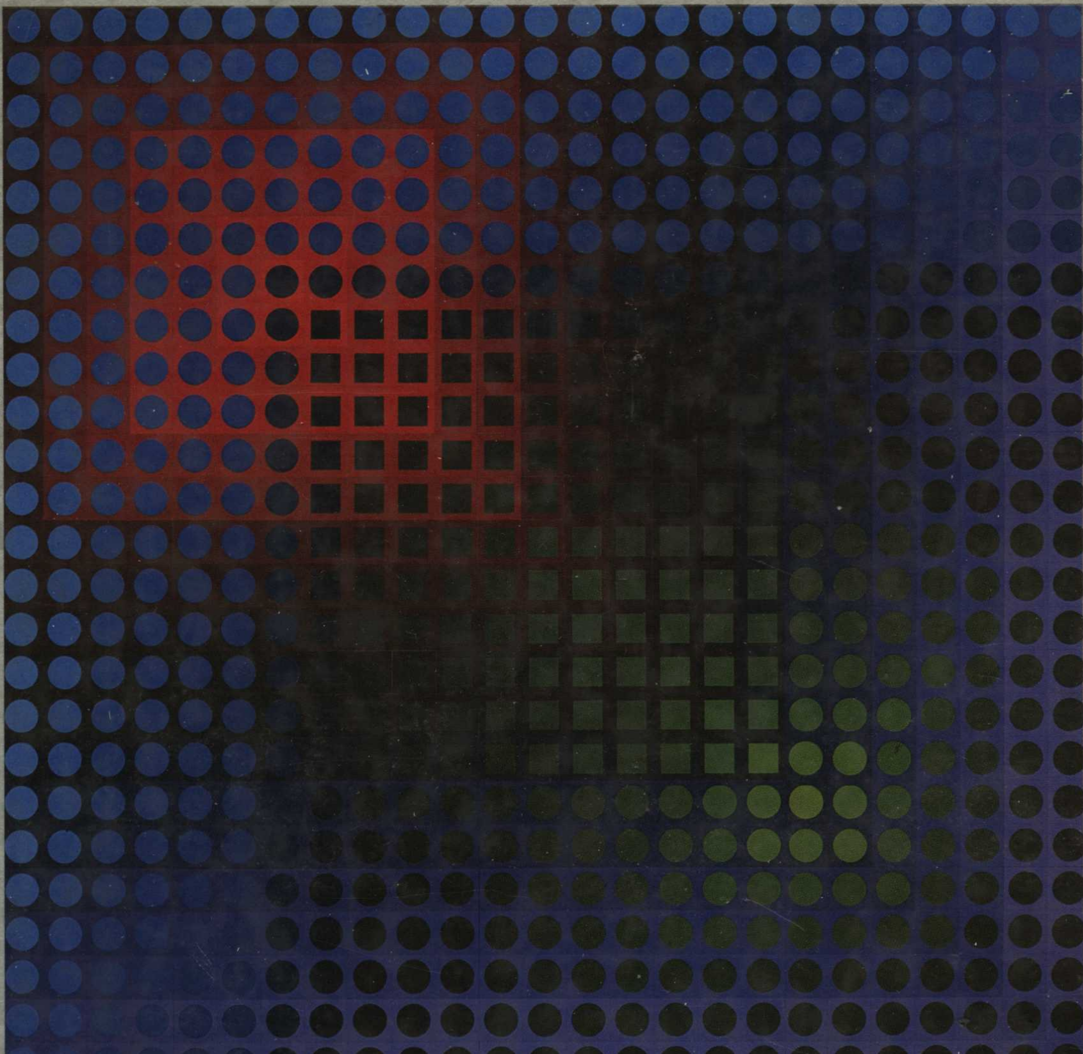
Microeconomics



EDWIN MANSFIELD

Shorter Seventh Edition

THEORY/APPLICATIONS

SHORTER SEVENTH EDITION

EDWIN MANSFIELD

UNIVERSITY OF PENNSYLVANIA

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PREFACE TO THE SHORTER SEVENTH EDITION

This is an abridged version of the seventh edition of my text *Microeconomics: Theory and Applications.* Specialized topics such as linear programming, benefit-cost analysis, intertemporal choice, decision-making under risk and uncertainty, and technological change have been eliminated. Also deleted are more advanced materials and footnotes that contain mathematical derivations. This shorter version is intended for use in courses where these materials are not needed. The emphasis is on clear and interesting exposition of the essentials of microeconomics.

In the last decade or so, a new generation of economists has advanced microeconomic theory in important new directions. Most notably, these economists have worked to understand the role of strategy in competitive rivalries, the effects of the information available to market participants on the outcomes of the markets in which they take part, and the ways in which economic models can be used to analyze financial markets. Their work has not changed the underlying structure of our discipline, but it has brought to us significant new insights, which all too frequently are omitted from intermediate microeconomic texts. Since I believe that it is high time that students are introduced to these exciting new developments and insights, I have made a particular effort in preparing this edition to provide clear, effective, and interesting discussions of the many important developments in microeconomic theory that have occurred in recent years. The result is the most extensive revision to date of this book.

In particular, the chapters on oligopoly and monopolistic competition have been completely rewritten. There is now a new chapter on Game Theory and Strategic Behavior, which discusses such topics as Nash equilibrium, the prisoners' dilemma, strategic moves, threats, entry deterrence, limit pricing, first-mover advantages, and preemptive strategies. This discussion of game theory, while pitched at a basic level, is more complete and up-to-date than in competing texts.

Further, the pervasive effects of asymmetric and imperfect information are emphasized at appropriate places throughout the text. Beginning in Chapter 2, the possibility of a "winner's curse" in auctions where information is imperfect and the effects of asymmetric information on the market for used cars are described. In Chapter 12, both market signaling in labor markets (and the role of education in this regard) and efficiency wage theory are taken up. In contrast to other texts, which either ignore these topics or lump them together in a chapter at the end of the book, the present text weaves them into the main thread of the discussion.

In addition, this edition explores a variety of influential and useful modern developments in the theory of the firm. In Chapter 6, for instance, there is a new section called "Firm Owners and Managers: A Principal-Agent Problem"; and in Chapter 12, there is a new section on "Employers and Workers: A Principal-Agent Problem." Still more examples appear in the treatment of monopoly pricing in Chapter 9, which has been enriched by the addition of new sections on two-part tariffs, tying, and bundling.

Several other additions deserve mention here. One is the new section on economies of scope in Chapter 7. Also, the discussion of public goods in Chapter 14, as well as the treatment of economic efficiency, has been revised and updated. Finally, the sections dealing with the Consumer Price Index and the optimal combinations of fertilizers in corn production have been simplified and clarified.

Given the host of new topics included in this edition, I have had no choice but to purge all passages that seemed out-of-date or extraneous. Chapter 3 provides a case in point. It has been rewritten extensively with some material dropped. In the case of two topics, however—cardinal utility and the kinked demand curve—I decided to keep them in the book, because many instructors find them useful. But since their coverage is optional, I put these discussions in chapter appendices.

While teachers, who are familiar with the foregoing developments in our field, are likely to be particularly interested in these aspects of the revision, students may be more impressed with the many new applications and examples that have been added. I have always felt that it is crucial to show how microeconomics can illuminate pressing problems of public and private policy. This is particularly important as the American and world economies move into the 1990s. Almost half of the boxed examples—17 of them, to be precise—are new. They deal with the following topics: (1) Is the War on Drugs Being Won? (2) Should Bovine Growth Hormone Be Banned? (3) Rent-Control California-Style: Mobile Home Owners vs. Park Owners, (4) Sickness and Health Insurance, (5) Calculating a Cost-of-Living Index, (6) Residential Demand for Water, (7) Should Two New York Dairy Farms Merge? (8) The Effects of Biotechnology on an Antibiotic's Production Costs, (9) What Would Be the Effects of National Dental Insurance? (10) Why Should the Price of Bananas Be So Much Higher in Denmark Than in Ireland? (11) A Two-Part Tariff at Disneyland, (12) The Rejection of the Santa Fe-Southern Pacific Merger, (13) A Cartel in the Orange Groves, (14) Should Amherst Buy All Its Steel from Duquesne? (15) How Government Can Tilt the Outcome of Oligopoly, (16) The Value of the Marginal Product of Irrigation Water, (17) How Much Effect Would a Wage Increase Have on the Nursing Shortage?

The well-received cross-chapter cases have also been reworked. In Parts Two and Four, there are new ones; both of them are concerned with the application of microeconomics to international topics and issues. The new case in Part Two deals with "The Demand for Airline Travel: The North Atlantic Market"; the new case in Part Four deals with "The Economics of 1992." These topics were selected by the same criteria used in choosing the other cross-chapter cases: to show how the material in several related chapters can be woven together to help illuminate a topic or issue of interest to both students and teachers. Indeed, given the importance of helping students to see that the world economy is becoming increasingly interdependent, it is worth noting that practically all of the cross-chapter cases now deal with international issues.

Finally, a number of new end-of-chapter questions have been added, and a host of small alterations have been inserted to make the discussion more current. From the first chapter to the last, a wide variety of changes have been made in tables, figures, text, and footnotes. Each sentence has been gone over with an eye toward improvement.

As with previous editions, a workbook and reader accompany the text. *Microeconomic Problems: Case Studies and Exercises for Review,* Seventh Edition, has been revised very substantially, making it more effective in guiding students toward an understanding of the theories comprising and underlying microeconomics. In particular, the organization of the book has been changed, problems have been segregated from review questions, and there is a more orderly transition from simpler to more difficult items. Also, new problems and questions have been added that test students' skills in applying microeconomic theory to real-world situations. *Microeconomic Problems* now contains about 1,100 questions and problems, together with their solutions.

Microeconomics: Selected Readings, Fifth Edition, includes papers on topics such as the demand for lemons, market signaling, laboratory experimentation in economics, recent antitrust cases, predatory behavior, and the economic implications of robots, among many others. In my opinion, this reader continues to be broader and more varied than other books of readings at the intermediate level.

An *Instructor's Manual* is available for the text. In addition to teaching suggestions for each chapter, it includes a test bank of multiple-choice questions and problem sets which not only reflects the decision-making emphasis of the text, but also develops theory as a set of principles that yields insights into everyday problems. William Gunther and Paul Sommers, the authors of the *Instructor's Manual,* have created a freshly varied diet of teaching materials for this new edition, and this is the place to record my thanks to them.

Test questions also are available to instructors on floppy disks for use with a personal computer. Information on obtaining these disks can be obtained from the publisher.

Since it would be impossible to list all of the many instructors and reviewers who have contributed in important ways to this and the previous editions, I must be content with thanking only a sample: Charles A. Berry, University of Cincinnati; Allan Braff, University of New Hampshire; Stephen R. Brenner, Grinnell College; Byron Brown, Michigan State University; Eleanor Brown, Pomona College; Neil Bruce, Queen's University; James Cairns, Royal Military

College of Canada; Joseph Cammarosano, Fordham University; Alvin Cohen, Lehigh University; Marshall Colberg, Florida State University; James Dana, Dartmouth College; Avinash Dixit, Princeton University; James Dolan, Regis College; Robert Dorfman, Harvard University; Catherine Eckel, Virginia Polytechnic Institute; Allan Feldman, Brown University; Alan Fisher, California State University at Fullerton; J. Fred Giertz, Miami University; Ellen Goldstein, California State University at Fullerton; Warren Gramm, Washington State University; William Gunther, University of Alabama; Kanji Haitani, State University of New York, Fredonia; Simon Hakim, Temple University; Richard Harmstone, Pennsylvania State University; William Holohan, University of Wisconsin at Milwaukee; Theodore E. Keeler, University of California, Berkeley; Elizabeth Sawyer Kelley, University of Wisconsin at Madison; Jonathan Kesselman, University of British Columbia; Charles Knoeber, North Carolina State University; Steven Kohlhagen, University of California, Berkeley; Shou-Eng Koo, Indiana University and Purdue University; John Laitner, University of Michigan; Richard Levin, Yale University; J. Patrick Lewis, Otterbein College; C. Richard Long, Georgia State University; Paul Malatesta, Colgate University; Lawrence Martin, Michigan State University; M. R. Metzger, George Washington University; Edwin Mills, Princeton University; Hajime Miyazaki, Stanford University; David Molina, North Texas State University; John Murphy, Canisius College; Richard Musgrave, Harvard University; K. R. Nair, West Virginia Wesleyan College; John Neufeld, University of North Carolina; Mancur Olson, University of Maryland; John Palmer, University of Western Ontario; R. D. Peterson, Colorado State University; Charles Plourde, York University; Robert Pollak, University of Pennsylvania; Richard Porter, University of Michigan; Charles Ratliff, Davidson College; David J. Ravenscraft, University of North Carolina, Chapel Hill; Thomas Riddell, Bucknell University; Ray Roberts, Jr., Furman University; Anthony Romeo, University of Connecticut; Robert E. Rosenman, Washington State University; Anthony Rufolo, Federal Reserve Bank of Philadelphia; Sol S. Shalit, University of Wisconsin at Milwaukee; Barry Siegel, University of Oregon; N. J. Simler, University of Minnesota; A. Michael Spence, Harvard University; James Stephenson, Iowa State University; Daniel Sullivan, Northwestern University; Richard Sylla, North Carolina State University; W. James Truitt, Baylor University; Gordon Tullock, Virgina Polytechnic Institute; Hal Varian, University of Michigan; David Vrooman, St. Lawrence University; Donal Walker, Indiana University of Pennsylvania; Joan Werner, University of Michigan; A. R. Whitaker, U.S. Naval Academy; Bronislaw Wojtun, Lemoyne-Owen College; Gary Yohe, Wesleyan University; and Richard Zeckhauser, Harvard University. Further, I would like to thank W. Drake McFeely of Norton for doing a fine job with the publishing end of the work. And special thanks go to my wife, who again helped in countless ways.

E.M.

Philadelphia, 1991

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1

THE NATURE OF MICROECONOMICS

INTRODUCTION

Winston Churchill, Britain's great prime minister, was not well versed in economics. Indeed, according to his critics, he was "without a deep appreciation of decimal points." While he could succeed without much knowledge of economics, you may not be so fortunate. Economics helps us to understand the nature and organization of our society, the arguments underlying many of the great public issues of the day, and the operation and behavior of business firms and other economic decision-making units. To perform effectively and responsibly as citizens, administrators, workers, or consumers, most people need to know some economics.

Microeconomics

Precisely what does economics deal with? According to one standard definition, economics is concerned with the way ~~in which resources are~~ allocated among alternative uses to satisfy human wants. It is customary to divide economics into two parts: microeconomics and macroeconomics. *Microeconomics* deals with the economic behavior of individual units such as consumers, firms, and resource owners; macroeconomics deals with the behavior of economic aggregates such as gross national product and the level of employment.

This book is concerned with microeconomics. A general definition of microeconomics fraught with vague words like *resources* and *human wants* is unlikely to communicate the power of microeconomic theory or its usefulness in solving major problems in the real world. So we begin our discussion by giving four examples of the kinds of problems that microeconomics can help to solve. (Each of these examples is considered in detail in subsequent chapters.) Although these four examples cover only a small sample of the questions to which microeconomics is relevant, they give you a reasonable first impression of the nature of microeconomics and its relevance to the real world.

OPTIMAL PRODUCTION DECISIONS

Business firms are constantly faced with the problem of choosing among alternative ways of manufacturing their products. Consider firms that produce ethanol, a chemical made from corn and used for fuel. The federal government, which has encouraged ethanol production to help meet the nation's fuel needs, favored the establishment of many small ethanol plants, but this has not occurred. As shown in Table 1.1, the cost of producing a gallon of ethanol is much higher for a small plant than for a large one. Thus firms have tended to build big plants, not small ones.

But how big should a plant be? And how many workers should be hired to run it? And how much output should it produce per day? These are examples of one type of problem that microeconomics is designed to solve. They are questions faced by an individual firm that is trying to maximize its profit or attain some other set of objectives of its owners and managers. Microeconomics serves as the basis for, and is helpful in promoting an understanding of, the powerful modern tools of managerial decision-making that help to solve such problems.

TABLE 1.1 Cost Per Gallon of Producing Ethanol in Plants of Various Sizes

Size of plant (millions of gallons per year)	Cost of production (per gallon)
10	$0.82
50	0.42
100	0.33

Source: A. Hacking, *Economic Aspects of Biotechnology* (Cambridge: Cambridge University Press, 1986), p. 202.

These analytical tools are as applicable in Tokyo or Singapore as in New York or Toronto, and woe to the firm that ignores or misapplies them in this era of intense international competition. Gone are the days when firms in a handful of nations in North America and Europe were the only ones that used them in a sophisticated way. Now the Japanese and others set the standard with regard to production decisions of this sort in industries like steel and consumer electronics. Besides being useful throughout the world, these analytical tools are applicable to government as well as business. The techniques introduced in recent decades in many government agencies to promote better decision-making are fundamentally applications of microeconomics.[1]

1. For answers to the kinds of problems posed in this section, see Chapters 8–13.

PRICING POLICY

Most firms are also faced with the problem of pricing their products. For example, consider a firm manufacturing telephone systems. If it sells in a variety of countries, it must decide whether to set a lower price in some countries than in others. In fact, according to the American Telephone and Telegraph Company, Japanese, Korean, and Taiwanese producers of telephone systems often set a much lower price in the United States than in their home markets. Is this sensible? And if so, how large should the international price differential be?

This type of problem faces many, many firms. For example, as shown in Table 1.2, the price of the same type of car of the same quality has been about 43 percent higher in the United Kingdom than in Belgium. It is important that firms know whether such price differentials are in their best interests—or whether they are too high or too low. Microeconomics provides a basis for analyzing and solving such problems. When a management consultant is hired to help solve a problem of this sort, his or her recommendations, if sound, will rely on the application of well-established principles of microeconomics.[2]

TABLE 1.2 Percentage Difference Between the Price of an Automobile in Selected European Countries and in Belgium, 1983

Country	Percentage difference in price
Belgium	0
France	+15
Germany	+17
Italy	+29
United Kingdom	+43

Source: M. Emerson, et al, *The Economics of 1992* (Oxford: Oxford University Press, 1988), p. 78. These prices exclude taxes and pertain to Japanese cars, but the results for European cars are very similar.

EFFICIENT ALLOCATION OF A SOCIETY'S RESOURCES

In the previous two sections we were concerned with problems facing individual business firms. Although such problems are important and interesting, they are by no means the only type dealt with by microeconomics. On the contrary, much of microeconomics is concerned with problems that face us all as citizens. Together we must somehow decide how we want to organize the production and marketing of goods and services in our country. We must also decide how

2. For a description of the way in which a pricing problem like that described in this section can be solved, see Chapter 9.