

MICROECONOMICS



Fourth Edition

David N. Hyman

MICROECONOMICS



Fourth Edition

David N. Hyman
North Carolina State University

IRWIN

Chicago • Bogotá • Boston • Buenos Aires • Caracas
London • Madrid • Mexico City • Sydney • Toronto

The Wall Street Journal is a trademark of Dow Jones & Company, Inc.

© Richard D. Irwin, a Times Mirror Higher Education Group, Inc. company, 1989, 1992, 1994, and 1997

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Irwin Book Team

Publisher: *Michael W. Junior*

Senior sponsoring editor: *Gary Nelson*

Development editor: *Deirdre Greene*

Editorial assistant: *Tracey Klein Douglas*

Marketing manager: *Katie Rose*

Senior project supervisor: *Rebecca Dodson*

Senior production supervisor: *Laurie Sander*

Designer: *Crispin Prebys*

Coordinator, Graphics and Desktop Services: *Keri Johnson*

Director, Prepress Purchasing: *Kimberly Meriwether David*

Compositor: *Interactive Composition Corporation*

Typeface: *10/12 Times Roman*

Printer: *Von Hoffmann Press, Inc.*



Times Mirror

Higher Education Group

Library of Congress Cataloging-in-Publication Data

Hyman, David N.

Economics / David N. Hyman. —4th ed.

p. cm.

Includes index.

ISBN 0-256-16175-5

ISBN 0-256-22215-0 (*Wall Street Journal* ed.)

1. Economics. I. Title.

HB171.5.H96 1996

330—dc20

96-3746

Printed in the United States of America

1 2 3 4 5 6 7 8 9 0 VH 3 2 1 0 9 8 7 6

THE IRWIN SERIES IN ECONOMICS

Appleyard and Field
International Economics

Baily and Friedman
**Macroeconomics, Financial
Markets, and the International
Sector**

Barron and Lynch
Economics
Third Edition

Baye/Beil
**Managerial Economics and
Business Strategy**

Blair
Urban and Regional Economics

Bornstein
**Comparative Economic Systems:
Models and Cases**
Seventh Edition

Brown and Moore
**Readings, Issues, and Problems in
Public Finance**
Third Edition

Colander
Economics

Colander
Microeconomics

Colander
Macroeconomics

Denzau
**Microeconomic Analysis: Markets
& Dynamics**

Hyman
Economics
Fourth Edition

Hyman
Microeconomics
Fourth Edition

Hyman
Macroeconomics
Fourth Edition

Hyman
**Modern Microeconomics: Analysis
and Applications**
Third Edition

Katz and Rosen
Microeconomics
Second Edition

Lehmann
**Real World Economic
Applications: The Wall Street
Journal Workbook**
Third Edition

Lindert
International Economics
Ninth Edition

Maurice and Phillips
**Economic Analysis: Theory and
Application**
Sixth Edition

Maurice, Thomas, and Smithson
**Managerial Economics: Applied
Microeconomics for Decision
Making**
Fourth Edition

Nadler and Hansen
**Microcomputer Macroeconomics
with IBM Disk**

OfSullivan
Urban Economics
Second Edition

O'Sullivan
Essential of Urban Economics

Peterson
Principles of Economics: Micro
Eighth Edition

Peterson
Principles of Economics: Macro
Eighth Edition

Prager
**Applied Microeconomics: An
Intermediate Approach**

Rima
Development of Economic Analysis
Fifth Edition

Roger and Daniel
**Principles of Economics Software
Simulation**

Rosen
Public Finance
Third Edition

Schwarz and Van Dyken
**Manager: Managerial Economics
Software**

Seo
**Managerial Economics: Text, Short
Cases**
Seventh Edition

Sharp, Register, and Leftwich
Economics of Social Issues
Eleventh Edition

Shepherd
Public Policies toward Business
Eighth Edition

Shugart
The Organization of Industry

Slavin
Economics
Third Edition

Slavin
Microeconomics
Third Edition

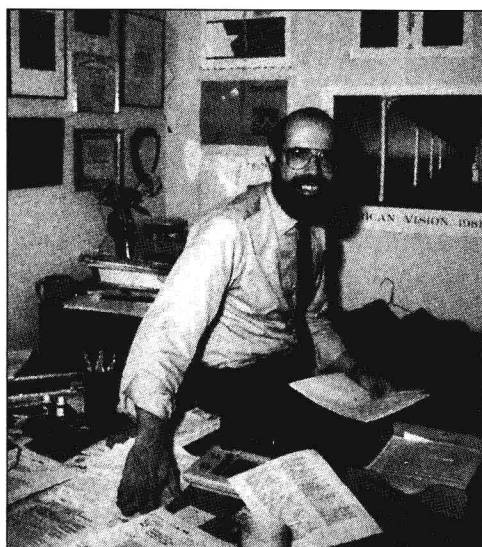
Slavin
Macroeconomics
Third Edition

Streifford
Economic Perspective

Walton and Wykoff
Understanding Economics Today
Fourth Edition

About the Author

David N. Hyman is Professor of Economics at North Carolina State University, where he has taught since receiving his Ph.D. in economics from Princeton University in 1969. In addition to being the author of *Economics*, Dr. Hyman is the author of widely used texts on public finance and microeconomics and is one of the most experienced textbook authors in the field of



economics. Professor Hyman has taught principles of economics to large numbers of students of the past 28 years and has been the recipient of several awards for outstanding teaching. His research on economic issues has been published in respected academic journals.

Professor Hyman's broad range of professional experience outside academia gives him the breadth of knowledge required to write a comprehensive and relevant text. He was a Senior Fulbright Research Scholar in Italy in 1980 and held a CNR (National Research Council of Italy) Fellowship from 1976 to 1977 while doing research at the University of Turin in Italy. He has had considerable government experience in Washington, D.C., where he has worked as a budget analyst and has served on the staffs of the Office of the U.S. Comptroller of the Currency of the Treasury Department and the Board of Governors of the Federal Reserve System. In 1988 he was a consultant to President Reagan's Council of Economic Advisers. During this time he authored Chapter 2, "Fiscal Policy and Economic Expansion" of the *Economic Report of the President* (1989). In 1989 he was senior staff economist on President Bush's Council of Economic Advisers.

Professor Hyman is also a professional fine art photographer whose works are in the permanent collect of the Corcoran Gallery of Art in Washington, D.C. His photographs have been exhibited in many galleries and museums and have been published in art photography books and on the covers of several novels. For recreation, he enjoys the flute and working in his garden.

Preface

Economics is a vital component of any student's education because an understanding of economic principles is essential for success in the modern world. The rapid evolution of global interdependence among both highly industrialized and less developed economies affects students' lives. My goal in writing this book has been to communicate the relevance of economics to everyday life by blending examples and applications with economic theory in each chapter. In this edition I've revised to update information and to consolidate some of the chapters. You will find many new relevant and interesting applications to current events and emerging issues. There is more analysis of both the role of government in our lives and the latest innovations in business management. In this edition every chapter has a set off analysis of a global or international issue to help you understand how the world you live in is changing.

Using the Text

This text has been designed with your learning in mind. Besides its careful and detailed unfolding of basic economic principles, the book contains a number of useful learning aids that will help improve your comprehension of the material. The introduction to each chapter is followed by a **Concept Preview** that outlines the key points you'll be exploring and that you should understand when you've finished the chapter. At the end of each major chapter section is a **Concept Check**: a series of questions that will help you test your grasp of what you've just read. Stop and respond to these questions to make sure you've acquired the background you'll need to go on to the next section. The Concept Checks will also be useful when you're reviewing material for a test. You'll notice, too, the **Concept Symbols** in the margins. These point the way to the discussions that explain chapter objectives. You'll see them again in the end-of-chapter questions—if you need to reread to answer question, the concept symbols will help you quickly find the appropriate section(s).

Throughout each chapter, **Key Terms** are highlighted in color type and defined when introduced. These terms are defined in the margins and are also listed at the end of the chapter. The marginal definitions will be a valuable aid in building your economic vocabulary. In the back of the book you'll find all of the text's key terms in a comprehensive **Glossary**.

Learning economic theory is first-rate mental exercise—but how do we translate theory into application? In addition to the many relevant real-world examples provided throughout the text, each chapter also contains one or more boxed analyses that enlarge on and illustrate an important concept discussed in the text. Entitled **Principles in Practice**, each of these commentaries offers you a close-up view of an economic theory in action, from supply and demand to the pros and cons of trade protectionism.

Some of the commentaries have a business focus and are subtitled either **Managerial Methods** or **Business Briefs**. These business-oriented features concentrate on decision making within business and on the competitive environment in which business firms operate. Those that carry the subtitle **Policy Perspective** apply economic principles to policy issues.

The Global Economy highlights important international trade or global economic issues to help you appreciate the increased international dimensions of the subject of economics. A global economy feature appears in every chapter of the text and often provides you with an opportunity to see how the theory discussed in each chapter can be applied to better understand a key international or global issue.

Inside Information highlights the sources and uses of economic information. To effectively operate in the modern world requires information. This feature helps you learn *where* to go to get economic information. You will learn the important sources of federal government data and of business-related data. This information will be useful to you for term papers and will help you later on as you move into a career as a guide to information that you will need to perform your job.

You'll encounter throughout the text a series of profiles of leading economists entitled **Economic Thinkers**, ranging from Adam Smith to Karl Marx. These profiles provide information about the subjects' major contributions to economic thought and also offer some intriguing personal sidelights. Additionally, to give you an idea of the diversity of careers available to students who choose to major in economics, we present a series of **Career Profiles** of professionals with a degree in economics.

When you read the **Prologue** to the text you will begin to see how economic issues affect you. Integrated into the text you will also find interviews with distinguished economists, including some who have been awarded Nobel Prizes, who have studied these issues in depth. As you read these **Insights on Issues** you will have a better idea about how economic policies affect you and the economy. Your instructor might use some of these interviews as a basis of class discussion.

The **Summary** at the end of each chapter enumerates the important concepts you've just learned; the **Concept Review** gives you one more check of your understanding of the chapter objectives; and the **Problems and Applications** give you the opportunity to demonstrate your understanding of these concepts in both expository and graphic form. Like the Concept Checks, these end-of-chapter features are helpful review aids.

The Study Guide

An excellent Study Guide prepared by Donald P. Maxwell of Central State University, Edmond, Oklahoma, accompanies the text. Each chapter contains learning objectives, a fill-in summary

of chapter content, vocabulary exercises using key terms, and a series of activities—work with graphs, fill-in charts and tables, completion exercises, and more. These exercises are followed up by a mini-exam to check your learning and to help you prepare for taking your exams. Many of the chapters include a news item with questions to help you analyze how economic principles work in the world. Time invested with this invaluable resource will yield maximum returns for you.

Some Tips

1. Talk to Your Instructor Your instructor is an experienced, knowledgeable professional who wants to serve as a resource for you and your classmates. If you consider this text a blueprint for the study of the relationships among economic principles, your instructor can provide the guidance you need to comprehend and connect the details of the blueprint and can serve as your interpreter as you learn the language of economics. In class and after class, ask your instructor questions. Challenge points you disagree with; request clarification of those you don't fully understand. Ask your instructor to recommend additional readings; seek his or her advice about career paths.

2. Keep Up with Current Events People in business read a variety of publications; among them are *The Wall Street Journal*, *The Economist*, *The New York Times*, *U.S. News & World Report*, *Business Week*, and *Fortune*. Alone and in combination, these resources contain a wealth of information you'll find pertinent to your study of economics. All of these publications are available free at your library, and you should plan to become a regular reader. Their analyses, editorials, and features will bring into sharp focus the material you'll be studying, from the economics of pollution control to the cost of agricultural subsidies and government assistance to the poor. In the pages of these publications you'll be introduced to new industries and growing companies (your future job market!); to talented young entrepreneurs and corporate leaders with decades of experience; to high government officials and foreign heads of state. Reading these publications regularly gives you the chance to expand your horizons beyond the classroom and to see how the economic principles you're learning work in the real world.

3. Talk to Your Classmates Outside of Class Discuss what you're learning and how it fits in with your curriculum and your ambitions. Their interests, family backgrounds, job experience, and career plans can be a productive resource for you. Classmates may be related to or acquainted with someone who's succeeding in a career to which you're attracted—and you may be helpful to them in the same way. Consider forming a study group for review and discussion of the material you're covering, or enhance your personal interaction skills by organizing a team to prepare a class project.

4. Consider Economics as a Major Talk to or read about people who have degrees in economics. You'll find them in literally dozens of fields. The Career Profiles in the book show you just a few of the choices that can be made, but you'll find economics majors are succeeding as entrepreneurs, diplomats, bankers, journalists, cabinet heads, corporate leaders, consultants, judges, and politicians.

Because economics is such a wide-ranging discipline, it's an excellent adjunct to many programs of study. If your major is business administration, political science, or international relations, a minor in economics will provide valuable insights into the contemporary social environment. If you elect to concentrate in marketing or finance, you can profitably pursue economics as a second major or a minor. A pairing of economics and journalism can help you lay the groundwork for a successful career in business communications. An undergraduate degree in economics also serves as an excellent foundation for graduate work in a variety of fields: business, law, public administration, and health, to name a few.

If you decide to become a professional economist, you almost certainly will need a graduate degree and will be pursuing career opportunities in business, teaching, research, or government. The National Association of Business Economists publishes a helpful booklet, *Careers in Business Economics*,¹ that describes the responsibilities of economists in government, insurance, banking, consulting, investments, industry, and communications. The booklet also outlines the education requirements for business economists and provides information on salaries.

5. Apply Economics in Your Life Above all, recognize that your "laboratory" for economics is no less than the world you live in. In this wider environment are valuable examples that will reinforce the economics you'll be learning from this text and from your class discussion. Be in tune with these applications wherever you find them—newspapers, magazines, television and radio; or from discussions with teachers, friends, and family; or from the everyday experiences of your own life.

I think you'll find that in all your endeavors, you'll be well served by the discipline of the economic way of reasoning. It's hard to think of a situation in which you wouldn't benefit from thinking logically and weighing alternatives. Good luck as you begin your exciting adventure.

David N. Hyman

¹Copies of this booklet may be obtained from the National Association of Business Economists, 28349 Chagrin Blvd., Suite 201, Cleveland, OH 44122. Single copies are free; quantity discounts are available.

Acknowledgments

It is with the utmost appreciation that I thank all those who contributed time and thought to this book. I regard them as partners in the development of this text.

I am indebted to the following reviewers of the manuscript and supplements for the first edition: Curt L. Anderson, University of Minnesota; Lloyd Dwayne Barney, Boise State University; Philip F. Bartholomew, University of Michigan; Gil Becker, Indiana University/Purdue University; Charles R. Britton, University of Arkansas; Rick L. Chaney, St. Louis University; Howard Chernick, Hunter College; Mary E. Cookingham, Michigan State University; David Denslow, University of Florida; Loraine Donaldson, Georgia State University; Frances Durbin, University of Delaware; Gary A. Dymski, University of Southern California; Patricia J. Euzent, University of Central Florida; Donald H. Farness, Oregon State University; Irwin Feller, Pennsylvania State University; Charles M. Hill, Prairie State College; Arnold Hite, The Citadel; Dennis L. Hoffman, Arizona State University; Janet Hunt, University of Georgia; Walter L. Johnson, University of Missouri; Michael Klein, Clark University; Leonard P. Lardaro, University of Rhode Island; Robert L. Lawson, Ball State University; Charles Leathers, University of Alabama; Jane H. Lillydahl, University of Colorado; Don Maxwell, University of Central Oklahoma; Herbert C. Milikien, American River College; David Molina, North Texas State University; Margaret D. Moore, Franklin University; Michael Nieswiadomy, North Texas State University; James Price, Syracuse University; Victor H. Rieck, Miami-Dade Community College; Teresa Riley, Youngstown State University; Jaime M. Rodriguez, Edmonds Community College; Raymond Sauer, University of New Mexico; Davinder Singh, California State University; Richard N. Spivack, Bryant College; Frederick E. Tank, University of Toledo; Abigail Taubin, University of Maryland; Robert W. Thomas, Iowa State University; John Trapani, University of Texas; Abdul M. Turay, Mississippi State University; John Vahaly, University of Louisville; Mark Vaughn, Washington University; Percy O. Vera, Sinclair Community College; William V. Weber, Illinois State University; James N. Wetzel, Virginia Commonwealth University; Arthur Wright, University of Connecticut; Darrel Young, University of Texas.

Thanks of those users who filled out an initial questionnaire: Mary H. Acker, Iona College; Steven G. Allen, North Carolina State University; Irma Alonso, Florida International University; Robert T. Averitt, Smith College; Arthur A. Bayer, Babson College; Herb Beadles, Otero Junior College; Andrew Buck Temple University; Yunhui Chen, State University of New York; Hope Corman, Rider College; Greg Delemeester, Marietta College; James L. Dietz, California State University, Fullerton; Peter Dorman, Smith College; Raymond P. H. Fishe, University of Miami; Mary Galvan, St. Xavier College; Kathie S. Gilbert, Mississippi State University; Nathan Eric Hampton, St. Cloud State University; Robert Hendricks, St. Cloud State University;

Arthur Janssen, Emporia State University; Hong-Bum Kim, State University of New York, Albany; Moonsik Lee, State University of New York, Albany; Robert Lee, Babson College; John Mark Lindvall, Southern California College; Neal B. Long, Stetson University; Kevin B. Lowe, Shorter College; Daniel J. Lynch, St. Xavier College; Robert C. McMahon, University of Southern Maine; Bret McMurrin, Chaffey College; John Neal, Lake-Sumter Community College; M. Reza Ramazani, St. Michael's College; Tom Riddell, Smith College; James M. Rigterink, Polk Community College; Rose Rubin, University of North Texas; Dean Schiffman, University of California, San Diego; Samuel A. Shrager, Lehman College of the City of New York; Alice Simon, Ohio Wesleyan University; J. Sondey, University of Idaho; Paul S. Taperek, South Florida Community College; H. Tuckman, Memphis State University; Katsumi Ukemori, State University of New York, Albany; R. Vaitheswaran, Coe College; Robert Von der Ohe, Rockford College; Jin Wang, Eureka College; Darwin Wassink, University of Wisconsin, Eau Claire; Dale Wheaton, University of Maine; James A. Xander, University of Central Florida.

I wish to thank the following reviewers for their detailed comments: Robert Averitt, Smith College; Colette Barr, Santa Barbara City College; Willie Belton, Georgia Institute of Technology; Ron Brandolini, Valencia Community College; Kathleen Brook, New Mexico State University; Gabriella Bucci, DePaul University; Paul Comolli, University of Kansas; James L. Dietz, California State University, Fullerton; Michael J. Gootzeit, Memphis State University; Simon Hakim, Temple University; Nathan Eric Hampton, St. Cloud State University; Thor Hertsgaard, North Dakota State University; Beth Ingram, University of Iowa; Ebrahim Karbassi-oon, Eastern Illinois University; Arthur Kartman, San Diego State University; Gary Lynch, Indiana University; Bruce McCrea, Lansing Community College; David Molina, University of North Texas; Ali Moshtagh, Eastern Illinois University; Richard Moss, Ricks College; William O'Dea, State University of New York; John Pharr, Cedar Valley College; James Rigterink, Polk Community College; Gary Rourke, Lakewood Community College; Alan G. Sleeman, Western Washington University; John Sondey, University of Idaho; Christopher R. Thomas, University of South Florida; Percy O. Vera, Sinclair Community College; Laura Wolff, Southern Illinois University.

The following focus group participants at the 1990 ASSA Convention provided excellent suggestions: James L. Dietz, California State University; Michael J. Gootzeit, Memphis State University; William P. O'Dea, State University of New York; Calvin D. Siebert, University of Iowa; Laura Wolff, Southern Illinois University.

I also express my gratitude to a panel of specialists who examined our real-world applications: Terence Alexander (international), University of California; Lewis Cain (historical), Loyola

University; Phil Friedman (macroeconomic), Bentley College; Wendell McCulloch (international business), California State University; Charles E. Staley (historical), State University of New York; Michael K. Taussig (environmental), Rutgers.

The planning for the fourth edition included a questionnaire that was sent to instructors across the United States and in other countries where this text is used. The response rate was remarkable and provided the information I needed to fine-tune this edition. Although it is impossible to list all of you, I do want to express my appreciation for both your time and your insights.

I would also like to thank John Bockino, Suffolk Community College; Andrew Foshee; Marcia Jones, Georgia State University; and Mik Kuplik, University of Montana for their thoughtful comments regarding the fourth edition.

The staff of Richard D. Irwin were helpful throughout the revision and production process for this book. Gary Nelson, sponsoring editor, provided many useful suggestions for this new edition. Deirdre Greene supervised the developmental process of

the new edition; Becky Dodson efficiently managed the editing process and Laurie Sander the production process. Crispin Prebys provided an eye-pleasing and functional design for the book. I am grateful to all those at Irwin for the many hours of work and thought that they put into the process of producing the polished text.

My colleagues at North Carolina State University were always available to help me sound out my ideas and supply information on their areas of specialization. I also wish to heartily thank my students at North Carolina State University who always keep me on my toes and provide the inspiration for developing many of the new ideas and applications that appear in this new edition.

Finally, I must thank my wife Linda for her support during the period I have worked on this project. She deserves a medal for her patience with a writer who has spent so many hours working on this new edition.

D. N. H.

Contents

In Brief

Prologue 1

PART ONE

Introduction to Economics 7

- 1 Economics: What It's All About 9
- 2 Production Possibilities and Opportunity Cost 34

PART TWO

Supply and Demand: Markets and the Price System 55

- 3 Market Transactions: Basic Supply and Demand Analysis 57
- 4 Using Supply and Demand Analysis 81
- 5 The Price System and the Mixed Economy 101

PART THREE

Product Markets: Microeconomic Analysis 129

- 6 Elasticity of Demand and Supply 131
- 7 Consumer Choice and the Theory of Demand 155
- 8 The Business Firm: A Prologue to the Theory of Market Supply 185
- 9 Production and Cost 198
- 10 The Profit-Maximizing Competitive Firm and Market Supply 228
- 11 Long-Run Supply in Competitive Markets 251
- 12 Monopoly 272
- 13 Monopolistic Competition and Oligopoly 297

PART FOUR

Government as a Regulator in Markets and as a Provider of Services: Microeconomic Analysis 323

- 14 Antitrust Policy and Regulation of Markets 325
- 15 Market Failure, Externalities, and the Environment 338
- 16 Public Goods, Public Choices, and Government Activity 364

PART FIVE

Input Markets and Incomes: Microeconomic Analysis 385

- 17 Input Markets and the Demand for Resources 387
- 18 Labor Markets 408
- 19 Interest, Rents, and Profit 431
- 20 The Distribution of Income and the Economics of Poverty 449

PART SIX

International Economic Issues 465

- 21 International Trade 467
- 22 The Economics of Foreign Exchange and the Balance of International Trade 490

EPILOGUE

Economic Development and Transition in the 21st Century 513

Glossary 525

Photo Credits 537

Index 539

Contents

Prologue 1

PART ONE

Introduction to Economics 7

1 Economics: What It's All About 9

- Some Basic Definitions 10
- The Basic Task of an Economy: Grappling with Scarcity 10
 - Opportunity Cost* 10
 - Three Basic Economic Decisions* 11
- Microeconomics versus Macroeconomics 11
 - Microeconomics* 11
 - Macroeconomics* 12
- Positive Analysis versus Normative Analysis 12
 - Positive Analysis* 13
 - Normative Analysis* 13
 - Principles in Practice: Policy Perspective—The Economics of Drinking, Driving, and Highway Deaths* 13
 - Gains and Losses from Economic Policies* 14
 - The Global Economy: Protectionism versus Free International Trade* 14
- The Economic Way of Reasoning: Models and Marginal Analysis 16
 - Economic Models* 16
 - Economic Thinkers: Adam Smith* 18
- Rational Behavior 18
 - Marginal Analysis of Rational Behavior* 19
- Graphs: An Aid to Understanding Economics 22
- Summary 22
- Key Terms 22
- Concept Review 23
- Problems and Applications 23
- Inside Information: Statistical Abstract of the United States 23
- Chapter Supplement: Graphs 25

2 Production Possibilities and Opportunity Cost 34

- Resources, Technology, and Production Possibilities 35
 - Technology* 35
 - The Production Possibilities Curve* 36
 - The Law of Increasing Costs* 38
 - Generalizing the Concepts: Peace Dividends and a Cleaner Environment* 39
- Productive Efficiency 41
 - Principles in Practice: Managerial Methods—Coping with Scarcity in the U.S. Automobile Industry* 42
 - Division of Labor and Productive Efficiency* 42
- Economic Growth: Expanding Production Possibilities 43
 - Annual Growth in Available Resources* 43
 - Improved Quality of Inputs* 44
 - Improvements in Technology* 44
 - Corporate Downsizing and Production Possibilities* 45
 - Principles in Practice: Personal Budgeting and the Opportunity Cost of Choices* 46
- Production for the Present versus Production for the Future: A Basic Economic Choice 47
 - The Global Economy: The Gains from International Trade* 48
- Scarcity and Trade-Offs 50
 - Insights on Issues: Do People in the United States Save Enough of Their Income?* 51
- Summary 50
- Key Terms 52
- Concept Review 52
- Problems and Applications 52
- Inside Information: Economic Report of the President 53
- Career Profile: Sandra Day O'Connor 53

PART TWO

Supply and Demand: Markets and the Price System 55

3 Market Transactions: Basic Supply and Demand Analysis 57

- Markets: Purposes and Functions 58
- Demand 58

The Law of Demand and the Market Demand Curve	59
<i>Changes in Relative Price</i>	60
<i>Changes in Quantity Demanded</i>	61
<i>Changes in Demand</i>	61
Supply	64
The Law of Supply and the Market Supply Curve	64
<i>Changes in Quantity Supplied</i>	66
<i>Changes in Supply</i>	66
Market Equilibrium Price and Quantity	68
<i>Graphic Depiction of Market Equilibrium</i>	68
<i>Self-Equilibrating Markets</i>	69
<i>The Impact of Changes in Demand on Market Equilibrium</i>	70
<i>The Impact of Changes in Supply on Market Equilibrium</i>	72
Mastering the Art of Supply and Demand Analysis	73
<i>The Global Economy: The Dollar Has Its Price Too!</i>	74
<i>Principles in Practice: The Market for Medical Services</i>	76
Summary	76
<i>Principles in Practice: Business Brief—The Stock Market</i>	78
Key Terms	79
Concept Review	79
Problems and Applications	79

4 Using Supply and Demand Analysis 81

Prices, Scarcity, and Marketing Prospects	82
<i>Nonscarce Goods</i>	82
<i>How Demand and Supply Conditions Affect the Success of New Products</i>	83
Markets for Labor and Credit	84
<i>Labor Markets</i>	84
<i>Principles in Practice: Operation of Labor Markets in the United States</i>	87
<i>Credit Markets: The Demand for and Supply of Loanable Funds</i>	87
Price Ceilings: Using Supply and Demand Analysis to Forecast Their Effects in Markets	88
<i>Rent Control</i>	89
<i>Nonprice Rationing of Shortages Resulting from Price Ceilings</i>	90
<i>Principles in Practice: Policy Perspective—Rent Control in New York City</i>	92
Price Floors: Supply and Demand Analysis of Their Effects	91
<i>Minimum Wages</i>	92
<i>Agricultural Price Supports</i>	94

Price Controls: The Cost of Government Intervention	95
<i>The Global Economy: The Transition to Free Markets in the Former Communist Nations</i>	96
<i>Insights on Issues: How Will Changes Abroad, Especially the Movement Away from Communism Toward Free Markets in Eastern Europe and the Former Soviet Union, Affect the U.S. Economy?</i>	98
Summary	99
Key Terms	99
Concept Review	99
Problems and Applications	99

5 The Price System and the Mixed Economy 101

Capitalism and the Market Economy	102
<i>Specialization and Exchange</i>	102
<i>Principles in Practice: Property Rights, Transaction Costs, and Pricing</i>	103
<i>How Production Generates Income in the Market Economy: Circular Flow of Income and Expenditures</i>	104
The Price System: How It Works	106
<i>How the Price System Influences What Is Produced</i>	106
<i>Principles in Practice: The Entrepreneurial Spirit in American Capitalism</i>	108
<i>How the Price System Influences Production Methods</i>	108
<i>Who Gets the Goods and Services?</i>	110
<i>A Recap: The Price System in Motion</i>	110
Some Common Defects in the Price System	110
<i>Public Goods and Externalities</i>	110
<i>Externalities and Resource Use</i>	111
<i>Other Common Problems in a Market System</i>	113
The Modern Mixed and Open Economy	114
<i>Government and the Economy</i>	114
<i>The Global Economy: International Trade</i>	116
Shaping the Role of Government	117
<i>Categorizing Government-Provided Goods</i>	118
Principles of Taxation	119
<i>Tax Equity: Different Points of View</i>	119
<i>Insights on Issues: What Role Should Government Play in the Economy?</i>	120
<i>Tax Rates: Average and Marginal</i>	121
<i>Taxes and Efficiency</i>	122
Summary	123
Key Terms	124
Concept Review	124
Problems and Applications	124
Inside Information: Getting Information on Financial and Commodity Markets	125
Career Profile: Rhonda Williams	126

PART THREE

Product Markets: Microeconomic Analysis 129

6 Elasticity of Demand and Supply 131

Price Elasticity of Demand 132

How to Use Price Elasticity of Demand to Make Market Forecasts 132

Categorizing Price Elasticity of Demand as Elastic or Inelastic 133

Determinants of Price Elasticity of Demand 134

Calculating Price Elasticity of Demand from Two Points on a Demand Curve 134

How Price Elasticity Can Vary Along a Demand Curve 136

Perfectly Inelastic and Perfectly Elastic Demand Curves 138

Using Price Elasticity of Demand to Forecast Changes in Total Expenditure and Total Revenue When Prices Change 139

Total Expenditure and Total Revenue 139

Predicting Changes in Total Expenditure and Revenue in Response to Price Increases 140

Price Decreases, Total Expenditures, and Total Revenue 141

Other Demand Elasticity Measures 141

Principles in Practice: Managerial Methods—How to Maximize Revenue 142

Income Elasticity of Demand 143

Principles in Practice: Empirical Estimates of Demand Elasticities 144

Cross-Elasticity of Demand 144

Price Elasticity of Supply 146

Determinants of Price Elasticity of Supply 146

Perfectly Inelastic and Perfectly Elastic Supply 147

The Global Economy: Import Quotas 149

Tax Shifting 150

Full Shifting 150

Partial Shifting 152

Summary 153

Key Terms 153

Concept Review 153

Problems and Applications 153

7 Consumer Choice and the Theory of Demand 155

Utility and Consumer Equilibrium 156

Total Utility and Marginal Utility 156

Consumer Equilibrium for Purchases: The Equimarginal Principle 158

Placing Dollar Values on Utility: Total Benefit and Marginal Benefit 160

Purchasing a Good to Maximize the Net Benefit 161

Consumer Surplus 163

Using the Theory of Consumer Choice 164

Choosing Items on a Menu: How Prices Induce You to Choose a Lower-Valued Alternative over a Higher-Valued One 164

The Paradox of Value: Why Water Is Cheaper Than Diamonds 165

How Changes in Income Change the Dollar Value Consumers Place on Items of Given Utility 166

The Global Economy: How Changes in the Former Soviet Union Could Add a Coveted Delicacy to the Diet of the Common Consumer 168

Deriving Demand Curves 169

The Demand Curve for an Individual Consumer 169

Income and Substitution Effects of Price Changes 169

Principles in Practice: Using Marginal Analysis to Understand the Choice to Have Children 170

Deriving Market Demand Curves from Individual Demand Curves 172

Are There Exceptions to the Law of Demand? 173

Summary 174

Key Terms 175

Concept Review 175

Problems and Applications 175

Chapter Appendix: Indifference Curve Analysis 176

8 The Business Firm: A Prologue to the Theory of Market Supply 185

The Business Firm 186

Industries 186

Corporate versus Noncorporate Firms 186

The Corporate Form of Business 187

Pros and Cons of Corporate versus Noncorporate Business 188

Do the Pros Outweigh the Cons? 189

The Functions of Business Firms 189

Production of Goods and Services to Be Sold 189

Assignment of Tasks to Workers versus Contracting with Other Firms: Determining the Degree of Vertical Integration 189

Some Simplifications 190

The Global Economy: The Globalization of U.S. Business 191

Measuring Cost and Profit 192

Economic Cost versus Accounting Cost 192

Opportunity Costs versus Accounting Costs: An Example 193

<i>Principles in Practice: Total Quality Management</i>	194
<i>Normal Profit versus Economic Profit</i>	195
Summary	196
Key Terms	196
Concept Review	197
Problems and Applications	197

9 Production and Cost 198

Production Relationships	199
<i>The Period of Production</i>	199
Production in the Short Run: The Law of Diminishing Marginal Returns	199
<i>The Total Product Curve and the Marginal Product Curve</i>	200
<i>Average Product</i>	202
<i>The Relationship between Average and Marginal Products of a Variable Input</i>	202
<i>How Product Curves Illustrate the Law of Diminishing Marginal Returns</i>	202
<i>Reasons for Diminishing Marginal Returns</i>	203
Short-Run Cost Curves	203
<i>Variable Costs, Fixed Costs, and Total Cost</i>	203
<i>Principles in Practice: Managerial Methods—Measuring Fixed Costs</i>	204
<i>Input Substitution and Variable Cost: The Equimarginal Principle</i>	204
<i>Average Cost</i>	206
<i>The Relationship between the Total Cost Curve and the Total Product Curve</i>	207
<i>Deriving Average Cost Curves</i>	208
<i>Marginal Cost</i>	209
<i>A Recap: How the Shapes of Average and Marginal Cost Curves Reflect the Law of Diminishing Marginal Returns</i>	211
<i>The Global Economy: Globalization of the Auto Industry</i>	213
Long-Run Cost Curves	214
<i>Variation in Plant Size</i>	215
<i>Explaining the Shapes of Long-Run Average Cost Curves</i>	216
<i>Economies of Scale and the Size of the Firm</i>	218
Summary	218
Key Terms	219
Concept Review	219
Problems and Applications	219
Chapter Appendix: Isoquant Analysis	220

10 The Profit-Maximizing Competitive Firm and Market Supply 228

Profit, Price, and Output in the Short Run for a Competitive Firm	229
<i>Perfect Competition</i>	229

<i>Economic Thinkers: Friedrich von Hayek</i>	230
<i>Demand as Seen by a Competitive Firm</i>	230
<i>How Profit Varies as a Competitive Firm Increases Output</i>	231

Using Marginal Analysis to Choose the Profit-Maximizing Output: The Theory of Short-Run Supply 233

<i>Marginal Revenue, Marginal Cost, and Marginal Profit</i>	233
<i>Principles in Practice: Are Markets Competitive?</i>	234
<i>Profit Maximization: Choosing the Output</i>	236
<i>Profit per Unit versus Total Profit</i>	237
<i>How Maximum Possible Profit Depends on Market Price</i>	237
<i>Using Marginal Analysis to Choose Output When Market Price is below Minimum Possible Average Cost</i>	239
<i>The Decision to Shut Down in the Short Run</i>	242
<i>The Competitive Firm's Short-Run Supply Curve</i>	243
<i>Market Supply</i>	244

Using the Theory of Competitive Supply 245

<i>A Reduction in the Price of a Variable Input: How a Decrease in Materials Prices Affects Market Supply and Market Price</i>	245
<i>A Change in the Price of a Fixed Input: The Short-Run Impact of License Fees and Fixed Annual Subsidies</i>	246
<i>The Global Economy: How Improved Productivity Is Increasing Profits, Expanding Exports, and Creating Jobs for U.S. Workers</i>	248

Marginal Analysis: Key Insights and Conclusions 248

Summary	249
Key Terms	249
Concept Review	250
Problems and Applications	250

11 Long-Run Supply in Competitive Markets 251

Long-Run Competitive Equilibrium	252
<i>Moving toward Long-Run Equilibrium</i>	252
<i>Price Equals Minimum Possible Average Cost in Long-Run Equilibrium</i>	253
<i>Long-Run Impact of Changes in Demand</i>	254
Profit, Losses, and Long-Run Supply	256
<i>When Are Long-Run Supply Curves Upward Sloping?</i>	257
Applications of the Model	258
<i>Principles in Practice: Business Brief—Prices and Competition in Personal Computer and Home Electronics Industries</i>	258
<i>Improvements in Technology in a Competitive Industry</i>	259
<i>Taxing the Output of a Constant-Costs Competitive Industry</i>	260

Principles in Practice: Policy Perspective—How Limits to Entry Affect a Competitive Industry 263

Long-Run Competitive Equilibrium and Allocative Efficiency 263

Competitive Markets and Efficiency 265

The Global Economy: Economic Integration in Europe 267

Perfect Competition: From Abstraction to Reality 269

Summary 270

Key Terms 270

Concept Review 270

Problems and Applications 270

12 Monopoly 272

Pure Monopoly 273

The Global Economy: How a Global Organization Has Monopolized the Sale of Diamonds 273

How Monopoly Is Maintained: Barriers to Entry 274

Principles in Practice: Business Brief—Patents and Monopoly 275

The Demand for a Monopolist's Product 276

The Monopolist's Marginal Revenue 276

Profit Maximization by Monopoly Firms 278

Elasticity of Demand and Monopoly Pricing 281

Monopoly Supply 282

Evaluating Market Outcomes under Pure Monopoly 282

The Social Cost of Monopoly 283

Are There Any Benefits from Monopoly? 284

Regulation of Pricing: The Case of Natural Monopoly 285

Cost Curves and the Profit-Maximizing Output for a Natural Monopoly 285

The Problem: Marginal-Cost Pricing Results in Losses for a Natural Monopoly 286

A Solution: Average-Cost Pricing 286

Principles in Practice: Business Brief—The Future—More Competition in Power Generation 287

Government Regulation of Natural Monopolies in Practice 288

Price Discrimination 288

Principles in Practice: Managerial Methods—Why Do Electric Companies Want You to Use Less Electricity 289

Price Discrimination in the Sale of Personal Services 289

Block Pricing 291

Price Discrimination in Segmented Markets 291

Price Discrimination in Practice 292

Principles in Practice: Business Brief—Monopoly Pricing Methods—Two-Part Tariffs 294

Summary 294

Key Terms 295

Concept Review 295

Problems and Applications 295

13 Monopolistic Competition and Oligopoly 297

Imperfect Competition 298

Monopolistic Competition 298

Economic Thinkers: Joan Robinson 299

Market Outcomes under Monopolistic Competition 300

Demand and Profit Maximization under Monopolistic Competition 300

Long-Run Equilibrium under Monopolistic Competition 301

Losses in Efficiency under Monopolistic Competition 302

Advertising and Product Development in Monopolistically Competitive Markets 303

Principles in Practice: Business Brief—Branding as a Signal of Quality: Some Benefits of Monopolistic Competition 304

A Recap 305

Oligopoly 305

How Oligopolies Arise and Are Maintained 306

Oligopolistic Price Wars and Contestable Markets 306

Collusion and Cartels under Oligopoly: Organizing to Keep Prices High and to Prevent Price Wars 307

Forming a Cartel: Directions and Difficulties 307

Other Oligopoly Models 309

Principles in Practice: OPEC: A Cartel in Distress 310

The Global Economy: How Foreign Competition Has Changed the American Automobile Market 314

Market Outcomes under Imperfect Competition 316

Summary 316

Key Terms 317

Concept Review 317

Problems and Applications 317

Chapter Appendix: Oligopoly Strategies and the Theory of Games 318

PART FOUR

Government As A Regulator in Markets and As A Provider Of Services: Microeconomic Analysis 323

14 Antitrust Policy and Regulation of Markets 325

Antitrust Policy 326

Antitrust Laws 326

Use of Antitrust Policy to Control Price-Fixing 327

The Rule of Reason 327

Principles in Practice: Price-Fixing: College Tuition and Industrial Diamonds 328

<i>The Relevant Market</i>	328
<i>Are High Market Concentration and High Profit Synonymous with the Exercise of Monopoly Power?</i>	329
<i>Principles in Practice: Business Brief—The Courts and Business</i>	330
<i>Mergers, International Competition, and U.S. Antitrust Policy</i>	331
<i>Economic Thinkers: John Kenneth Galbraith</i>	332
Regulating Pricing and Entry in Markets Served by Competing Sellers	333
<i>The Regulatory Commissions</i>	333
The Trend toward Deregulation	333
<i>Deregulation, Then Reregulation: The Case of Cable TV</i>	334
<i>The Global Economy: Industrial Policy</i>	334
Government Regulation: Pro and Con	335
Summary	336
Key Terms	336
Concept Review	336
Problems and Applications	337

15 Market Failure, Externalities, and the Environment 338

Externalities: A Common Cause of Market Failure	339
<i>How Negative Externalities Prevent Exchange in Competitive Markets from Achieving Efficiency</i>	339
<i>How Positive Externalities Prevent Efficiency in Competitive Markets</i>	340
Coping with Externalities: Causes and Cures	342
<i>Property Rights Disputes</i>	342
<i>Internalizing Externalities</i>	342
<i>Using a Corrective Tax to Internalize a Negative Externality</i>	342
<i>Using a Corrective Subsidy to Internalize a Positive Externality</i>	342
<i>The Coase Theorem</i>	344
The Economics of Pollution	346
<i>Emissions versus Pollution</i>	346
<i>The Efficient Amount of Pollution Control</i>	347
<i>Estimating the Costs and Benefits of Pollution Control</i>	348
<i>Negative Externalities and Efficient Pollution Control</i>	349
Emissions Control Policies in Practice	349
<i>Emissions Charges</i>	349
<i>Regulation</i>	350
<i>Principles in Practice: Global Warming</i>	351
<i>Command-and-Control Regulation</i>	351
<i>Pollution Rights: Tradable Emissions Permits</i>	352
<i>Bubbles and Offsets</i>	353

<i>Principles in Practice: Trading the Right to Emit</i>	354
<i>Political Reality</i>	354
<i>The Global Economy: Global Environmental Issues</i>	355
The Economics of Exhaustible Resources	356
<i>Markets for Depletable Natural Resources</i>	356
<i>Principles in Practice: Are Natural Resources Becoming Scarcer?</i>	358
<i>Property Rights and Renewable Natural Resources</i>	358
Government Failure: How Politics Can Prevent Efficiency	359
Summary	360
Key Terms	361
Concept Review	361
Problems and Applications	361
<i>Insights on Issues: What Measures Should the United States Take to Improve Environmental Quality?</i>	363

16 Public Goods, Public Choices, and Government Activity 364

Public Goods and Their Provision by Governments	365
<i>Efficient Output of Pure Public Goods</i>	365
<i>The Free-Rider Problem</i>	367
<i>Public Goods versus Government-Provided Goods</i>	368
Public Choice and Majority Rule	368
<i>Voting</i>	368
<i>Political Equilibrium under Majority Rule</i>	370
<i>The Median Voter Rule</i>	371
<i>Market Outcomes versus Political Outcomes</i>	372
Special-Interest Groups	372
<i>Rent Seeking</i>	373
The Economics of Subsidies and Tax Breaks	373
<i>Direct Subsidies</i>	374
<i>Indirect Subsidies: Tax Credits and Tax Preferences</i>	375
<i>Hidden Subsidies</i>	377
Agricultural Subsidies and Price Supports	377
<i>Acreage Control Programs</i>	378
<i>What Does the Government Do with Surplus Agricultural Commodities?</i>	378
<i>Principles in Practice: Grains, Beans, and Oils</i>	379
<i>Target Prices and Direct Subsidies</i>	379
Impact of Subsidies to Industries: A Generalization and Conclusion	381
<i>The Global Economy: Agricultural Policy and International Trade</i>	382
Summary	382
Key Terms	383
Concept Review	384
Problems and Applications	384

PART FIVE

Input Markets and Incomes: Microeconomic Analysis 385

17 Input Markets and the Demand for Resources 387

- Input Markets and Prices 388
- Competitive Input Markets 388
 - Operation of Perfectly Competitive Input Markets* 389
 - Derived Demand* 389
- The Hiring Decision: Marginal Analysis 391
 - Weighing the Benefits and Costs of Additional Workers* 392
 - The Marginal Revenue Product Curve: A Firm's Demand Curve for an Input Hired in a Competitive Market* 393
 - What Can Cause a Firm's Input Demand to Change?* 394
 - Using More Than One Input for Profit Maximization* 395
 - Industry Demand for Labor* 395
- Market Demand for and Supply of Inputs and the Concept of Economic Rent 396
 - Market Demand for an Input* 396
 - Market Supply of an Input* 397
 - Market Equilibrium and Economic Rent* 397
- Key Facts about Competitive Input Markets 398
 - The Global Economy: Productivity, Competition, and Wages in Malaysia* 399
- Monopsony 400
 - Marginal Input Cost for Monopsony Firms* 400
 - Hiring Decisions in Monopsonistic Input Markets* 402
 - Principles in Practice: Monopsony Power and Athletes' Salaries* 404
- Summary 404
- Key Terms 406
- Concept Review 406
- Problems and Applications 406

18 Labor Markets 408

- Labor Supply 409
 - Equilibrium Allocation of Time to Work: Marginal Analysis* 409
 - Income and Substitution Effects of Wage Changes* 410
 - Backward-Bending Labor Supply Curves* 411
 - Market Supply of Labor Services* 412
 - Labor Productivity* 412
 - The Global Economy: Recent Trends in U.S. Immigration* 413
- Explaining Differences in Wages 414
 - Quality Differences in Labor Services* 414
 - Working Conditions and Compensating Wage Differentials* 415

- Nonpecuniary Job Benefits* 416
- Signaling, Screening, and Personnel Management 416
 - Principles in Practice: Wages and Salaries in the United States* 417
 - The Problem of Staffing* 417
 - Promoting Workers: The Internal Labor Market* 418
 - On-the-Job Training* 418
 - Monitoring Workers: The Principal-Agent Problem* 418
- The Economics of Labor Unions 419
 - Principles in Practice: Signals and Screens* 420
 - Labor Unions in the United States* 420
 - Organizational Problems* 421
 - Unions Shops and Labor Union Membership* 422
 - Union Control over the Labor Supply* 422
 - Collective Bargaining* 425
 - The Impact of Unions on Wages* 425
 - The Impact of Unions on Labor Productivity* 426
- Bilateral Monopoly 426
 - Bilateral Monopoly in Practice* 427
 - How a Labor Union Can Increase Both Wages and Employment When Dealing with a Monopsony Firm* 428
- Summary 428
- Key Terms 429
- Concept Review 429
- Problems and Applications 429

19 Interest, Rents, and Profit 431

- Capital, Investment, and the Interest Rate 432
 - Investment, Saving, and Capital Stock* 432
 - Economic Thinkers: Gary Becker* 433
 - How the Interest Rate Affects Investment Decisions* 433
 - The Investment Decision: Marginal Analysis* 434
- Present Value of a Stream of Future Annual Payments 435
 - Discounted Present Value* 435
 - Principles in Practice: Business Brief—Corporate Finance* 437
 - The Equilibrium Price of a Capital Asset* 438
- Supply of and Demand for Loanable Funds 438
 - Market Demand for Loanable Funds* 438
 - Market Supply of Savings* 439
 - Determining the Market Rate of Interest in Competitive Markets* 439
 - Investment Risk* 440