussed earlier, however, intelligent decisions require taking the value of forgone opportunities properly into account.

The opportunity cost of an activity, once again, is the value of all that must be forgone in order to engage in that activity. If buying a wireless keyboard downtown means not watching another hour of your favorite show on Netflix, then the value to you of watching the show is an implicit cost of the trip. Many people make bad decisions because they tend to ignore the value of such forgone opportunities. To avoid overlooking implicit costs, economists often translate questions like "Should I walk downtown?" into ones like "Should I walk downtown or watch another hour of my favorite show?"



Implicit costs are like dogs that fail to bark in the night. Many of us tend to overlook activities that fail to happen.

²Arthur Conan Doyle, "The Adventure of Silver Blaze," *The Memoirs of Sherlock Holmes* (London: George Newnes Ltd., 1893).

EXAMPLE 1.3

Implicit Cost

Should you use your frequent-flyer coupon to fly to Cancun for spring break?

With spring break only a week away, you are still undecided about whether to go to Cancun with a group of classmates at the University of Iowa. The round-trip airfare from Cedar Rapids is \$500, but you have a frequent-flyer coupon you could use for the trip. All other relevant costs for the vacation week at the beach total exactly \$1,000. The most you would be willing to pay for the Cancun vacation is \$1,350. That amount is your benefit of taking the vacation. Your only alternative use for your frequent-flyer coupon is for a trip to Boston the weekend after spring break to attend your brother's wedding. (Your coupon expires shortly thereafter.) If the Cedar Rapids–Boston round-trip airfare is \$400, should you use your frequent-flyer coupon to fly to Cancun for spring break?

Cost-Benefit



The Cost-Benefit Principle tells us that you should go to Cancun if the benefits of the trip exceed its costs. If not for the complication of the frequent-flyer coupon, solving this problem would be a straightforward matter of comparing your benefit from the week at the beach to the sum of all relevant costs. And because your airfare and other costs would add up to \$1,500, or \$150 more than your benefit from the trip, you would not go to Cancun.

But what about the possibility of using your frequent-flyer coupon to make the trip? Using it for that purpose might make the flight to Cancun seem free, suggesting you'd reap an economic surplus of \$350 by making the trip. But doing so also would mean you'd have to fork over \$400 for your airfare to Boston. So the implicit cost of using your coupon to go to Cancun is really \$400. If you use it for that purpose, the trip still ends up being a loser because the cost of the vacation, \$1,400, exceeds the benefit by \$50. In cases like these, you're much more likely to decide sensibly if you ask yourself, "Should I use my frequent-flyer coupon for this trip or save it for an upcoming trip?"



Bkindler/E-/Getty Images

Is your flight to Cancun "free" if you travel on a frequent-flyer coupon?

We cannot emphasize strongly enough that the key to using the Cost-Benefit Principle correctly lies in recognizing precisely what taking a given action prevents us from doing. Self-Test 1.3 illustrates this point by modifying the details of Example 1.3 slightly.

**SELF-TEST 1.3**

Refer to given information in Example 1.3, but this time your frequent-flyer coupon expires in a week, so your only chance to use it will be for the Cancun trip. Should you use your coupon?

PITFALL 3: FAILING TO THINK AT THE MARGIN

When deciding whether to take an action, the only relevant costs and benefits are those that would occur as a result of taking the action. Sometimes people are influenced by costs they ought to ignore. Other times they compare the wrong costs and benefits. *The only costs that should influence a decision about whether to take an action are those we can avoid by not taking the action. Similarly, the only benefits we should consider are those that would not occur unless the action were taken.* As a practical matter, however, many decision makers appear to be influenced by costs or benefits that would have occurred no matter what. Thus, people are often influenced by **sunk costs**—costs that are beyond recovery at the

sunk cost a cost that is beyond recovery at the moment a decision must be made

moment a decision is made. For example, money spent on a nontransferable, nonrefundable airline ticket is a sunk cost.

As the following example illustrates, sunk costs must be borne *whether or not an action is taken*, so they are irrelevant to the decision of whether to take the action.

EXAMPLE 1.4

Sunk Cost

How much should you eat at an all-you-can-eat restaurant?

Sangam, an Indian restaurant in Philadelphia, offers an all-you-can-eat lunch buffet for \$10. Customers pay \$10 at the door, and no matter how many times they refill their plates, there is no additional charge. One day, as a goodwill gesture, the owner of the restaurant tells 20 randomly selected guests that they can eat at the all-you-can-eat buffet for free. The remaining guests pay the usual price. If all diners are rational, will those who are able to eat at the buffet for free consume a different amount of food, on average, than those who have to pay \$10 for the buffet?

Having eaten their first helping, diners in each group confront the following question: “Should I go back for another helping?” For rational diners, if the benefit of doing so exceeds the cost, the answer is yes; otherwise it is no. Note that at the moment of decision, the \$10 charge for the lunch is a sunk cost. Those who paid it have no way to recover it. Thus, for both groups, the (extra) cost of another helping is exactly zero. And because the people who received the free lunch were chosen at random, there’s no reason their appetites or incomes should be any different from those of other diners. The benefit of another helping thus should be the same, on average, for people in both groups. And because their respective costs and benefits are the same, the two groups should eat the same number of helpings, on average.

Psychologists and economists have experimental evidence, however, that people in such groups do *not* eat similar amounts.³ In particular, those who have to pay for the all-you-can-eat buffet tend to eat substantially more than those for whom the buffet is free. People in the former group somehow seem determined to “get their money’s worth.” Their implicit goal is apparently to minimize the average cost per bite of the food they eat. Yet minimizing average cost is not a particularly sensible objective. The irony is that diners who are determined to get their money’s worth usually end up eating too much.

The fact that the cost-benefit criterion failed the test of prediction in Example 1.4 does nothing to invalidate its advice about what people *should* do. If you are letting sunk costs influence your decisions, you can do better by changing your behavior.

In addition to paying attention to costs and benefits that should be ignored, people often use incorrect measures of the relevant costs and benefits. This error often occurs when we must choose the *extent* to which an activity should be pursued (as opposed to choosing whether to pursue it at all). We can apply the Cost-Benefit Principle in such situations by repeatedly asking the question, “Should I increase the level at which I am currently pursuing the activity?”

In attempting to answer this question, the focus should always be on the benefit and cost of an *additional* unit of activity. To emphasize this focus, economists refer to the cost of an additional unit of activity as its **marginal cost**. Similarly, the benefit of an additional unit of the activity is its **marginal benefit**.

marginal cost the increase in total cost that results from carrying out one additional unit of an activity

marginal benefit the increase in total benefit that results from carrying out one additional unit of an activity

³See, for example, Richard Thaler, “Toward a Positive Theory of Consumer Choice,” *Journal of Economic Behavior and Organization* 1, no. 1 (1980).