

Robert S. Pindyck · Daniel L. Rubinfeld

## THIRD EDITION

# Microeconomics

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## **Preface**

For students who care about how the world works, microeconomics is one of the most relevant and interesting subjects they study. A good grasp of microeconomics is vital for managerial decision making, for designing and understanding public policy, and more generally for appreciating how a modern economy functions.

We wrote this book, *Microeconomics*, because we believe that students need to be exposed to the new topics that have come to have a central role in microeconomics over the past few years—topics such as game theory and competitive strategy, the roles of uncertainty and information, and the analysis of pricing by firms with market power. We also felt that students need to be shown how microeconomics can be used as a tool for decision making. Microeconomics is an exciting and dynamic subject, but students need to be given an appreciation of its relevance and usefulness. They want and need a good understanding of how microeconomics can actually be used outside the classroom.

To respond to these needs, our book provides a fresh treatment of microeconomic theory that stresses its relevance and application to both managerial and public-policy decision making. This applied emphasis is accomplished by including more than eighty extended examples that cover such topics as the analysis of demand, cost, and market efficiency, the design of pricing strategies, investment and production decisions, and public policy analysis. Because of the importance that we attach to these examples, they are included in the flow of the text, rather than being "boxed" or screened. (A list of the examples is included in the table of contents on pages xv-xvii.)

The coverage in *Microeconomics* incorporates the dramatic changes that have occurred in the field in recent years. There is growing interest in game theory and the strategic interactions of firms (Chapters 12 and 13), in the role and implications of uncertainty and asymmetric information (Chapters 5 and 17), in the pricing strategies of firms with market power (Chapters 10 and 11), and in the design of policies to deal efficiently with externalities such as environmental pollution (Chapter 18). These topics, which are missing or barely covered in most books, receive prominent attention here.

That the coverage in *Microeconomics* is comprehensive and up-to-date does not mean that it is "advanced" or difficult. We have worked hard to make the exposition clear and accessible as well as lively and engaging. We believe that the study of microeconomics should be enjoyable and stimulating. We hope

that our book reflects this. Except for appendices and footnotes, *Microeconomics* uses no calculus. As a result, it should be suitable for students with a broad range of backgrounds. (Those sections that are more demanding are marked with an asterisk and can be easily omitted.)

### Changes in the Second Edition

The second edition of *Microeconomics* contained a number of important changes and additions. Chapters 3 and 4 on Consumer Demand, and Chapters 6 and 7 on the Theory of the Firm, were heavily revised. The coverage of these important core topics was more comprehensive and much more clear and accessible. We reorganized and rewrote some of the material on oligopoly in Chapter 12; we began with an introductory discussion of the Nash Equilibrium, and then used this concept as a framework for analyzing the Cournot model and models of price competition. Less extensive revisions were also made in the other chapters of the book. In addition, a number of new examples were added, and many of the book's existing examples were revised and updated.

We also added new material throughout the book. Chapter 1 discussed the extent of a market and the meaning of a market price. Chapter 3 included coverage of revealed preference, Chapter 4 discussed Engel curves, and in Chapters 8 and 10 we expanded our coverage of profit maximization and output choice. In Chapter 11 we added a new section on advertising. Chapter 13 was considerably expanded, with new material on game theory and its application not only to the competitive strategies of firms, but also to the strategic trade policies of nations. Chapter 16 discussed comparative advantage and international trade explicitly. In Chapter 17 we added a new section on incentive design in vertically integrated firms. Finally, in response to a heightened interest in environmental issues, we expanded our coverage in Chapter 18 of externalities and the design of public policies to deal with them.

#### Changes in the Third Edition

The third edition of *Microeconomics* contains a number of important changes and additions. Chapters 3 and 4 on Consumer Demand, and Chapters 6, 7, and 8 on the Theory of the Firm and Competitive Supply have been rewritten with an eye toward greater clarity and accessibility. New material has been added in several places, including Hicksian substitution effects in Chapter 4, and an analysis of recycling in Chapter 18. Less extensive revisions were also made in other chapters of the book. Finally, a number of new examples have been added, and many of the book's existing examples have been revised and updated.

#### **Alternative Course Designs**

Microeconomics offers instructors substantial flexibility in course design. For a one-quarter or one-semester course stressing the basic core material, we would suggest using the following chapters and sections of chapters: 1, 2, 3, 4.1–4.4, 6.1–6.5, 7.1–7.4, 8, 9.1–9.4, 10.1–10.4, 11.1–11.3, 12.1–12.2, 12.5–12.6, 14, 15.1–15.4, 18.1–18.2, and 18.5. A somewhat more ambitious course might also include parts of Chapters 5 and 16, and additional sections in Chapters 6, 7, 9, 10, and 12. To emphasize uncertainty and market failure, an instructor should also include substantial parts of Chapters 5 and 17.

Depending on one's interests and the goals of the course, other sections could be added or used to replace the materials listed above. A course that emphasized modern pricing theory and business strategy would include all of Chapters 10, 11, 12, and 13, and the remaining sections of Chapter 15. A course in managerial economics might also include the Appendices to Chapters 4, 7, and 11, as well as the Appendix on regression analysis at the end of the book. A course that emphasized welfare economics and public policy should include Chapter 16 and additional sections of Chapter 18.

Finally, we want to stress that those sections or subsections which are more demanding and/or are peripheral to the core material have been marked with an asterisk. These sections can easily be omitted without detracting from the flow of the book.

#### **Supplementary Materials**

Instructional aids of an exceptionally high quality are available to instructors and students using this book. The Instructor's Manual was written by Gilbert White of Michigan State University, Geoffrey Rothwell of Stanford University, and Valerie Suslow of the University of Michigan. It provides answers to all of the Questions for Review and the Exercises that appear at the end of the chapters, as well as a summary of the key points in each chapter and a series of teaching suggestions. It is available from the publisher on request, as is a separate Test Bank, written by Dennis Muraoka and Judith Roberts of California State University at Long Beach. The Study Guide, by Valerie Suslow of the University of Michigan and Jonathan Hamilton of the University of Florida, provides a wide variety of review materials and exercises for students. The Study Guide can be purchased separately. Finally, Arthur Lewbel of Brandeis University has developed MICRO-EX, an innovative software package that extends many of the examples, and reinforces an understanding of the concepts and their application by allowing the student to easily work through a variety of simulation exercises. This software is also available for separate purchase. Please contact your Prentice Hall sales representative for information on availability of all supplementary materials.

#### Acknowledgments

Since this text has been the outgrowth of years of experience in the classroom, we owe a debt of gratitude to our students and to the colleagues with whom we often discuss microeconomics and its presentation. We have also had the help of capable research assistants, including Walter Athier, Phillip Gibbs, Jamie Jue, Kathy O'Regan, Karen Randig, Subi Rangan, and Deborah Senior. Kathy Hill helped with the art, while Assunta Kent, Mary Knott, and Dawn Elliott Linahan provided secretarial assistance with the first edition. We especially want to thank Lynn Steele and Jay Tharp, who provided considerable editorial support for the second edition. Mark Glickman and Steve Wiggins assisted with the examples in the third edition, while Andrew Guest, Jeanette Sayre, and Lynn Steele provided valuable editorial support.

Writing this book has been a painstaking and enjoyable process. At each stage we received exceptionally fine guidance from teachers of microeconomics throughout the country. After the first draft of the first edition of this book had been edited and reviewed, it was discussed at a two-day focus group meeting in New York. This provided an opportunity to get ideas from instructors with a variety of backgrounds and perspectives. We would like to thank the following focus group members for advice and criticism: Carl Davidson of Michigan State University; Richard Eastin of the University of Southern California; Judith Roberts of California State University, Long Beach; and Charles Strein of the University of Northern Iowa. We would also like to thank all those who reviewed the first edition at each stage of its evolution:

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