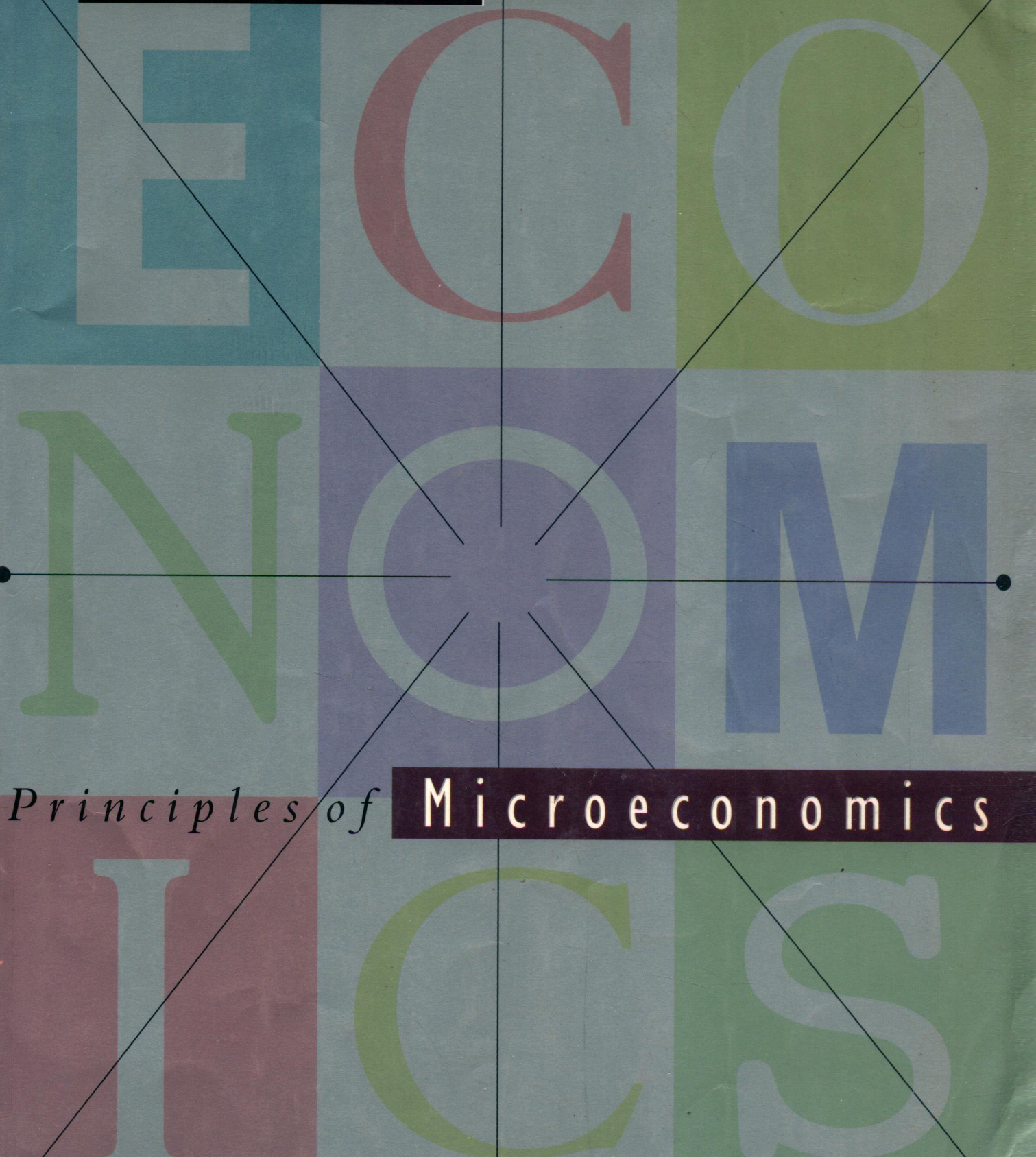


John B. Taylor



*Principles of* **Microeconomics**

# P RINCIPLES OF MICROECONOMICS

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**Stanford University**

**Houghton Mifflin Company**    **Boston**    **Toronto**  
Geneva, Illinois    Palo Alto    Princeton, New Jersey

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COVER DESIGN: Harold Burch, Harold Burch Design, NYC.

PHOTO CREDITS

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Printed in the U.S.A.

Student Edition ISBN: 0-395-66032-7

Exam Copy ISBN: 0-395-71686-1

23456789-VH-99 98 97 96 95

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

Taylor, John B.

Principles of microeconomics / John B. Taylor.

p. cm.

Includes index.

ISBN 0-395-66032-7

I. Economics. II. Title. III. Title: Principles of microeconomics.

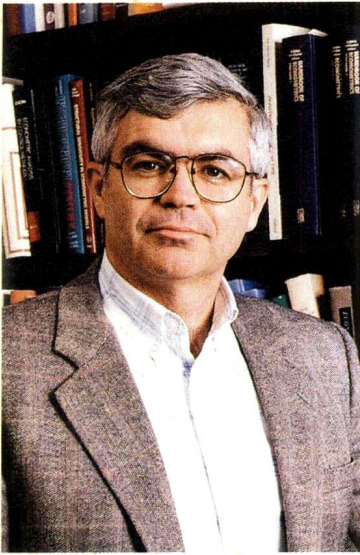
HB172.T39 1995

338.5—dc20

94-48758

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# **PRINCIPLES OF MICROECONOMICS**



### About the Author

John B. Taylor is the Mary and Robert Raymond Professor of Economics at Stanford University and the director of the Stanford Center for Economic Policy Research. He received the highest teacher rating for the elementary economics course ever recorded by a Stanford faculty member, and in 1992 was awarded the prestigious Hoagland Prize, which is presented annually to Stanford's most outstanding teacher of undergraduate students.

Professor Taylor's areas of specialty are economic policy, macroeconomics, and international finance, and he has made significant contributions in the areas of fiscal and monetary stabilization policy, the role of wages and prices in macroeconomic stability, rational expectations models, international coordination in monetary policy, and economic growth models. He has written over eighty research papers and several books on these subjects. His textbook in macroeconomics is an acknowledged best seller, used at over three hundred colleges and universities in the United States and other countries.

Taylor distinguished himself as an undergraduate at Princeton University before receiving his Ph.D. at Stanford University. His broad experience as a teacher has taken him to Columbia, Princeton, and Yale Universities.

In 1989 John Taylor was nominated and confirmed to serve as a member of the President's Council of Economic Advisers, a position he held until 1991. He was responsible for assembling the administration's economic forecasts, and, as part of his international responsibilities, he was a member of the U.S. delegation to the Uruguay Round and to the U.S.-Japan trade talks.

Professor Taylor currently lives in Stanford, California with his wife and two children.

# Preface

This book is about economics. It is meant to provide an introduction to this fascinating subject for students who may have had no prior exposure to it other than what they find all around them as everyday participants in the economy. Why did I write such a book? It was a labor of three loves.

*First*, I love to teach. To me, writing a textbook is a natural extension of teaching. This textbook gradually grew out of lectures I have regularly given over the years in introductory economics, one of the courses I most enjoy teaching. Many portions of the text—from noise pollution examples, to student experiments, to quotes from Adam Smith—are written versions of presentations or dramatizations I have used in my lectures. For example, Adam Smith usually visits my class during the lecture on the division of labor; at about the same point in this book, a short biography of Adam Smith appears.

*Second*, I love to do economic research, and writing a textbook is a natural extension of research—sharing with others new developments or simply putting old developments in a new light. There is a valuable tradition in American colleges and universities that faculty research and undergraduate teaching go hand and hand, each benefiting the other. It is a tradition that I support whole-heartedly by regularly teaching the introductory economics course while continuing to do economic research.

Largely because of economic research, the subject of economics has changed radically over the fifty years since Paul Samuelson wrote his standard-setting economics textbook. I have enjoyed researching, learning about, and finding good ways to teach these ideas at the introductory level.

*Third*, I love economic policy—the application of economics to government as well as to decision-making in business. The main purpose of economic textbooks—including the first one by Adam Smith—has been to show how economics can be used to improve government policy. My experience on the Council of Economic Advisers is reflected in the applications of economics to policy discussed in this text; even though the first person singular is not used, many of the examples in this book reflect my personal experiences—whether in international trade negotiations or debates about U.S. positions on antitrust policy.

## THE PLAN OF THE BOOK

Many reviewers of this text commented on the clear and accessible way it captures many of the new ideas in economics developed during the last fifty years. While it is gratifying to hear such reviews, let me explain in what ways I think this book is different.

### What Is New?

I have purposefully tried to make the book different only in ways that reviewers, the editors, and I view as valuable to the students and the teachers who use the book. In fact, I am a great admirer of what is old in economics, including the Marshallian supply and demand model, the Ricardian comparative advantage model, the Smithian stress on the growth of supply through the division of labor, the Keynes-Malthus stress on demand, and even the Marxian analysis of the great productive power of

capitalism. This and much more of the core of traditional economics is included in this book, expressed as clearly and as interestingly as I can. Moreover, I have kept to a traditional organizational format that does not require changes in course syllabi.

In my view, this book is new because it brings for the first time to introductory economics students—most of whom will never take another economics course—important ideas that have become part of the modern core of economics. If these ideas are developed intuitively while the solid core of traditional economics is maintained—as I have tried to do—then there is no longer any reason to withhold these interesting and influential ideas from the introductory course.

This approach means providing a full and intuitive explanation of why competitive markets are efficient (the first theorem of welfare economics) and the use of deadweight loss to measure the costs of inefficiency (basic welfare analysis), which underlies virtually all applications of microeconomics to public policy today. It also means explaining the informational efficiency of markets and showing how to assess when organizations are likely to be more efficient than markets.

Experimental economics is also being used to great advantage in research, education, and public policy; that exciting story should be told at the introductory level as well.

Without a basic understanding of these ideas, important public policy issues discussed in *Economic Report of the President*, the publications of the Congressional Budget Office or the International Monetary Fund, or even in newspapers are beyond one's grasp. The following brief summary of the book shows how the new and old ideas are woven together.

## A Brief Tour

The book is designed for a one-term course. I recognize that teachers use a great variety of sequences and syllabi, and I have therefore taken great pains to allow for alternative plans of coverage. International economic issues are considered throughout the text, and separate chapters on international economic policy build on economic principles

The basic workings of markets and the reasons they improve people's lives are the subjects of Part 1. Chapter 1 describes how economists observe and explain economic facts, and Chapter 2 outlines the basic unifying themes of economics: scarcity, choice, and the interaction of people. The role of prices, the inherent international aspect of economics, the importance of property rights and incentives, the difference between central planning and markets are some of the key ideas in these chapters. Chapters 3 and 4 cover the basic supply and demand model as it has been known for over one hundred years. I have endeavored to explain these basic ideas as fully and as clearly as I can, adding the extra sentence of clarification whenever it might help in understanding. The goal is to show how to *use* the supply and demand model and to learn to “think like an economist,” just as in the initial treatment of this model by Alfred Marshall.

A trio of chapters—5, 6, and 7—has the ultimate aim of explaining why competitive markets are efficient, perhaps the most important idea in economics. The parallel exposition of utility maximization (Chapter 5) and profit maximization (Chapter 6) culminates in a detailed description of why competitive markets are efficient (Chapter 7). The latest results from experimental economics have a dual role: to illustrate how well models work and to make the discussion of these important topics less abstract. This text is unique in providing a complete, self-contained analysis of competitive markets in these first seven chapters before going on to

### Part 1: Introduction to Economics and Its Foundations

develop more difficult concepts such as long-run versus short-run cost curves or imperfect competition. This approach enables the student to learn, appreciate, and use important concepts such as efficiency and deadweight loss early in the course.

A modern market economy is not static; rather it grows and changes over time as firms add new and better machines and as people add to their skills and training. Part 2 describes how firms and markets grow and change over time. This part also shows how economists model the behavior of firms that are not perfectly competitive, such as monopolies. The models of dynamic behavior and imperfect competition developed in this part of the book are used to explain the rise and fall of real world firms and industries. Part 2 of the book also delves into the special characteristics of labor markets.

Different countries have taken widely different approaches to the economy. The policy of some countries has been to directly intervene in virtually every economic decision; other countries have followed more hands-off policies. Part 3, therefore, is devoted to the role of government in the economy. After showing how the tools of economics can be applied to governments as well as to firms and consumers, the pros and cons of alternative approaches of government intervention are discussed. Tax policy, welfare reform, environmental policy, international trade policy, the regulation of industry, and the role of government in producing public goods are analyzed. International trade theory extends the principles of both competitive and imperfectly competitive markets, which are reviewed and applied in Chapter 18. International trade policy and international finance are explored in Chapters 19 and 20. The book concludes with an examination of economies in transition in Chapter 21.

**Part 2:**  
**Microeconomics over Time and Through Markets**

**Part 3:**  
**The Role of Government**

## PEDAGOGICAL ADVANTAGES

In my classroom experience, I have observed that students find the following pedagogical features of this book helpful in learning economics.

***Applications of economic models within the text.*** This feature emphasizes that learning *how to use* models in real world situations is as important as learning *about* models. Just to mention one example, the application of the supply and demand model to a recent drought in the U.S. peanut market is found in the text of Chapter 3.

***Motivating students to study economic models through puzzles to be explained.*** Most chapters begin with a description of real world phenomena; by the end of the chapter the theory is developed that explains the phenomena. Examples include: the rise and fall of the Zinfandel grape industry (Chapter 8); the decline in U.S. productivity growth in the mid-1970s (Chapter 11); and the recent increase in income inequality (Chapter 11).

***Use of new results from experimental economics*** to help explain key ideas in ways that are helpful even to those who do not do such experiments. Introductory descriptions of experimental economics appear in the text, with additional material provided in boxes. (Details on how to run experiments are provided in an optional Experimental Economics Lab Manual).

***Integrating new material in the context of substantive economic problems*** rather than in separate chapters. Just as game theory is introduced in the context of oligopoly, new material on implicit contracts, principal agent problems, asymmetric information, and transfer pricing is used to solve basic economic problems such as the



governance of corporations and the merger of firms. This approach demonstrates the relevance of the new ideas and keeps the text to a manageable size. To give instructors flexibility, this newer material is frequently placed near the end of chapters.

**Brief reviews at the end of each major section** (about four per chapter) summarize the key points in abbreviated form as the chapter evolves; these reviews are useful for preliminary skim reading as well as for review.

**Boxes to give both current-event and historical perspectives.** Many of the text's boxes (all written by the author of the text) explain how to decipher recent news stories about economic policy. Others examine the contributions of the great economists such as Alfred Marshall and John Maynard Keynes; the history of great ideas such as consumer surplus or the multiplier; and key historical events such as the development of the machine tool industry.

**Functional use of full color** to distinguish between curves and to show how the curves shift dynamically over time. Examples of the effective use of multiple colors are found in the discussion of increasing opportunity costs in Chapter 2 and the exposition of the long-run average total cost curves in Chapter 8.

**Complete captions and small conversation boxes in graphs.** There are approximately 240 figures. The captions and the small yellow-shaded conversation boxes, which show the steps in the derivation of graphs, make many of the figures completely self-contained. By sequentially numbering these conversation boxes, the dynamic nature of the curves is stressed.

**Use of photos and cartoons to illustrate abstract ideas.** Special care has gone into the search for and selection of photos to illustrate difficult economic ideas such as inelastic supply curves, diminishing returns, or the informational efficiency of markets versus organizations. Each text photo (many consisting of two or three parts) has a short title and caption to explain its relevance to the text discussion.

**Key term definitions** are placed in the margin, and a listing of the terms appears at the end of every chapter and appendix. There is also an alphabetized *glossary* at the end of the book.

**Questions for review** are found at the end of every chapter and appendix. These are tests of recall and require only short answers; they can be used for oral review or as a quick self-check.

**Problems**, an essential tool in learning economics, have been carefully selected and tested. An ample supply of these appear in every chapter and appendix. Some of these problems ask the reader to work out examples that are slightly different from the ones in the text; others require a more critical thinking approach. The most challenging ones are placed at the very end of each list.

## A COMPLETE PACKAGE OF TEACHING AND LEARNING AIDS

A highly effective teaching and learning package has been prepared to accompany the text. It provides a full range of support for instructors and students.

**Study Guide.** David Papell of the University of Houston and John Solow of the University of Iowa have prepared the study guide for the text. In my view, this study guide provides a wonderful learning opportunity that many students will value. Each chapter contains an overview, informal chapter reviews, and a section

called *Zeroing In*, which harnesses student intuition to explain the chapter's most important concepts. The study guide also provides ample means for practice in using the economic ideas and graphs introduced in each text chapter. There is a mix of question types, including many graph-based questions and problems as well as a twenty-question multiple-choice practice test. A section called *Working it Out* provides worked problems that take the student step by step through the analytical process needed to solve real-world applications of core concepts covered in the chapter. These are followed by practice problems that require students to use the same analytical tools. Detailed answers are provided for all review and practice questions.

In addition, the study guide includes end-of-part sections that emphasize the way economic concepts are woven together to explain large social and economic systems. Each end-of-part section includes a brief recap of the main concepts covered in the part, a quiz covering material from the entire part, and a section called *Looking Beyond the Exam: Using Economics Outside the Classroom*, which includes excerpts from newspapers and journals and from government documents such as the *Economic Report of the President* with questions that relate the examples to ideas in the text.

***The Houghton Mifflin Tutorial and Simulation Software.*** A flexible, interactive computerized tutorial is available for students to review basic concepts covered in the text. Students are directed back to the text for extra review of concepts they are having difficulty mastering, and a glossary and context-sensitive help are always available. The simulation component of the software extends the study of selected modules, allowing students to manipulate real-life data and make decisions based on a host of complex, interrelated factors.

***Test Bank.*** A reliable test bank is the most important resource for efficient and effective learning and teaching. A test bank to go along with the text has been prepared by Stuart Glosser of the University of Wisconsin, Whitewater, J. Byron Schlomach of Texas A & M, and myself. It contains more than 4,500 test questions—including multiple choice, true/false, short answer, and problems—many of which are based on graphs. The questions are coded for correct answer, question type, level of difficulty, and text topic. At the end of each test bank chapter is a set of problems that parallels the carefully selected end-of-chapter problems from the text. The test bank is available in both printed and computerized form.

***Computerized Test Program.*** A sophisticated and user-friendly program called ESA Test is available so that instructors can quickly create tests according to various selection criteria, including random selection. The program prints graphs as well as the text part of each question. Instructors can scramble the answer choices, edit questions, add their own questions to the pool, and customize their exams in various other ways. The program is available in DOS, Windows, and Mac versions.

***Instructor's Resource Manual.*** Prepared by Clifford B. Sowell of Berea College, William Stewart Mounts, Jr., of Mercer University, and myself, The Instructor's Resource Manual provides both first-time and experienced instructors with a variety of additional resources for use with the text. Each chapter contains a brief overview, teaching objectives, key terms from the text, a section that orients instructors to the text's unique approach, and a suggested lecture outline with teaching tips that provide additional examples not found in the text and hints for teaching more difficult material. Discussion topics and solutions to end-of-chapter text problems are also provided.

**Overhead Transparencies.** A set of full-color transparencies for all the numbered figures used to describe the economic models or theories in the text are available for those who are using the text. I usually use two overhead projectors in class so that more than one figure or table can be shown simultaneously.

**Electronic Lecture Manager.** This Windows-based software developed by Houghton Mifflin allows instructors to create customized lecture presentations that can be displayed on computer-based projection systems. The software makes available the figures, tables, and key equations from the text and also allows for access to laser disc sequences and screens from other Windows-based software. With the Electronic Lecture Manager, instructors can quickly and easily integrate all these components—and create their own screens as well—to prepare a seamless classroom presentation with minimal in-class tinkering.

**Experimental Economics Lab Manual.** As I mentioned previously, the text makes use of results from experimental economics to test models and to explain how markets work. I have regularly used experiments in my introductory economics classes—both small sections and large lectures—to illustrate how markets work. For those instructors who would like to do similar experiments, a lab manual has been prepared by Greg Delemeester of Marietta College and John Neral of Frostburg State University. Written with the first-time user in mind, the lab manual includes a set of experiments including the double auction experiment described in Chapter 7 of the text. For each experiment there is an overview of the experiment and detailed step-by-step instructions for conducting the experiment.

## ACKNOWLEDGMENTS

Completing a project like this is a team effort. I have had the chance to work with an excellent team of professionals at Houghton Mifflin. I am grateful to Denise Clinton, Marjorie Singer Anderson, Ann West, Paula Kmetz, Sue Warne, Joan Horan, Kelly Faughnan, Carol Merrigan, Nomi Sofer, Julie Hogenboom, Nancy Murphy, Judy Arisman, Connie Gardner, Gary Eldridge, Mike Ginley, Charles Baker, Garret White, Greg Tobin, June Smith, Mike Melody, and Liz Hacking.

I am grateful to many of my colleagues at Stanford whom I consulted hundreds of times: in particular I wish to thank Don Brown, Tim Breshnahan, Anne Kreuger, Tom McCurdy, Paul Milgrom, Roger Noll, John Pencavel, Nate Rosenberg, and Frank Wolak for their help. In addition I am grateful to Charles Plott, California Institute of Technology, who gave suggestions for the use of experimental economics in Chapter 7 and to Anthony O'Brien, Lehigh University, who reviewed art and text for accuracy during the production process. I am also grateful to Kerry Pannell, Craig Furfine, and Jennifer Leland for help throughout the project and to Marcelo Clerici-Arias for his advice on both the first and final drafts. I also wish to thank the Economics 1 students at Stanford who used the book in manuscript and asked good questions that helped me determine when and where to add that extra sentence of explanation.

Many college teachers and researchers read all or part of the manuscript and gave very helpful comments that were incorporated into revisions. The book would not exist without their help. In particular I wish to thank the following reviewers.

- Mark D. Agee  
*Pennsylvania State University, Altoona*
- Lee J. Alston  
*University of Illinois*
- Dean Baim  
*Pepperdine University*
- Raymond S. Barnstone  
*Northeastern University and Lesley College*
- Kari Battaglia  
*University of North Texas*
- Klaus G. Becker  
*Texas Tech University*
- Valerie R. Bencivenga  
*Cornell University*
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*University of Bath*
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*Abilene Christian University*
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*University of Queensland*
- Daniel Rubenson  
*Southern Oregon State College*
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*Rutgers University*
- Robert S. Rycroft  
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- Jonathan Sandy  
*University of San Diego*
- James Byron Schlomach  
*Texas A&M University*
- Torsten Schmidt  
*University of New Hampshire*
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*Providence College*
- Michael Smitka  
*Washington & Lee University*
- Ronald Soligo  
*Rice University*
- John L. Sollow  
*University of Iowa*
- Clifford Sowell  
*Berea College*
- Michael Spagat  
*Brown University*
- J. R. Stanfield  
*Colorado State University*
- Ann B. Sternlicht  
*University of Richmond*
- Richard Stevenson  
*Liverpool University*
- James Stodder  
*Rensselaer Polytechnic Institute*
- Leslie S. Stratton  
*University of Arizona*
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*Rutgers University*
- James Swoffard  
*University of South Alabama*
- Paul Turner  
*University of Leeds*
- Gerald R. Visgilio  
*Connecticut College*
- Manhar Vyas  
*University of Pittsburgh*
- William V. Weber  
*Eastern Illinois University*
- Karl Wesolowski  
*Salem State College*
- Joseph Wesson  
*State University of NY, Potsdam*
- Geoff Whittam  
*University of Glasgow*
- Kenneth P. Wickman  
*State University of NY, Cortland*
- Catherine Winnett  
*University of Bath*
- Jennifer P. Wissink  
*Cornell University*
- Simon Wren-Lewis  
*University of Strathclyde*
- Peter R. Wyman  
*Spokane Falls Community College*
- Ali Zaker Shahrak  
*University of Santa Clara*

My family deserves very special thanks for putting up with me. My wife, who majored in economics in college and is now a lawyer, took time from her own work to read the entire manuscript and add a unique perspective. My children helped by asking good questions about the book, by insisting on straight answers, and by helping choose the cartoons. This book is dedicated to my family.

John B. Taylor  
Stanford, California  
November 1994

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