



17

# Microeconomics

McConnell  
Brue



Relevant economic statistics, selected years, 1947-1982

	1947	1949	1951	1953	1955	1957	1959	1961	1963
1 Sales by manufacturers (billions of dollars)*	—	—	—	265.9	278.4	320.0	338.0	356.4	412.7
2 Profits by manufacturers (billions of dollars)*	—	—	—	24.4	28.6	28.2	29.7	27.5	34.9
3 After-tax manufacturing profits per dollar of sales (cents)*	6.7	6.4	4.9	4.3	5.4	4.8	4.8	4.3	4.7
4 Index of business sector productivity (1992 = 100)	32.2	34.5	38.5	41.0	43.6	45.0	48.0	50.6	55.0
5 Annual change in business sector productivity (%)	—	2.3	3.2	3.6	4.1	3.2	3.8	3.5	3.9
6 Nonagricultural employees in goods-producing industries (millions)	—	—	—	—	—	—	19.2	18.6	19.4
7 Nonagricultural employees in service-producing industries (millions)	—	—	—	—	—	—	34.2	35.5	37.4
8 Compensation of employees (billions of dollars)	130.1	141.9	181.4	210.2	225.7	257.5	281.0	305.3	345.2
9 Average weekly hours in private nonagricultural industries**	—	—	—	—	—	—	40.3	39.9	40.6
10 Average hourly earnings in private nonagricultural industries (dollars)	—	—	—	—	—	—	—	—	—
11 Average weekly earnings in private nonagricultural industries (dollars)	—	—	—	—	—	—	—	—	—
12 Federal minimum wage rate (dollars per hour)	.75	.75	.75	.75	.75	1.00	1.00	1.15	1.25
13 Prime interest rate (%)	1.63	2.00	2.56	3.17	3.16	4.20	4.48	4.50	4.50
14 Ten-year Treasury bond interest rate (%)	—	—	—	2.85	2.82	3.65	4.33	3.88	4.00
15 Net farm income (billions of dollars)	15.4	12.8	15.9	13.0	11.3	11.1	10.7	12.1	11.8
16 Index of prices received by farmers (1990-1992 = 100)	—	—	—	—	—	—	—	—	—
17 Index of prices paid by farmers (1990-1992 = 100)	—	—	—	—	—	—	—	—	—
18 Persons below poverty level (millions)	—	—	—	—	—	—	39.5	39.6	36.4
19 Poverty rate (% of population)	—	—	—	—	—	—	22.4	21.9	19.5
20 Gini ratios for household income distribution (range = 0-1)	—	—	—	—	—	—	—	—	—
21 U. S. goods exports (billions of dollars)	16.1	12.2	14.2	12.4	14.4	19.6	16.5	20.1	22.3
22 U.S. goods imports (billions of dollars)	6.0	6.9	11.2	11.0	11.5	13.3	15.3	14.5	17.0
23 Trade balance on current account (billions of dollars)	9.0	0.9	0.9	-1.3	0.4	4.8	-1.3	3.8	4.4
24 Industry R&D expenditures (billions of dollars)	—	—	—	3.6	4.5	7.3	9.2	10.3	12.2
25 Price of crude oil (U.S. average, dollar per barrel)	2.16	2.77	2.77	2.92	2.93	3.14	3.00	2.85	2.91

\*Revised definition for this series beginning in 1973.

\*\*Includes overtime.

UPT OF THE ASIA FOUNDATION  
NOT FOR RE-SALE

NG CỦA QUỸ CHÂU Á  
ĐƯỢC BÁN LẠI



1965	1967	1969	1971	1973	1975	1977	1978	1979	1980	1981	1982
492.2	575.4	694.6	751.1	1,017.2	1,065.2	1,328.1	1,496.4	1,741.8	1,912.8	2,144.7	2,039.4
46.5	47.8	58.1	52.9	81.4	79.9	115.1	132.5	154.2	145.8	158.6	108.2
5.7	5.0	4.8	4.1	4.7	4.6	5.3	5.4	5.7	4.8	4.7	3.5
58.8	62.5	65.0	69.0	73.4	74.8	78.5	79.3	79.3	79.2	80.7	80.1
3.5	2.2	0.5	4.1	3.0	3.5	1.7	1.1	0.0	-0.2	2.1	-0.8
20.6	21.9	22.9	21.6	23.4	21.3	23.0	24.2	25.0	24.3	24.1	22.6
40.3	44.0	47.6	49.7	53.5	55.8	59.6	62.7	64.9	66.3	67.2	67.1
399.5	475.1	577.6	658.9	811.2	949.1	1,180.5	1,366.1	1,500.8	1,651.8	1,825.8	1,925.8
41.2	40.6	40.6	39.9	40.7	39.5	40.3	40.4	40.2	39.7	39.8	38.9
2.63	2.85	3.22	3.63	4.14	4.73	5.44	5.87	6.33	6.84	7.43	7.86
101.52	108.02	120.75	135.58	152.77	170.28	195.30	210.15	225.35	240.77	261.54	272.74
1.25	1.40	1.60	1.60	1.60	2.10	2.30	2.65	2.90	3.10	3.35	3.35
4.54	5.61	7.96	5.72	8.03	7.86	6.83	9.06	12.67	15.27	18.87	14.86
4.28	5.07	6.67	6.16	6.84	7.99	7.42	8.41	9.44	11.46	13.91	13.00
12.9	12.3	14.3	15.0	34.4	25.5	19.9	25.2	27.4	16.1	26.9	23.8
—	—	—	—	—	73	73	83	94	98	100	94
—	—	—	—	—	47	53	58	66	75	82	86
33.2	27.8	24.1	25.6	23.0	25.9	24.7	24.5	26.1	29.3	31.8	34.4
17.3	14.2	12.1	12.5	11.1	12.3	11.6	11.4	11.7	13.0	14.0	15.0
—	0.399	0.391	0.396	0.397	0.397	0.402	0.402	0.404	0.403	0.406	0.412
26.5	30.1	36.4	43.3	71.4	107.1	120.8	142.1	184.4	224.3	237.0	211.2
21.5	26.9	35.8	45.6	70.5	98.2	151.9	176.0	212.0	249.7	265.1	247.6
5.4	2.6	0.4	-1.4	7.1	18.1	-14.3	-15.1	-0.3	2.3	5.0	-5.5
13.8	16.0	17.8	17.8	20.7	23.5	28.9	32.2	37.1	43.2	43.2	57.2
3.01	3.12	3.32	3.60	4.75	12.21	14.40	14.95	25.10	37.42	35.75	31.83

(Continued in back of book)



Seventeenth Edition

# Microeconomics

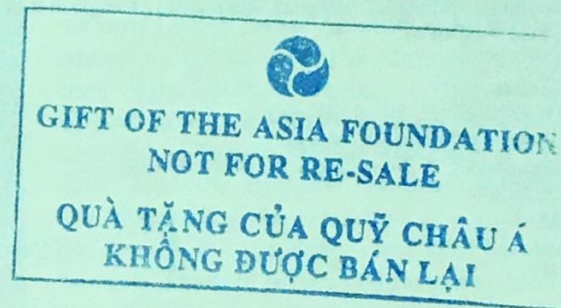
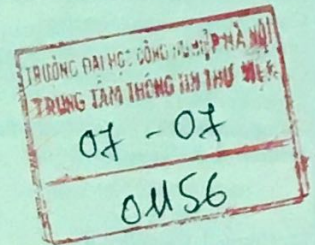
Principles, Problems, and Policies

Campbell R. McConnell

*University of Nebraska*

Stanley L. Brue

*Pacific Lutheran University*



**McGraw-Hill  
Irwin**

Boston Burr Ridge, IL Dubuque, IA Madison, WI New York San Francisco St. Louis  
Bangkok Bogotá Caracas Kuala Lumpur Lisbon London Madrid Mexico City  
Milan Montreal New Delhi Santiago Seoul Singapore Sydney Taipei Toronto



To **Mem** and to **Terri** and **Craig**



**MICROECONOMICS: PRINCIPLES, PROBLEMS, AND POLICIES**

Published by McGraw-Hill/Irwin, a business unit of The McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY, 10020. Copyright © 2008 by The McGraw-Hill Companies, Inc. All rights reserved. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written consent of The McGraw-Hill Companies, Inc., including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning. Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

2 3 4 5 6 7 8 9 0 DOW/DOW 0 9 8 7

ISBN 978-0-07-327309-9

MHID 0-07-327309-0

Editorial director: *Brent Gordon*

Executive editor: *Douglas Reiner*

Developmental editor II: *Rebecca Hicks*

Media producer: *Jennifer Wilson*

Lead project manager: *Lori Koettters*

Lead production supervisor: *Michael R. McCormick*

Director of design BR: *Keith J. McPherson*

Photo research coordinator: *Lori Kramer*

Photo researcher: *Keri Johnson*

Lead media project manager: *Becky Szura*

Cover design: *Sayles Graphics*

Interior design: *Maureen McCutcheon/Kay Fulton*

Cover image: *Gettyimages Paul Harris Photographer*

Typeface: *10/12 Jansen*

Compositor: *GTS – New Delhi, India Campus*

Printer: *R. R. Donnelley*

**Library of Congress Cataloging-in-Publication Data**

McConnell, Campbell R.

Microeconomics : principles, problems, and policies / Campbell R. McConnell,

Stanley L. Brue. -- 17th ed.

p. cm.

Includes index.

ISBN-13: 978-0-07-327309-9 (alk. paper)

ISBN-10: 0-07-327309-0 (alk. paper)

1. Microeconomics. I. Brue, Stanley L., 1945- II. Title.

HB172.M3925 2008

338.5--dc22

2006029034



## About the Authors

**Campbell R. McConnell** earned his Ph.D. from 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 is also coauthor of *Contemporary Labor Economics*, seventh edition, and *Essentials of Economics*, first edition (both The McGraw-Hill Companies), and has edited readers for the principles and labor economics courses. He is a recipient of both the University of Nebraska Distinguished Teaching Award and the James A. Lake Academic Freedom Award and is past 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. His primary areas of interest are labor economics and economic education. He has an extensive collection of jazz recordings and enjoys reading jazz history.

**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 a professor at Pacific Lutheran University, where he has been 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*, seventh edition, *Essentials of Economics*, first edition (both The McGraw-Hill Companies), and *The Evolution of Economic Thought*, seventh edition (South-Western). For relaxation, he enjoys international travel, attending sporting events, and skiing with family and friends.



## List of Key Graphs

1.2	The Production Possibilities Curve	12
2.2	The Circular Flow Diagram	39
3.6	Equilibrium Price and Quantity	54
7.1	Total and Marginal Utility	127
8.2	The Law of Diminishing Returns	149
8.5	The Relationship of the Marginal-Cost Curve to the Average-Total-Cost and Average-Variable-Cost Curves	154
8.8	The Long-Run Average-Total-Cost Curve: Unlimited Number of Plant Sizes	157
9.3	Short-Run Profit Maximization for a Purely Competitive Firm	173
9.6	The $P = MC$ Rule and the Competitive Firm's Short-Run Supply Curve	176
9.12	Long-Run Equilibrium: A Competitive Firm and Market	183
10.4	Profit Maximization by a Pure Monopolist	196
11.1	A Monopolistically Competitive Firm: Short Run and Long Run	213
11.4	The Kinked-Demand Curve	222
14.3	Labor Supply and Labor Demand in (a) a Purely Competitive Labor Market and (b) a Single Competitive Firm	275
23.2	Trading Possibility Lines and the Gains from Trade	446
24.1	The Market for Foreign Currency (Pounds)	468



# Preface

## Fundamental Objectives

We have three main goals for *Microeconomics*:

- Help the beginning student master the principles essential for understanding the economizing problem, specific economic issues, and the policy alternatives.
- Help the student understand and apply the economic perspective and reason accurately and objectively about economic matters.
- Promote a lasting student interest in economics and the economy.

## What's New and Improved?

One of the benefits of writing a successful text is the opportunity to revise—to delete the outdated and install the new, to rewrite misleading or ambiguous statements, to introduce more relevant illustrations, to improve the organizational structure, and to enhance the learning aids. A chapter-by-chapter list of changes is available at our Web site, [www.mcconnell17.com](http://www.mcconnell17.com). The more significant changes include the following.

## Chapter-Level Learning Objectives

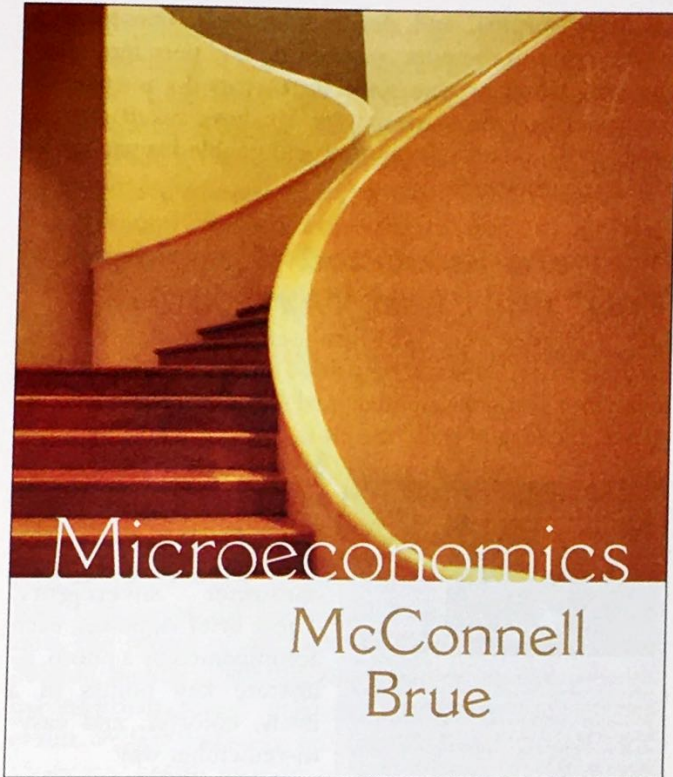
Several learning objectives have been included on the first page of each chapter. After reading a chapter, students should have mastered these core concepts. Questions in Test Banks I and II are organized according to these learning objectives, as are the narrated PowerPoint presentations.

## Worked Problems

We continue to integrate the book and our Web site with in-text Web buttons that direct readers to Web site content. Specifically, we have added a third Web button consisting of a set of 50 worked problems.

Written by Norris Peterson of Pacific Lutheran University, these pieces consist of side-by-side computational questions and the computational procedures used to derive the answers. In essence, they extend the textbook's explanations involving computations—for example, of the unemployment rate, the inflation rate, per-unit production costs, economic profit, and more. From a student perspective, they provide “cookbook” help for problem solving.

This new content joins two carryover Web buttons from the prior edition. “Interactive



Welcome to the seventeenth edition of *Microeconomics*, the micro portion of *Economics*, the nation's best-selling economics textbook. An estimated 13 million students worldwide have now used this book. *Economics* has been adapted into Australian and Canadian editions and translated into Italian, Russian, Chinese, French, Spanish, Portuguese, and other languages. We are pleased that *Economics* continues to meet the market test: nearly one out of four U.S. students in principles courses used the sixteenth edition.

## A Note about the Cover

The seventeenth edition cover includes a photograph of a staircase in the Musée des Beaux-Arts in Nancy, France. The photo is a metaphor for the step-by-step approach that we use to present basic economic principles. It also represents the simplicity, beauty, and power of basic economic models. Our goal is to entice the student to walk up the staircase. The floors above contain hundreds of years of accumulated economic knowledge, a portion of which we have captured for you here.







Graphs" (developed under the supervision of Norris Peterson) depict more than 30 major graphs and instruct students to shift the curves, observe the outcomes, and derive relevant generalizations. "Origins of the Idea" are brief histories (written by Randy Grant of Linfield College) of 70 major ideas identified in the book. Students are interested in learning about the economists who first developed ideas such as opportunity costs, equilibrium price, the multiplier, comparative advantage, and elasticity.

## New Internet Chapter

A new Internet chapter is available for free use at our Web site, [www.mcconnell17.com](http://www.mcconnell17.com). "Natural Resource and Energy Economics" (Chapter 15Web) covers topics such as the optimal rate of extraction, resource substitution, resource sustainability, oil prices, and alternative energy sources. For an outline of this chapter, see page 307 of this book.

The new Internet chapter was written by Sean Masaki Flynn. Sean is an important new member of the McConnell and Brue author team. He did his undergraduate work at USC, obtained his Ph.D. from the University of California-Berkeley (2002), and teaches at Vassar College. He is the author of the best-selling *Economics for Dummies*. We are very excited to have Sean on the authorship team, since he shares our desire to present economics in a way that is understandable to all.

The Web chapter has the same design, color, and features as regular book chapters, is readable in Adobe Acrobat format, and can be printed if desired. It is supported by the *Study Guide*, *Test Banks*, and other supplements to the book.

## Consolidated Chapter

With overwhelming support of reviewers, we have consolidated the first two chapters of the prior edition into a single chapter, "Limits, Alternatives, and Choices" (Chapter 1). This new chapter quickly and directly moves the student into the subject matter of economics, demonstrating its methodology. This consolidation has the side benefit of reducing Part 1 (the common chapters in *Economics*, *Macroeconomics*, and *Microeconomics*) from six chapters to five.

## Consumer Surplus, Producer Surplus, and Deadweight Loss Analysis

Our previous chapter on elasticity is now "Extensions of Demand and Supply Analysis" (Chapter 6). Along with elasticity, this chapter introduces consumer surplus,

producer surplus, and deadweight loss. These topics appear again in the pure competition and pure monopoly chapters. Knowing that some instructors do not want to cover deadweight loss analysis, we have taken care to present the ideas in a way that will enable instructors to skip these insertions.

## New and Relocated "Consider This" and "Last Word" Boxes

Our "Consider This" boxes are used to provide analogies, examples, or stories that help drive home central economic ideas in a student-oriented, real-world manner. For instance, the idea of trade secrets is described with the story

of "cat gut" and violin strings, while McDonald's "McHits" and "McMisses" demonstrate the idea of consumer sovereignty. These brief vignettes, each accompanied by a photo, illustrate key points in a lively, colorful, and easy-to-remember way.

New "Consider This" boxes include such disparate topics as fast-food lines (Chapter 1), the economics of war (Chapter 1), "buying American" (Chapter 2), ticket scalping (Chapter 3), salsa and coffee beans (Chapter 3), unprincipled agents (Chapter 4), a CPA and a house painter (Chapter 5), waste-to-oil conversion

**CONSIDER THIS . . .**

**Unprincipled Agents**  
In the 1990s many corporations addressed the principal-agent problem by providing a substantial part of executive pay either as shares of the firm's stock or as stock options. Stock options are contracts that allow executives or other key employees to buy shares of their employers' stock at fixed, lower prices when the stock prices rise. The intent was to align the interest of the executives and other key employees more closely with those of the broader corporate owners. By pursuing high profits and share prices, the executives would enhance their own wealth as well as that of all the stockholders.

This solution to the principal-agent problem had an unexpected negative side effect. It prompted a few unscrupulous executives to inflate their firm's share prices by hiding costs, overstating revenues, engaging in deceptive transactions, and, in general, exaggerating profits. These executives then sold large quantities of their inflated stock, making quick personal fortunes. In some cases, independent outside auditing firms turned out to be not so independent, because they held valuable consulting contracts with the firms being audited.

When the stock-market bubble of the late 1990s burst, many instances of business manipulations and fraudulent accounting were exposed. Several executives of large U.S. firms were indicted and a few large firms collapsed, among them Enron (energy trading), WorldCom (communications), and Arthur Andersen (accounting and business consulting). General stockholders of those firms were left holding severely depressed or even worthless stock.

In 2002 Congress strengthened the laws and penalties against executive misconduct. Also, corporations have improved their accounting and auditing procedures. But seemingly endless revelations of executive wrongdoings make clear that the principal-agent problem is not an easy problem to solve.

**Last Word**

**A Legal Market for Human Organs?**

A legal market might eliminate the present shortage of human organs for transplant. But there are many serious objections to it. Selling human body parts into commoditized form for purchase and sale.

It has become increasingly commonplace in medicine to transplant kidneys, lungs, livers, eye corneas, pancreases, and hearts from deceased individuals to those whose organs have failed or are failing. But organs have failed or are failing. But organs and many of their patients face a growing problem: There are shortages of donated organs available for transplant. Not everyone who needs a transplant can get one. In 2005 there were 89,000 Americans on the waiting list for transplants. Indeed, an inadequate supply of donated organs causes an estimated 4000 deaths in the United States each year.

**Why Shortages?** Scarcity is the result of shortages of desired goods in market economies. What is different about organs for transplant? One difference is that no legal market exists for human organs. To understand this situation, observe the demand curve  $D_1$  and supply curve  $S_1$  in the accompanying figure. The downward slope of the demand curve tells us that if there were a market for human organs, the quantity of organs demanded would be greater at lower prices than at higher prices. Vertical supply curve  $S_1$  represents the fixed quantity of human organs now donated via consent before death. Because the price of these donated organs is in effect zero, quantity demanded  $Q_1$  exceeds quantity supplied  $Q_1$ . The shortage of  $Q_1 - Q_1$  is removed through a waiting list of those in medical need of transplants. Many people die while still on the waiting list.

**Use of a Market.** A market for human organs would increase the incentive to donate organs. Such a market might work like this: An individual might specify in a legal document that he or she is willing to sell one or more usable human organs upon death or near-death. The person could specify where the money from the sale would go, for example, to family, a church, an educational institution, or a charity. Firms would then compete to purchase the organs.



methods (Chapter 15Web), art for art's sake (Chapter 16), and the hedging of risk in agriculture (Chapter 19).

Our "Last Word" pieces are lengthier applications and case studies located toward the end of each chapter. In this edition, we included photos to pique student interest. New and relocated Last Words include those on pitfalls to sound economic reasoning (Chapter 1), a market for human organs (Chapter 3), the long-run problem of financing Social Security (Chapter 4), efficiency gains from entry (Chapter 9), the effects of economic growth of the environment (Chapter 15Web), and mandatory health insurance (Chapter 21).

## Contemporary Discussions and Examples

The seventeenth edition refers to and discusses many current topics. Examples include the economics of the war in Iraq, China's rapid growth rate, the productivity acceleration, the recent profit paths of Wal-Mart and General Motors, rapidly expanding and disappearing U.S. jobs, rising oil prices, recent antitrust actions, farm subsidy programs, welfare caseloads, prescription drug coverage under Medicare, health savings accounts (HSAs), immigration impacts, large U.S. trade deficits, offshoring of American jobs, and many more.

## Distinguishing Features

**Comprehensive Explanations at an Appropriate Level** *Microeconomics* is comprehensive, analytical, and challenging yet fully accessible to a wide range of students. The thoroughness and accessibility enable instructors to select topics for special classroom emphasis with confidence that students can read and comprehend other independently assigned material in the book. Where needed, an extra sentence of explanation is provided. Brevity at the expense of clarity is false economy.

**Fundamentals of the Market System** Many economies throughout the world are making difficult transitions from planning to markets. Our detailed description of the institutions and operation of the market system in Chapter 2 is even more relevant than before. We pay particular attention to property rights, entrepreneurship, freedom of enterprise and choice, competition, and the role of profits because these concepts are often misunderstood by beginning students.

**Early and Full Integration of International Economics** We give the principles and institutions of the global economy early treatment. Chapter 5 examines the growth of world trade and its major participants, specialization and comparative advantage, the foreign exchange market, tariffs and subsidies, and various trade agreements. This strong introduction to international economics permits "globalization" of later discussions in both the macro and the micro chapters. Then, we delve into the more difficult, graphical analysis of international trade and finance in Chapters 23 and 24.

**Early and Extensive Treatment of Government** Government is an integral component of modern capitalism. This book introduces the economic functions of government early and accords them systematic treatment in Chapter 4. Chapter 16 examines government and market failure in further detail, and Chapter 17 looks at salient facets of public choice theory and taxation. Part 5 of the text includes issue- and policy-oriented chapters.

**Stress on the Theory of the Firm and Technological Advance** We have given much attention to microeconomics in general and to the theory of the firm in particular, for two reasons. First, the concepts of microeconomics are difficult for most beginning students; abbreviated expositions usually compound these difficulties by raising more questions than they answer. Second, we wanted to couple analysis of the various market structures with a discussion of the impact of each market arrangement on price, output levels, resource allocation, and the rate of technological advance. Our Chapter 12 on the microeconomics of technology is unique to principles books.

**Focus on Economic Issues** For many students, the chapters on antitrust, agriculture, income inequality, health care, and labor issues are where the action is centered. We guide that action along logical lines through the application of appropriate analytical tools. In this part, we favor inclusiveness; instructors can effectively choose two or three chapters from this group.

**Integrated Text and Web Site** *Microeconomics* and its Web site are highly integrated through in-text Web buttons, Web-based end-of-chapter questions, bonus Web chapter, multiple-choice self-tests at the Web site, online newspaper articles, math notes, and other features. Our Web site is part and parcel of our student learning package, customized to the book.