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macroeconomics

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THE SEVEN VERSIONS OF MCCONNELL, BRUE, FLYNN

Economics 22e Chapter Title	*Economics 22e*	*Microeconomics 22e*	*Macroeconomics 22e*	*Economics Brief Edition 3e*	*Microeconomics Brief Edition 3e*	*Macroeconomics Brief Edition 3e*	*Essentials of Economics 4e*
Limits, Alternatives, and Choices	x	x	x	x	x		x
The Market System and the Circular Flow	x	x	x	x	x		x
Demand, Supply, and Market Equilibrium	x	x	x	x	x		x
Market Failures Caused by Externalities & Asymmetric Information	x	x	x	**x**	**x**		**x**
Public Goods, Public Choice, and Government Failure	x	x	x	**x**	**x**		**x**
Elasticity	x	x		x	x		x
Utility Maximization	x	x		**x**	**x**		x
Behavioral Economics	x	x		**x**	**x**		
Businesses and the Costs of Production	x	x		**x**	**x**		**x**
Pure Competition in the Short Run	x	x		x	x		x
Pure Competition in the Long Run	x	x		x	x		x
Pure Monopoly	x	x		x	x		x
Monopolistic Competition	x	x		x	x		x
Oligopoly and Strategic Behavior	x	x		x	x		x
Technology, R&D, and Efficiency	x	x					
The Demand for Resources	x	x					
Wage Determination	x	x		x	x		
Rent, Interest, and Profit	x	x					
Natural Resource and Energy Economics	x	x					
Public Finance: Expenditures and Taxes	x	x		x	x		
Antitrust Policy and Regulation	x	x					
Agriculture: Economics and Policy	x	x		x	x		**x**
Income Inequality, Poverty, and Discrimination	x	x					
Health Care	x	x					
Immigration	x	x					
An Introduction to Macroeconomics	x		x	**x**		**x**	**x**
Measuring Domestic Output and National Income	x		x	x		x	x
Economic Growth	x		x	x		x	x
Business Cycles, Unemployment, and Inflation	x		x	x		x	x
Basic Macroeconomic Relationships	x		x				x
The Aggregate Expenditures Model	x		x				x
Aggregate Demand and Aggregate Supply	x		x	x		x	x
Fiscal Policy, Deficits, and Debt	x		x	x		x	x
Money, Banking, and Financial Institutions	x		x	x		x	x
Money Creation	x		x				
Interest Rates and Monetary Policy	x		x	**x**		**x**	
Financial Economics	x		x				
Extending the Analysis of Aggregate Supply	x		x	**x**		**x**	**x**
Current Issues in Macro Theory and Policy	x		x				
International Trade	x	x	x	x		x	x
The Balance of Payments, Exchange Rates, and Trade Deficits	x	x	x	**x**		**x**	**x**
The Economics of Developing Countries	x	x	x				

A red "**X**" indicates chapters that combine or consolidate content from two or more *Economics* chapters.

McCONNELL | BRUE | FLYNN

Twenty-Second Edition

macroeconomics

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University of Nebraska

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Sean M. Flynn
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Mc Graw Hill

MACROECONOMICS, TWENTY-SECOND EDITION

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To Mem, Terri and Craig, and Rupali

ABOUT THE AUTHORS

CAMPBELL R. MCCONNELL earned his Ph.D. at the University of Iowa after receiving degrees from Cornell College and the University of Illinois. He taught at the University of Nebraska–Lincoln from 1953 until his retirement in 1990. He was also coauthor of *Contemporary Labor Economics* and *Essentials of Economics*. He was a recipient of both the University of Nebraska Distinguished Teaching Award and the James A. Lake Academic Freedom Award and served as president of the Midwest Economics Association. Professor McConnell was awarded an honorary Doctor of Laws degree from Cornell College in 1973 and received its Distinguished Achievement Award in 1994. He was also a jazz expert and aficionado until his passing in 2019.

STANLEY L. BRUE did his undergraduate work at Augustana College (South Dakota) and received its Distinguished Achievement Award in 1991. He received his Ph.D. from the University of Nebraska–Lincoln. He is retired from a long career at Pacific Lutheran University, where he was honored as a recipient of the Burlington Northern Faculty Achievement Award. Professor Brue has also received the national Leavey Award for excellence in economic education. He has served as national president and chair of the Board of Trustees of Omicron Delta Epsilon International Economics Honorary. He is coauthor of *Economic Scenes,* fifth edition (Prentice-Hall); *Contemporary Labor Economics,* eleventh edition; *Essentials of Economics,* third edition; and *The Evolution of Economic Thought,* eighth edition (Cengage Learning). For relaxation, he enjoys international travel, attending sporting events, and going on fishing trips.

SEAN M. FLYNN did his undergraduate work at the University of Southern California before completing his Ph.D. at U.C. Berkeley, where he served as the Head Graduate Student Instructor for the Department of Economics after receiving the Outstanding Graduate Student Instructor Award. He teaches at Scripps College (of the Claremont Colleges) and is the author of *Economics for Dummies,* third edition (Wiley); *Essentials of Economics,* third edition; and *The Cure That Works: How to Have the World's Best Healthcare—at a Quarter of the Price* (Regnery). His research interests include behavioral finance, behavioral economics, and health care economics. An accomplished martial artist, Sean has coached five of his students to national championships and is the author of *Understanding Shodokan Aikido*. Other hobbies include running, traveling, and cooking.

KEY GRAPHS

IN MEMORIAM

CAMPBELL R. McCONNELL (1928-2019)

We have lost a gracious friend, superb mentor, and legendary coauthor. In 2019 Professor Campbell R. "Mac" McConnell passed away at age 90 in Lincoln, Nebraska. Mac was one of the most significant and influential American economic educators of his generation. Through his best-selling principles textbook, he made introductory economics accessible to millions of students. By way of numerous adaptations and translations of his textbook, he influenced students throughout the world.

Mac was born in Harvey, Illinois, graduated from Cornell College (Iowa) and obtained his Ph.D. from the University of Iowa. He had a long and successful career as a researcher and teacher at the University of Nebraska, publishing peer-reviewed research articles and serving in leadership positions such as President of the Midwest Economic Association. His gift of explaining complex economics simply and thoroughly led him to explore opportunities to extend his educational reach beyond his own classroom. McGraw-Hill understood the great potential in his textbook proposal and the first edition of *Economics: Principles, Problems, and Policies* made its debut in 1960. It was an instant hit and by the late 1970s it became the leading seller in the United States, supplanting Paul Samuelson's textbook as the market leader. *Economics* remains the top seller today.

In 1986, Mac and his former student, Stanley Brue, coauthored *Contemporary Labor Economics* and two years later Professor Brue joined Mac as a coauthor of *Economics*. Stan, Mac, and McGraw-Hill added Sean Flynn as the third coauthor on the authorship team in 2008. The authorship transitions have been planned in advance, with authors working side-by-side for several editions. These smooth transitions have greatly contributed to the progress of the book and its continuing success.

We (Stan and Sean) are humbled and proud to have worked with Mac and McGraw-Hill over these many years. We pledge to instructors and students that we will continue to stress clarity of presentation—in each new chapter, revised paragraph, rephrased explanation, and edited sentence. We believe that our dedication to preserving and improving the quality of the book is absolutely the best way for us to honor and extend Mac's amazing legacy. Mac liked to say that, "*Brevity at the expense of clarity is false economy.*" We will honor him, and his legacy, by always putting clarity first.

We greatly miss our coauthor and long-time friend Campbell R. McConnell.

Stanley L. Brue
Sean M. Flynn

PREFACE

Welcome to the 22nd edition of *Economics*, America's most innovative—and popular—economics textbook.

We are pleased to present faculty and students with comprehensive revisions, insightful new content, and significant improvements to both our online learning system and our industry-leading ancillary materials.

Significant Content Updates

The financial crisis and the subsequent slow recovery increased both student and faculty demand for principles-level content geared toward explaining directly and intuitively why markets and governments fail—sometimes spectacularly—in delivering optimal social outcomes. To satisfy that demand, **our presentation of market failures, government failure, and public choice theory has been significantly restructured** in Chapters 4 and 5 to allow students to quickly absorb the key lessons regarding externalities, public goods provision, voting paradoxes, the special interest effect, and other problems that hinder either markets or governments from achieving optimal social outcomes.

Faculty teaching macroeconomics will also find that **we have made major changes to our presentation of monetary policy.** These important updates explain how the post-Crisis Fed conceptualizes its role in the economy—the dual mandate—and how it currently operationalizes contractionary or expansionary monetary policy in pursuit of full employment with price stability.

Our innovative presentation revolves around the monetary policy "bullseye chart" pioneered by the Chicago Fed. We explain in a friendly and intuitive manner why expectations matter so much and how monetary policy rules like the Taylor rule are helpful in explaining the priorities of Fed policymakers with respect to balancing the goal of moderate inflation with the goal of full employment. **We also explain why and how interest on excess reserves (IOER) and the "repo rate" have supplanted the federal funds rate as the Fed's major tool for modulating banking lending and credit creation.**

Improved Efficiency for Instructors

Faculty time is precious. To preserve as much of it as possible for the faculty adopting *Economics,* we went sentence-by-sentence and section-by-section, pulling out extraneous examples, eliminating unnecessary graphs, and—in some cases—removing entire sections that faculty reported they didn't have time to teach. **We have slashed the average chapter's word count by about 15 percent,** even after accounting for newly added content.

These changes have been reviewed positively by faculty and we are excited that **our streamlined presentation frees up faculty time for more advanced classroom activities, including experiments, debates, simulations, and various forms of peer instruction and team-based learning.**

Improved Readability for Students

Student time is also precious. The current crop of college students are digital natives and social media pioneers. They are used to Googling for answers, reading things that tend to be no longer than a Tweet, and receiving instant feedback. **We have revised our presentation to accommodate their fast-paced, nonlinear learning style.** You will find a greater economy of language and an increased focus on key examples, including new Key Graphs that have self-contained Quick Quizzes to help students comprehend and apply crucial models.

We have also worked hard to accommodate the large number of students who study by "hunting" through a chapter rather than by reading the content in sequence. **They will find dozens of additional in-chapter Quick Review boxes** to help them identify key material**, scores of additional headers** to help them scan for key concepts, **and a much greater use of bullet points** to organize related concepts and ideas.

These revisions will also aid traditional students who study the old-fashioned way by providing them with increased structure and organization. **Traditional students will additionally appreciate our switch to a single-column design that allows for extensive note taking in the margins.**

Examples and Illustrations that Resonate with Students

Students absorb economic theory most easily when it resonates with their experiences and is explained with current examples.

To that end, **the 22nd edition covers many topics that are currently in the news.**

The new edition also features new "Consider This" and "Last Word" boxed features that drive home key ideas in an accessible, student-oriented manner. Topics include "Bitcoin and Cheap Electrons," "Hasta La Vista, Venezuela," and "Voluntary Pollution Control."

Accelerating Student Achievement via Adaptive Learning and Innovative Ancillary Materials

Would you as a faculty member enjoy spending less time on definitions and more time on theory, applications, and enrichment material?

Most faculty say YES!—which is why we continue to make large annual improvements to what is already the most effective digital learning platform in higher education: *Connect Economics*.

Before Class

You can use *Connect Economics* and its built-in adaptive reading technology, *SmartBook*, to ensure that students know all the basics before class starts. Simply assign your selected chapter readings in *SmartBook* and have students complete related problems and questions before lecture. The *Connect Economics* platform will automatically probe for misunderstandings—and then fix them with instant feedback and remediation.

To further enhance the ability of instructors to "get students up to speed" before class, **we also offer interactive graphing exercises, math-preparedness tutorials, and a large bank of custom-made videos covering real-world examples.** All are assignable within *Connect Economics*, and each includes assignable assessment questions and instant feedback.

During Class

You can then proceed, during class, to higher-level learning activities that build correct intuitions and the ability to apply models, theories, and concepts to new situations that have not already been covered in your class.

Creating higher-level classroom activities is no easy task, and we know from personal experience that faculty often find themselves with too little time left over at the end of a long day of teaching, service, and research to create the high-quality enrichment materials that they would like to use in class.

To that end, we have gone out of our way to developed two major in-class enrichment tools that you can use to "flip" your classroom and engage students at a higher level.

Guided Peer Instruction With the help of Todd Fitch of U.C. Berkeley, **we have authored and field-tested hundreds of in-class questions and answers that can be used to facilitate the peer instruction teaching method pioneered by Eric Mazur of Harvard University.** Our version, which we call Guided Peer Instruction (or GPI), is a student-focused, interactive teaching method that has been shown to more than double student understanding relative to "chalk and talk" and other lecture-based presentation formats. **We are proud to be the first textbook to fully support Guided Peer Instruction.**

Application-Based Activities (ABAs) These immersive **decision-making simulations are delivered digitally within the Connect platform and put students 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 that can be replayed by eager students to build intuition.

A 22nd Edition for the 21st Century

***Economics* has maintained its position as the world's best-selling economics textbook for nearly fifty years by continually updating its coverage and its pedagogy.** We weren't just the first with adaptive learning and instant remediation, but also with everything from student study guides to computerized test banks (in the 1970s!).

McConnell Is/Was/And Will Remain The Innovation Champion:

- The first textbook with a student study guide.
- The first textbook to place both a meaningful title and a short accompanying explanation next to every graph, figure, and table.
- The first textbook with comprehensive test banks.
- The first textbook with multi-colored graphs.
- The first textbook with overhead projector slides.
- The first televised economics lectures.
- The first overhead projector slides.
- The first instructors' manual.
- The first computerized test bank.
- The first textbook with PowerPoint slides.
- The first fully integrated adaptive-learning system.

It is our sincere hope that our 22nd edition will continue to promote rapid learning and deep understanding as the 21st century passes its 20th birthday. We have worked hard to ensure that *Economics* and all of its ancillary materials are comprehensive, analytical, and challenging—yet fully accessible to a wide range of students. **Where needed, an extra sentence of explanation is provided. Brevity at the expense of clarity is false economy.**

Sean M. Flynn
Stanley L. Brue

Chapter-by-Chapter Changes

Each chapter of *Economics,* 22nd edition, contains data updates, revised Learning Objectives, and new examples. Chapter-specific updates include new boxed pieces, additional Quick Reviews, and, where appropriate, substantial revisions to the core content.

Chapter 1: Limits, Alternatives, and Choices features a new Last Word about "The Marginal Starbucks," a new Global Perspective comparing investment levels in selected countries, and a new Consider This titled, "Is Facebook Free?".

Chapter 2: The Market System and the Circular Flow contains three new Consider This pieces—on Bitcoin mining, the Korean peninsula at night, and flood insurance subsidies—as well as a new Last Word about the economic collapse of Venezuela.

Chapter 3: Demand, Supply, and Market Equilibrium includes a new Consider This on market equilibrium as well as a new Global Perspective on the price of a loaf of bread in various countries.

Chapter 4: Market Failures Caused by Externalities and Asymmetric Information is a new chapter that features substantial new content, including a Consider This on congestion pricing, a Global Perspective on pollution abatement, a Key Graph on externalities, and a Last Word on how markets for pollution credits overcome information asymmetries between polluting firms and the government.

Chapter 5: Public Goods, Public Choice, and Government Failure is another new chapter that also features substantial new content, including innovative material on quadratic voting and a Last Word discussing the ineffectiveness of corporate relocation subsidies.

Chapter 6: An Introduction to Macroeconomics has a new Last Word on the behavioral economics of sticky prices as well as a new Key Graph on the effects of demand shocks under fixed and flexible prices.

Chapter 7: Measuring Domestic Output and National Income benefits from extensive data updates, a heavily revised introductory section on GDP accounting and a new Last Word on the difficulties that the digital economy has created for national income and product accounting. We also summarize the recent accounting revisions under which the Bureau of Economic Analysis defines private domestic investment to include expenditures on R&D and money spent on the creation of new works of art, music, writing, film, and software.

Chapter 8: Economic Growth contains extensive data updates, a more intuitive explanation of network effects, a more concise discussion of catch-up growth, a new Last Word on the growth-boosting effects of the surges in female labor force participation and educational attainment that have taken place over the last few decades.

Chapter 9: Business Cycles, Unemployment, and Inflation benefits from a streamlined presentation, several data updates, a more intuitive presentation of Okun's Law, and a new Last Word on the shortage of skilled workers ten years after the Great Recession ended.

Chapter 10: Basic Macroeconomic Relationships features data updates, a new Key Graph on the multiplier process, and a streamlined presentation.

Chapter 11: The Aggregate Expenditures Model contains a handful of data updates but is otherwise unchanged save for an additional Quick Review and some minor wording improvements.

Chapter 12: Aggregate Demand and Aggregate Supply contains a new Global Perspective on the size of various countries' GDP gaps, a new Key Graph on the effect of a negative demand shock when the price level is inflexible, and a decrease in page count thanks to the elimination of the section on downward price rigidity (which was made redundant by the new Ch 26 Last Word on the behavioral economics of sticky prices).

Chapter 13: Fiscal Policy, Deficits, and Debt incorporates several data updates, an additional Quick Review, and a new Key Graph on expansionary fiscal policy when the price level is downwardly inflexible.

Chapter 14: Money, Banking, and Financial Institutions is significantly more concise thanks to a shortened discussion of securitization, a streamlined history of the financial crisis, and the elimination of the section on the structure of the post-crisis financial services industry.

Chapter 15: Money Creation includes a shorter and more intuitive discussion of the monetary multiplier as well as a new Global Perspective on required reserve ratios.

Chapter 16: Interest Rates and Monetary Policy features a more intuitive explanation of repos and reverse repos plus a totally new presentation of monetary policy that utilizes the Chicago Fed's "bullseye chart" to explain the Fed's dual mandate, the usefulness and design of monetary policy rules, and why the Fed should be concerned about its management of inflationary expectations.

Chapter 17: Financial Economics contains several new examples, updated data, and edits throughout for simplicity and clarity.

Chapter 18: Extending the Analysis of Aggregate Supply delivers a streamlined presentation of supply-side economics as well as significant edits for clarity and concision, especially with regard to the analytical transition from the short-run Phillips curve to the long-run Phillips curve.

Chapter 19: Current Issues in Macro Theory and Policy includes a clarified explanation of the monetarist view, a heavy rewrite of the rational expectations section, and a new Global Perspective that reports on the target rates of inflation set by various national and regional central banks.

Chapter 20: International Trade contains extensive data updates, a streamlined presentation of the arguments in favor of protectionism, a new Key Graph on the economic effects of tariffs and import quotas, and an updated and consolidated discussion of multilateral trade pacts, including the USMCA revisions to NAFTA.

Chapter 21: The Balance of Payments, Exchange Rates, and Trade Deficits offers significantly streamlined coverage of fixed exchange rates, extensive data updates, and various edits for concision and clarity.

Chapter 22: The Economics of Developing Countries includes new examples, data updates, and a new Consider This about the fraction of the world's population living in extreme poverty falling from 36 percent in 1990 to just 10 percent in 2015.

Acknowledgments

We give special thanks to Peggy Dalton, and Peter Staples for their hard work updating the questions and problems in *Connect,* as well as the material they created for the additional Connect Problems.

Thank you Jody Lotz for sedulously copy editing the Connect end-of-chapter material and many thanks to Laura Maghoney for her expert revisions of the SmartBook content and help with data updates.

Thanks to the dedicated instructors who accuracy-checked the end-of-chapter content, test banks, and Instructor's Manuals: Per Norander, Ribhi Daoud, Gretchen Mester, Erwin Erhardt, Susan Bell, Stephanie Campbell, and Xavier Whiticare.

We offer our gratitude to Laureen Cantwell for her research assistance and we thank William Walstad and Tom Barbiero (the coauthor of our Canadian edition) for their helpful ideas and insights.

We are greatly indebted to an all-star group of professionals at McGraw-Hill—in particular Adam Huenecke, Anke Weekes, Harvey Yep, Chrissy Kouvelis, Kelly Pekelder, Bobby Pearson, and Terri Schiesl—for their publishing and marketing expertise.

The 22nd edition has also greatly benefited from a number of perceptive faculty reviews. The reviewers, listed in the next section, were a rich source of suggestions for this revision. To each of you, and to any others we may have inadvertently overlooked, thank you for your considerable help in improving *Economics*.

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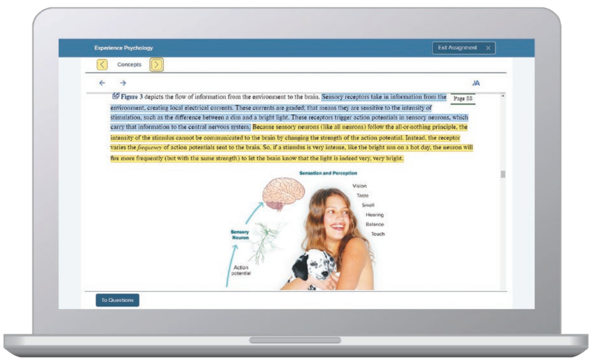

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BRIEF CONTENTS

CONTENTS

PART 1

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CHAPTER 1

Limits, Alternatives, and Choices

>> LEARNING OBJECTIVES

LO1.1 Define economics and the features of the economic perspective.

LO1.2 Describe the role of economic theory in economics.

LO1.3 Distinguish microeconomics from macroeconomics and positive economics from normative economics.

LO1.4 Explain the individual's economizing problem and illustrate trade-offs, opportunity costs, and attainable combinations with budget lines.

LO1.5 List the categories of scarce resources and explain society's economizing problem.

LO1.6 Apply production possibilities analysis.

LO1.7 Explain how economic growth and international trade increase consumption possibilities.

LO1.8 (Appendix) Understand graphs, curves, and slopes as they relate to economics.

People's wants are numerous and varied. Biologically, people need only air, water, food, clothing, and shelter. But in modern societies people also desire goods and services that provide a more comfortable or affluent standard of living. We want bottled water, soft drinks, and fruit juices, not just water from the creek. We want salads, burgers, and pizzas, not just berries and nuts. We also want flat-panel TVs, Internet service, education, national defense, smartphones, health care, and much more.

Fortunately, society possesses productive resources, such as labor and managerial talent, tools and machinery, and land and mineral deposits. These resources, employed in the economic system (or simply the economy), help us produce goods and services that satisfy many of our economic wants. But in reality our economic wants far exceed the productive capacity of our scarce (limited) resources. We are forced to make choices. This unyielding truth underlies the definition of **economics** as the social science concerned with how individuals, institutions, and society make optimal (best) choices under conditions of scarcity.

economics The social science concerned with how individuals, institutions, and society make optimal (best) choices under conditions of scarcity.

The Economic Perspective

>> **LO1.1** Define economics and the features of the economic perspective.

Economists view things from a unique perspective. This **economic perspective** has several critical and closely interrelated features.

Scarcity and Choice

The economic resources needed to make goods and services are in limited supply. This **scarcity** restricts options and demands choices. Because we "can't have it all," we must decide what we will have and what we must forgo.

At the core of economics is the idea that "there is no free lunch." You may be treated to lunch, making it "free" from your perspective, but someone bears a cost (as in the nearby story about Facebook). Scarce inputs involved in creating the lunch include land, equipment, and farm labor. Because society could have used these resources to produce other things, it sacrifices those other goods and services in making the lunch available. Economists call such sacrifices **opportunity costs:** To obtain more of one thing, society sacrifices the opportunity of getting the next best thing that could have been created with those resources.

Purposeful Behavior

Economics assumes that human behavior reflects "rational self-interest." Individuals and institutions look for and pursue opportunities to increase their **utility**—the pleasure, happiness, or satisfaction obtained from consuming a good or service. They allocate their time, energy, and money to maximize their satisfaction. Because they weigh costs and benefits, their economic decisions are "purposeful" or "rational," not "random" or "chaotic."

"Purposeful behavior" does not assume that people and institutions are immune from faulty logic and therefore are perfect decision makers. They sometimes make mistakes. Nor does it mean that people's decisions are unaffected by emotion or the decisions of those around them. Indeed, economists acknowledge that people are sometimes impulsive or irrational. "Purposeful behavior" simply means that people make decisions with some desired outcome in mind.

Rational self-interest is not the same as selfishness. On the contrary, increasing one's own wage, rent, interest, or profit normally requires identifying and satisfying somebody else's wants! Also, people make personal sacrifices for others. They contribute time and money to charities because they derive pleasure from doing so. Parents help pay for their children's education for the same reason. These self-interested, but unselfish, acts help maximize the givers' satisfaction as much as any personal purchase of goods or services.

Marginal Analysis: Comparing Benefits and Costs

The economic perspective focuses largely on **marginal analysis**—comparisons of marginal benefits and marginal costs, usually for decision making. To economists, "marginal" means "extra," "additional," or "a change in." Most choices or decisions involve changes in the existing state of affairs.

economic perspective A viewpoint that envisions individuals and institutions making rational decisions by comparing the marginal benefits and marginal costs associated with their actions.

scarcity The limits placed on the amounts and types of goods and services available for consumption as the result of there being only limited economic resources from which to produce output; the fundamental economic constraint that creates opportunity costs and that necessitates the use of marginal analysis (cost-benefit analysis) to make optimal choices.

opportunity cost The amount of other products that must be forgone or sacrificed to produce a unit of a product.

utility The want-satisfying power of a good or service; the satisfaction or pleasure a consumer obtains from the consumption of a good or service (or from the consumption of a collection of goods and services).

CONSIDER THIS . . .

Is Facebook Free?

Facebook spends over $20 billion every year updating its platform, running server farms, and paying its employees. It also gives away its product for free to more than 2 billion users. Has Facebook figured out a way to overcome scarcity?

No, it hasn't. Scarcity is permanent. But Facebook *has* figured out a way to more than cover its costs without charging its users a penny. Facebook's trick is to charge advertisers instead. They pay Facebook nearly $40 billion per year to boost content and target ads to specific individuals.

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Lesson One: If you are consuming a good or service and not paying for it, the cost is being borne by someone else.

Lesson Two: Companies don't usually give freebies to be nice; they do it as part of their business model. Facebook grants users free access to its platform to make sure that it has as many "eyeballs" as possible to sell to advertisers.