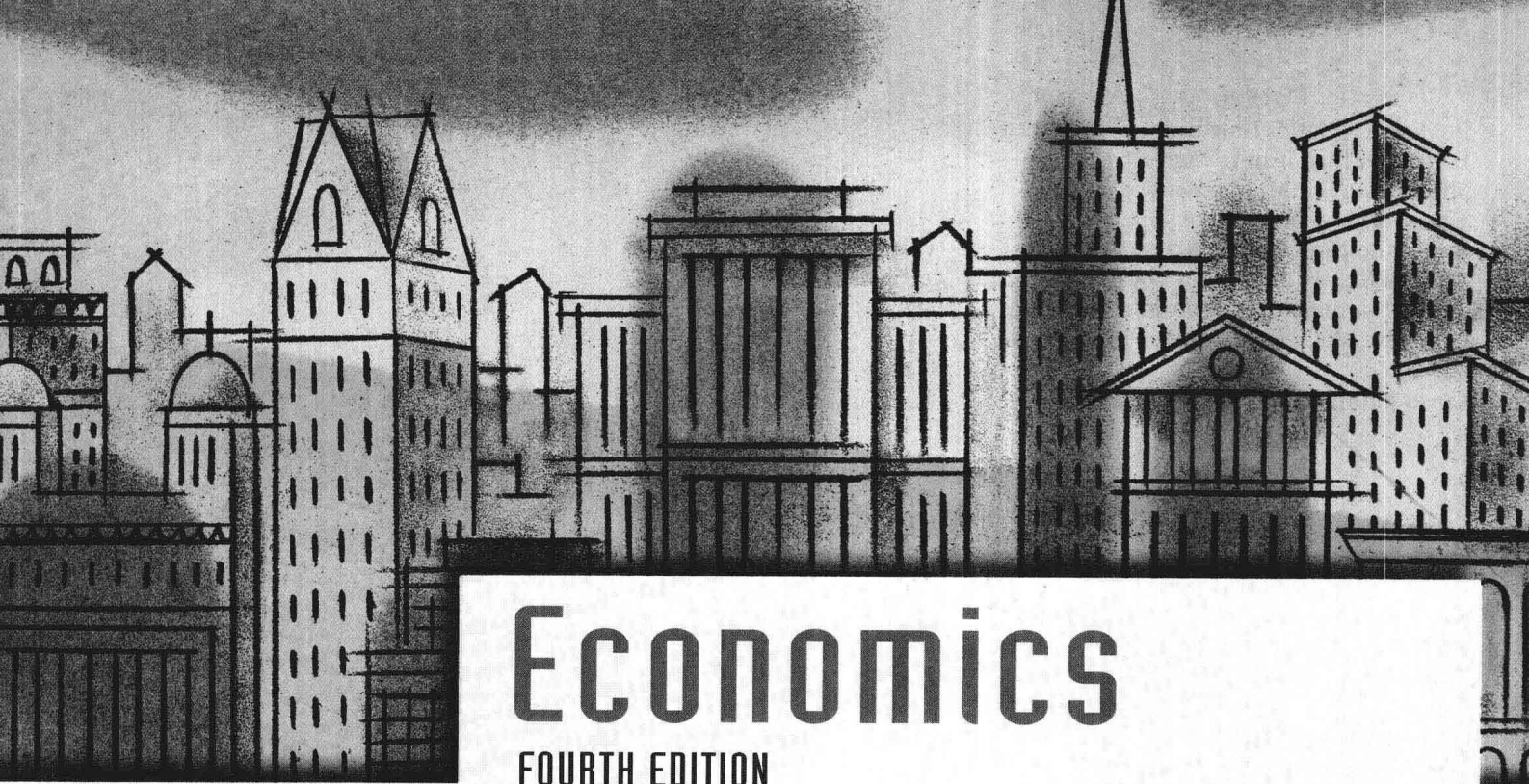


A nighttime photograph of a city harbor. In the foreground, a large white ship with a dark hull is docked at a pier. Behind it, a red bridge with a truss structure spans the water. In the background, a city skyline is visible with numerous lights. A prominent red neon sign on a building in the lower left reads "PUBLIC MARKET".

TAYLOR

# Economics

Fourth Edition



# Economics

FOURTH EDITION

John B. Taylor

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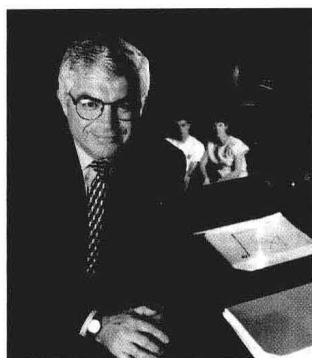
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# Economics

# About the Author



John B. Taylor is one of the field's most inspiring teachers. As the Raymond Professor of Economics at Stanford University, his distinctive instructional methods have made him a legend among introductory economics students and have won him both the Hoagland and Rhodes prizes for teaching excellence. Described by the *Wall Street Journal*, Taylor's "sober appearance . . . belies a somewhat zany teaching style." Few of his students forget how he first illustrated a shift of the demand curve—by dressing up as a California raisin and dancing to "Heard It Through the Grapevine," or how he proved that the supply and demand model actually works—by hav-

ing student buyers and sellers call out live bids to him in the classroom. It is this gift for clear explanations and memorable illustrations that makes his textbook so useful to students around the country.

Professor Taylor is also widely recognized for his research. He has created formulas for wage and price setting and models for economic policy evaluation. One of his well-known research contributions is a rule—now widely called the Taylor Rule—used at central banks around the world. The *U.S. News and World Report* wrote about his rule, "Amaze Your Friends! Predict the Fed's Next Move!" His latest research focuses on why economic expansions have gotten longer.

Taylor has had an active public service career. On leave from Stanford, he now serves as the Under Secretary for International Affairs at the U.S. Department of the Treasury. He has also served as economic adviser to the governor of his state (California), to the U.S. Congressional Budget Office, and to the president of the United States.

Professor Taylor began his career at Princeton, where he graduated with highest honors in economics. He then received his Ph.D. from Stanford and taught at Columbia, Yale, and Princeton before returning to Stanford.

# Preface

I love economics and I enjoy sharing my love of it with others. The goal of this book has been to present modern economics in a form that is intuitive, relevant, and memorable to students who have had no prior exposure to the subject. I have been gratified by the positive responses I've received to the first three editions from economists who teach introductory economics. But most rewarding have been the kind thank-you's from students—frequently by email from colleges around the country—for the clarity of the presentation and for the one-on-one teacher–student focus of the writing.

## Standing on the Shoulders of Giants

When I took the introductory economics course in college in the 1960s, I found the course and the textbook (Paul Samuelson's) fascinating. People called 1960s-vintage economics the “new economics,” because many new ideas, including those put forth by John Maynard Keynes, were being applied for the first time in public policy. But during the 1970s, the 1980s, and the 1990s, economics underwent another tremendous wave of change. Now at the beginning of the 21st century, economics places much greater emphasis on incentives, expectations, long-run fundamentals, individual experiences, institutions, and the importance of stable, predictable economic policies. These new ideas are of great relevance to real-world economic policy and confirm to students that economic ideas do indeed affect people's lives.

I believe that this book has achieved the right mix of old and new. I know from experience that its “newness” and the knowledge that the ideas are actually used in practice make economics more interesting to students, thereby making learning economics easier.

## Changes to the Fourth Edition

Many of this text's adopters have commented on how much they and their students enjoy reading the book and appreciate the graphs, real-world examples, and modern approach to economic policy. In the previous two revisions, I focused my efforts on streamlining and clarifying difficult concepts, expanding introductory chapter vignettes to be sure they clearly (and dramatically) motivated the ideas in each chapter, reviewing (and in some cases, revising) the flow of ideas both within chapters and from chapter to chapter, and adding interesting examples, many in the form of longer case studies that follow the flow of the chapters and help clarify difficult material just presented.

With many of the organizational and presentation challenges solved, this revision focuses on addressing specific points brought up by our reviewers and updating the content to reflect the latest trends in the world's economy. Several new case studies help illustrate key ideas and many new or revised chapter-opening vignettes keep the “drama” alive. In addition, many new examples of economic concepts appear in the “Economics in Action” and “Reading the News About . . .” boxes. In response to popular demand, the appendixes once again directly follow the chapters they supplement.

The world economy has also changed radically in recent years. Following two back-to-back record-breaking expansions, the U.S. economy—the largest in the world—went into recession. The second and third largest economies in the world, Japan and Germany, are also facing an economic slowdown, making this a challenging time for the world economy. Yet, there are many reasons to be optimistic. Market economies are now the preferred choice of virtually all countries around the world. The two most populous countries of the world, India and China, have opened up their economies and are experiencing rapid economic growth. Billions of people are linked together through international trade in this “new economy.” With these changes, economics is now more fascinating and more relevant than ever.

The strategy for revising the third edition was to give these changes a prominent, clearly explained place within the basic tradition of economics upon which they stand. Emphasis is placed on the central ideas of economics: that people make purposeful choices with scarce resources and interact with other people when they make these choices. There are also demonstrations showing how a market economy works and a thorough explanation of why markets are efficient when incentives are right and inefficient when incentives are wrong. Long-run fundamentals are given prominent attention along with real-world public policy issues where the short run matters, too.

## Content Changes

A detailed account of the chapter-by-chapter changes in the text can be found in the Transition Guide available in the Instructor's Resource Manual or on the book's web site. Here are just a few highlights:

- A new “Economics in Action” box in Chapter 1, “The Central Idea,” applies the concept of opportunity cost to teaching jobs and graduate school applications in 2001.
- The explanation of income and substitution effects in Chapter 5, “The Demand Curve and the Behavior of Consumers,” was clarified, to make this difficult concept easier to understand.
- A case study on price controls and deadweight loss in the milk industry was added to the coverage in Chapter 7 of the real effects of price controls and agricultural subsidies on production and consumer surplus.
- In Chapter 11, “Product Differentiation, Monopolistic Competition, and Oligopoly,” a discussion of the Cournot oligopoly model from a game theoretic point of view has been added.
- The coverage in Chapter 12 of antitrust policy and regulation now includes a new discussion of the Microsoft antitrust case, along with a new “Economics in Action” box on the California electricity crisis. In addition, the discussion of asymmetric information in regard to incentive regulation has been clarified in this chapter.
- The revised macroeconomics chapters improve on the new approach to teaching modern macroeconomics that was introduced with the first edition nearly ten years ago. That approach starts with long-run fundamentals about unemployment, economic growth, and the composition of spending. It stresses that the United States is part of the world economy. It shows how the Fed's decisions about the interest rate are intended both to keep inflation in control and to prevent or mitigate recessions. The recent recession has provided some interesting new data to explore in this regard, and key economic data have been updated throughout these chapters.

- Chapter 17, “Macroeconomics: The Big Picture,” addresses the macroeconomic impact of September 11 and contains an expanded discussion of the role that macroeconomic policy (both fiscal and monetary) plays in the economy.
- In Chapter 19, the discussion of the impact of interest rate changes on consumption and investment has been clarified and now includes discussion of how to find the equilibrium interest rate using the spending allocation model.
- The section on Malthusian equilibrium found in Chapter 21, “Productivity and Economic Growth,” has been streamlined, with a more prominent role given to the discussion of technology as a driver of economic growth. A new “Reading the News About . . .” box in this chapter focuses on the recent spurt in productivity growth.
- Chapter 22, “Money and Inflation,” has been revised to illuminate the role that money plays in the economy; in addition, the notation in the section on the money multiplier has been clarified.
- Chapter 23, “The Nature and Causes of Economic Fluctuations,” now includes discussion of the most recent business cycle, and coverage of the simple model where consumption and income are interrelated has been clarified.
- In Chapter 24, “The Economic Fluctuations Model”, the structure of the model is presented so that it explicitly incorporates the real interest rate. The Fed’s policy rule is presented in terms of the real interest rate being changed in response to changes in inflation. The text makes clear that the Fed does not directly control the real interest rate but instead manipulates the nominal interest rate to influence the real interest rate. The derivation of the real interest rule is explained using additional graphs. Finally, the “Reading the News About . . .” box was changed to reflect more recent policy decisions by the Fed.
- The case study in Chapter 25, “Using the Economic Fluctuations Model,” now covers the recent recession, including an explanation of how the *AD-IA* model can be used to understand this recession.
- The introduction to Chapter 26, “Fiscal Policy,” now focuses on the recent rapid reversal of the government’s budget situation from deficit to surplus and back again. The “Reading the News About . . .” box in this chapter was changed to focus on the impact of the recession and tax cuts on budget balance. A brief discussion of the Economic Growth and Tax Relief Reconciliation Act of 2001 has also been added.
- The introduction to Chapter 27, “Monetary Policy,” talks about the challenges that faced the Fed in 2002 and includes an updated discussion about Argentina in the section on the effects of fixed exchange rates on monetary policy. There is also a new “Reading the News About . . .” box about the economic situation in Argentina.
- The discussion of international trade in Chapter 30 has been updated to include current trade policies.

## Enhanced Teaching and Learning Package for Students and Instructors

The array of teaching and learning aids provided with this text (and described below) has also been revised and contains several new options, including a **Student Technology Package**—automatically shrinkwrapped with most new texts. The Student Technology Package is comprised of a new, highly interactive Tutorial CD-ROM; access to SmarThinking™, a live online tutoring service with e-structors qualified in economics; and a print Technology Guide to help students integrate into their study schedules all the technology options available with the text.



For instructors, an instructor CD, HMClassPrep with HMTesting, includes computerized testing, PowerPoint slides, and instructor materials—providing in one place all the teaching resources and tools a principles instructor or teaching assistant might need.

## A Brief Tour

**E**conomics is designed for a two-term course. Recognizing that teachers use a great variety of sequences and syllabi, the text allows for alternative plans of coverage. Furthermore, the text is available in two other self-contained volumes, *Principles of Microeconomics* and *Principles of Macroeconomics*.

The basic workings of markets and the reasons they improve people's lives are the subjects of Part One. Chapter 1 outlines the unifying themes of economics: scarcity, choice, and economic interaction. The role of prices, the inherent international aspect of economics, the importance of property rights and incentives, and the difference between central planning and markets are some of the key ideas in this chapter. Chapter 2 introduces the field of economics through a case study showing how economists observe and explain economic puzzles. Chapters 3 and 4 cover the basic supply and demand model and elasticity. The goal is to show how to use the supply and demand model and to learn to “think like an economist.” A trio of chapters—5, 6, and 7—explains 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. The text provides a complete, self-contained analysis of competitive markets in these first seven chapters, before going on to develop more difficult concepts, such as long-run versus short-run cost curves or monopolist competition. This approach enables the student to learn, appreciate, and use important concepts such as efficiency and dead-weight 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. Chapters 8 and 9 describe how firms and markets grow and change over time. Chapters 10 and 11 demonstrate how economists model the behavior of firms that are not perfectly competitive, such as monopolies. The models of dynamic behavior and imperfect competition developed here are used to explain the rise and fall of real-world firms and industries. Chapter 12 reviews the policy implications.

Chapter 13 considers labor markets. Chapters 14 and 15 are devoted to the role of government in the economy. Tax policy, welfare reform, environmental policy, and the role of government in producing public goods are analyzed. 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. The problem of government failure is analyzed using models of government behavior. Chapter 16 discusses capital markets.

The study of macroeconomics begins with Chapter 17. This chapter is an overview of the facts emphasizing that macroeconomics is concerned with the growth and fluctuations in the economy as a whole. Chapter 18 shows how GDP and other variables are measured.

Chapter 19 starts with the first macro model to determine the long-run shares of GDP. Chapter 20 gives an analysis of how the level of unemployment in the econ-

omy as a whole is determined. Labor, capital, and technology are then presented in Chapter 21 as the fundamental determinants of the economy's growth path. One clear advantage of this approach is that it allows students to focus first on issues about which there is general agreement among economists. Moreover, this ordering helps students better understand short-term economic fluctuations. Similarly, the long-run treatment of money, presented in Chapter 22, sets the stage for economic fluctuations.

As shown in the five chapters of Part Six (Chapters 23 through 27), the economy does fluctuate as it grows over time. Declines in production and increases in unemployment (characteristics of recessions) have not vanished from the landscape as long-term growth issues have come to the fore. Part Six delves into the causes of these fluctuations and proposes an analysis of why they end. It begins by explaining why shifts in aggregate demand may cause the economy to fluctuate and ends by showing that price adjustment plays a significant role in the end of recessions.

Countries have tried a variety of approaches to deal with economic growth and economic fluctuations. Part Seven (Chapters 28 through 31) examines these approaches to policy, about which there are many differing opinions. Areas of agreement are also stressed.

## Pedagogical Features

The following pedagogical features are designed to help students learn economics.

**Examples within the text.** Illustrations of real-world situations help explain economic ideas and models. A wide variety of these examples are included throughout the text. Examples include the health care case study in Chapter 2, the case study looking at a drought in the U.S. peanut market in Chapter 3, and the new case study on milk price supports in Chapter 7. Many other examples are simply woven into the text.

**Boxed examples to give real-life perspectives.** “Reading the News About . . .” boxes explain how to decipher recent news stories about economic policy. “Economics in Action” boxes examine the contributions of the great economists, such as Adam Smith, or notable current events. Many of these current events boxes have been revised or replaced in this edition.

**Stimulating vignettes at the beginning of each chapter.** Examples of opening vignettes include the opportunity costs of college for Tiger Woods in Chapter 1 and the work of health-care economist Mark McClellan in Chapter 2.

**Functional use of full color.** Color is used to distinguish between curves and to show how the curves shift dynamically over time. An example of the effective use of multiple colors can be found in the equilibrium price and equilibrium quantity figure in Chapter 3 (Figure 3.8).

**Complete captions and small conversation boxes in graphs.** The captions and small yellow-shaded conversation boxes make many of the figures completely self-contained. In some graphs, sequential numbering of these conversation boxes stresses the dynamic nature of the curves. Again, Figure 3.8 provides a good example.

**Conversation boxes in text margins.** These appear where an additional explanation or reminder might help students more easily grasp a new concept.

**Use of photos and cartoons to illustrate abstract ideas.** Special care has gone into the search for and selection of photos and cartoons to illustrate difficult economic

ideas such as inelastic supply curves or opportunity costs. 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.** Definitions of key terms appear in the margins and in the alphabetized glossary at the end of the book. The key terms are listed at the end of every chapter and appendix.

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

**Questions for review at the end of every chapter.** 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, the problems have been carefully selected, revised, and tested for this edition. An ample supply of these appear at the end of every chapter and appendix. Some of the 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. A second set of problems parallels those in the text and is included in the accompanying test bank and on the instructor's HMClassPrep with HMTesting CD. This problem set is also available to instructors via the web site.

## A Complete Package of Teaching and Learning Aids

The highly effective teaching and learning package prepared to accompany this text has been completely revised, updated, and expanded. It provides a full range of support for students and instructors.

**Student Technology Package.** This package is available with all new texts and is also available for sale separately. The package includes:

- **Tutorial and Simulation Software.** A brand-new, interactive computerized tutorial parallels the content in the fourth edition and provides a unique way for students to review basic concepts covered in the text. Interacting directly with the graphs relevant to each chapter, students can observe how changes affect curves and test themselves on what they've learned. A glossary and context-sensitive help are always at students' fingertips. The simulation component of the software includes more than 60 years of data on more than 20 key economic indicators. The software allows students to plot data, compare various measurement instruments in table or graph form, and print out their results.
- **SmarThinking™ Online Tutoring Service.** A live tutoring service allows students to interact online with an experienced SmarThinking e-structor (online tutor) between 9:00 P.M. and 1:00 A.M. EST every Sunday through Thursday. SmarThinking provides state-of-the-art communication tools, such as chat technology and virtual whiteboards designed for easy rendering of economic formulas and graphs, to help students absorb key concepts and learn to think economically.
- **Student Technology Guide.** A printed guide to all available resources.

**Micro and Macro Study Guides.** Revised and updated by David Papell of the University of Houston and Wm. Stewart Mounts, Jr. of Mercer University, these study guides provide a wonderful learning opportunity that many students will value. Each chapter contains an overview, informal chapter review, and a section called “Zeroing In,” which harnesses students’ intuition to explain the chapter’s most important concepts. The study guides also provide ample means for practice in using the economic ideas and graphs introduced in each text chapter and suit a variety of learning needs through graph-based questions and problems as well as multiple-choice practice tests. 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 on their own. Detailed answers are provided for all review and practice questions. End-of-part quizzes offer students yet another chance to test their retention of material before taking in-class exams.

**Web Site** (<http://college.hmco.com/>; select “economics”). The Taylor *Economics* web site provides an extended learning environment for students and a rich store of teaching resources for instructors who are using the text. Materials are carefully developed to complement and supplement each chapter. The student will find key economic links as well as numerous opportunities to test their mastery of chapter content—including both objective-type quizzes and more extended web-based assignments developed by John Kane of SUNY, Oswego. Instructors will find an additional set of guided web activities that relate to the key concepts of each chapter of the textbook. Prepared by John S. Min of Northern Virginia Community College, the Economics W.I.R.E.D. web links are accompanied by brief suggestions to the instructor regarding their use in the classroom as well as discussion questions or exercises for assessing student learning. In addition, the instructor web site contains a complete set of parallel questions (and solutions) matching the end-of-chapter problems from the text.

**Micro and Macro Test Banks.** A reliable test bank is the most important resource for efficient and effective teaching and learning. Micro and Macro Test Banks have been prepared by Jim Lee of Texas A & M, Corpus Christi and Stuart Glosser of The University of Wisconsin—Whitewater. They contain more than 5,000 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. The test banks also include a set of parallel problems that match the end-of-chapter problems from the text and are conveniently available in both printed and computerized form.

**Instructor’s Resource Manual.** Prepared and revised by Wm. Stewart Mounts, Jr. of Mercer University and Sarah Culver of the University of Alabama at Birmingham, 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 as well as hints for teaching more difficult material. Discussion topics and solutions to end-of-chapter text problems are also provided.

**PowerPoint Slides.** A complete set of downloadable PowerPoint slides is available to adopters of the text on the fourth edition web site. To gain access to the web site’s instructor resources, obtain a user name and password from your Houghton Mifflin sales representative. The slides will also be available to adopters of the fourth edition on the HMClassPrep with HMTTesting CD-ROM.



**HMClassPrep with HMTTesting CD-ROM.** Organized by chapter for easy reference and class planning, this all-in-one instructor CD contains a wealth of resources, including lecture outlines, teaching objectives and tips, solutions to text problems, a set of parallel problems and solutions, video footage, and in-class experiment and discussion ideas. PowerPoint slides for most of the figures in the text are also contained on this CD, as are *all the questions* found in the two test banks. Using the sophisticated and user-friendly HMTTesting program, instructors can quickly create tests according to various selection criteria, including random selection. The program prints graphs and tables in addition to the text part of each question. Instructors can scramble the questions and answer choices, edit questions, add their own questions to the pool, and customize their exams in various other ways. HMTTesting provides a complete testing solution, including classroom administration and online testing features in addition to test generation. The program is available in Windows and Mac versions.

**Overhead Transparencies.** Overhead transparencies for key figures from the text are available to adopters of *Economics*, *Principles of Microeconomics*, and *Principles of Macroeconomics*. I usually use two overhead projectors in class so that more than one figure or table can be shown simultaneously.

**Experimental Economics Lab Manual.** Instructors who would like to incorporate experiments into their classroom teaching should request a copy of the experiments manual prepared by Greg Delemeester of Marietta College and John Neral of Frostburg State University. Written for instructors who are both new to and experienced in the use of experiments in class, this manual provides detailed instructor support, including an overview of the experiment and its purpose, necessary materials, step-by-step instructions for conducting the experiment, and any relevant worksheets.

**WebCT WebCourselet and Blackboard Course Cartridge.** These resources provide text-specific student study aids in customizable, Internet-based education platforms. Both platforms provide a full array of content delivery and course management features for instructors who wish to incorporate educational technology in their traditional classrooms or for those who are creating distance-learning courses.

## Acknowledgments

Completing a project like this is a team effort. I have always been fortunate to work with some very talented economists at Stanford—colleagues and students—who have provided me with many ideas and feedback through every edition. But in the case of the fourth edition, I acknowledge with very special gratitude the substantial contributions of two of my former graduate students, Marcelo Clerici-Arias and Akila Weerapana. Both Marcelo and Akila have become extraordinary educators in their own right. Marcelo helped in the creation and management of the Introductory Economics Center at Stanford University, where he served as associate director for several years. He is currently the Associate Director for Social Sciences and Technology at Stanford's Center for Teaching and Learning and regularly teaches undergraduate courses in the economics department. Marcelo has been involved in this book from its very beginning—both as a sounding board and as an experienced teacher.

Akila Weerapana demonstrated his extraordinary research and teaching skills even before completing his Ph.D. at Stanford. He provided an enormous amount of useful feedback on this book. After receiving his Ph.D., Akila joined the faculty at Wellesley College, where he has taught the principles course over many semesters and further established his reputation for teaching excellence. Akila and Marcelo have both played essential roles in the completion of this fourth edition, including

researching new data, writing up new examples and other material, and making critical decisions about topics they felt needed more attention.

Many college teachers have taken the time to write with questions or comments about the text and ideas for improvement that have come from their own teaching. In particular, I would like to mention John Constantine, University of California at Davis, who was extremely generous in providing me with his thoughts on improving material in several macro chapters. I would also like to especially mention the in-depth reviews received from Laurie J. Bates, Bryant College; Mark L. Burkey, North Carolina A&T State University; Chiuping Chen, American River College; Eric D. Craft, University of Richmond; Gregory Green, Idaho State University; Murat F. Iyigun, University of Colorado, Boulder; Bridget Lyons, Sacred Heart University; A. Cristina Cunha Parsons, Trinity College, Washington D.C.; Robert J. Rossana, Wayne State University; Sarah L. Stafford, College of William and Mary; and Shaianne T.O. Warner, Ithaca College. These instructors provided comments and suggestions that were critical to the development of the fourth edition. I would also like to thank Jim Lee, Texas A&M University, who reviewed the text for accuracy.

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## Reviewers

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