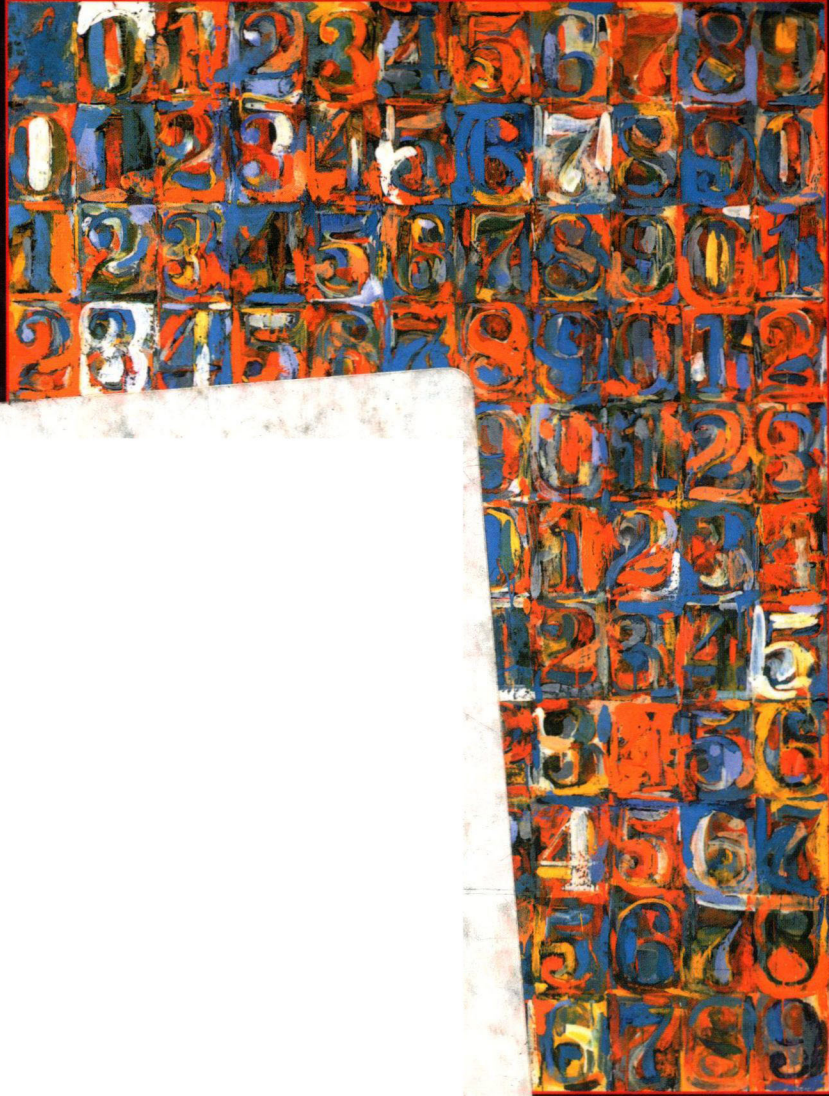


# MANAGERIAL ECONOMICS



& BUSINESS STRATEGY

THIRD EDITION

MICHAEL R. BAYE

# MANAGERIAL ECONOMICS & BUSINESS STRATEGY

**THIRD EDITION**

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**MICHAEL R. BAYE**

Bert Elwert Professor of Business Economics and Public Policy  
Kelley School of Business  
Indiana University



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To my buddy, Mitchell.



# About the Author

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Michael Baye is the Bert Elwert Professor of Business Economics and Public Policy at Indiana University's Kelley School of Business. He received his B.S. from Texas A&M University in 1980, where he won both the University Senior Honors Thesis Prize for best undergraduate thesis and the Alfred Chalk Award for outstanding senior in the economics department. Michael earned a Ph.D. in Economics from Purdue University in 1983.

Michael regularly teaches courses in managerial economics and industrial organization at the undergraduate, MBA, and Ph.D. level. He has won numerous teaching awards, including an Outstanding Graduate Teacher Award at Purdue University's Krannert Graduate School of Management and several Teaching Excellence Awards at Indiana University's Kelley School of Business. He has also taught graduate and undergraduate courses at The Pennsylvania State University, Texas A&M University, and the University of Kentucky, where he also served on the faculty. A prolific researcher, Michael's articles on game theory, industrial organization, and pricing strategy have been published in leading economics journals, including the *American Economic Review*, *Journal of Political Economy*, *Econometrica*, and the *Review of Economic Studies*. His research has been supported by the National Science Foundation, the Fulbright Commission, and other organizations.

Michael has held visiting appointments at Erasmus University and Tilburg University in the Netherlands, the New Economic School in Russia, and NEMETRIA in Italy. He serves on several editorial and advisory boards and is the editor of *Advances in Applied Microeconomics*.





# Preface

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I once again have the pleasure to thank you for making previous editions of *Managerial Economics and Business Strategy* such a success. The goal of this text is to provide students with the tools from intermediate microeconomics, game theory, and industrial organization that they need to make sound managerial decisions. Users have suggested that the book's success stems from its thorough coverage of modern topics not contained in any other single managerial textbook: oligopoly, multistage and repeated games, signaling and screening, contracting, vertical and horizontal integration, bargaining, principal-agent problems, adverse selection, auctions, search, and numerous pricing strategies. It also illustrates the relevance of traditional economic tools: present value analysis, supply and demand, regression, indifference curves, isoquants, production, costs, and the basic models of perfect competition, monopoly, and monopolistic competition. This balanced coverage makes it appropriate for a wide variety of managerial economics classrooms.

In preparing the third edition of *Managerial Economics and Business Strategy*, I have incorporated numerous suggestions from many reviewers, instructors, and students who have used the text. To ensure a smooth transition to the third edition, every effort has been made to maintain the organizational structure and key features of the first two editions.

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## Key Features

### *Headlines*

As in previous editions, each chapter begins with a Headline that is based on a real-world economic problem—a problem that students should be able to address after completing the chapter. Each Headline is essentially a



“mini-case” that reveals the practical issues that can be addressed after completing a chapter. The Headlines are answered at the end of the relevant chapter—when the student is better prepared to deal with the complications of real-world problems. Adopters of the first two editions praised the Headlines not only because they motivated students to learn the material in the chapter, but because the answers at the end of each chapter helped students learn how to use economics to make business decisions.

### ***Demonstration Problems***

I continue to believe that the best way to learn economics is to work problems. So, in addition to the Headlines, each chapter contains many *Demonstration Problems* sprinkled throughout the text, along with detailed answers. Users of the first two editions liked this feature for two main reasons. First, it provides students with a mechanism to verify that they have mastered the material. Secondly, it reduces the cost to students and instructors of having to meet during office hours to discuss answers to problems.

### ***Inside Business Applications***

The third edition includes updated boxed material (called *Inside Business Applications*) to illustrate how theories explained in the text relate to a host of different business situations. As in the first two editions, I have tried to strike a balance between applications drawn from the current economic literature and the popular press.

### ***Calculus and Non-Calculus Alternatives***

Users can easily include or exclude calculus-based material without losing content or continuity. That’s because the basic principles and formulae needed to solve a particular class of economic problems (e.g.,  $MR = MC$ ) are first stated without appealing to the notation of calculus. Immediately following each stated principle or formula is a clearly marked *Calculus Alternative*. Each of these calculus alternatives states the preceding principle or formula in calculus notation, and explains the relation between the calculus and non-calculus based formula. More detailed calculus derivations are relegated to Appendices. Thus, the book is designed for use by instructors who want to integrate calculus into managerial economics, and by those who do not require students to use calculus.

### ***Key Terms and Marginal Definitions***

Each chapter ends with a list of key terms and concepts. These provide an easy way for professors to glean material covered in each chapter, and for students to check their mastery of terminology. In addition, marginal definitions are provided throughout the text.

### ***End-of-Chapter Problems***

All thirteen chapters contain a large assortment of class-tested End-of-Chapter Problems. Many are new to the third edition. Answers to selected problems are presented at the end of the book; a complete set of answers is available to instructors in the Instructor's Manual.

### ***Flexibility***

Our market research reveals that there is a significant amount of change going on in managerial economics classrooms, and as a result, instructors have genuinely heterogeneous needs when it comes to textbooks. The third edition continues to recognize the diverse needs of the market. Reviewers and users have assured us that material or even entire chapters can be excluded without losing continuity.

### ***Learning Diskette***

Each text includes a learning disk that contains files to help students get hands-on experience at making economic decisions. The disk includes (1) revised data for regression problems, (2) spreadsheet versions of key tables in the book to enable students to see how key economic concepts—like marginal cost and profit-maximization—can be implemented on standard spreadsheets, and (3) spreadsheet files that students can use to find the optimum price and quantity under a variety of market settings, including monopoly, Cournot oligopoly, and Stackelberg oligopoly.

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## **Supplements**

### ***Power Point Slides***

New to the third edition, Power Point Presentations are available to instructors who adopt the third edition. These presentations include slides with animated figures and graphs to make teaching and learning a snap. For instance, a simple mouse click reveals the firm's demand curve. Another click reveals the associated marginal revenue curve. Another click shows the firm's marginal cost. A few more clicks, and students see how to determine the profit-maximizing output, price, and maximum profits. Animated graphs and tables are also provided for all other relevant concepts (like Cournot and Stackelberg equilibrium, normal form and extensive form games, etc.).

### ***Instructor's Manual***

An Instructor's Manual, prepared by Michael R. Baye and Patrick Scholten, provides (1) a summary of each chapter, (2) a teaching outline for each chapter, (3) a set of open-ended mini-cases compiled by Darrell Parker, (4) complete answers to all End-of-Chapter Problems, (5) a hard copy of the questions

contained in the electronic test bank, and (6) transparency masters for selected figures from the text.

### ***Electronic Test Bank***

The test questions provided in the Instructor's Manual are also available in an electronic test bank in Word for Windows format.

### ***Study Guide***

In addition to the numerous problems and answers contained in the textbook, I have written a student workbook that is designed to enhance student performance at minimal cost.

### ***Website***

Starting with the third edition, I am introducing a website developed by Ron Cenfetelli which is available at [www.mhhe.com/economics/baye](http://www.mhhe.com/economics/baye). This resource not only provides direct support and updates for the text, but serves as a filter to the plethora of economic-related information available on the world wide web. The instructor area of the site contains downloadable versions of some of the supplements described above, as well as chapter-by-chapter hypertext links to pertinent news articles and websites offering real-world economic examples. The student site includes links to these articles, sample problems from the Study Guide, and other material designed to help students effectively use both the textbook and study guide. My web page at Indiana University (<http://php.indiana.edu/~mbaye>) also contains a link to this and other cool sites.

## **New to This Edition**

Every effort has been made to update and improve *Managerial Economics and Business Strategy* while assuring a smooth transition to the third edition. Below is a summary of some of the changes to the third edition.

### ***New Pedagogical Features***

- Learning Diskette included with every textbook at no additional cost.
- Power Point Slides available for adopters of the third edition.
- Website for instructors and students.
- Links between economics and other business disciplines such as marketing, strategic management, human resources, and managerial accounting are clearly identified.
- Expanded marginal definitions.
- New and updated Headlines, Inside Business Applications, Demonstration Problems, and End-of-Chapter Problems to help students learn the economic way of thinking.

### *Summary of Content Changes*

- **Chapter 1** has been revised to incorporate links between economics and other business disciplines, including managerial accounting, strategic management, and finance. Coverage has been expanded to include the Five Forces Model and incremental decisions. Contains new End-of-Chapter Problems, including one that compares the benefits of Roth IRAs with traditional IRAs.
- **Chapter 2** opens with a new Headline and contains new and updated Inside Business Applications. The third edition includes more lively End-of-Chapter Problems, including one that involves proposed price ceilings on ATM fees.
- **Chapter 3** begins with a new Headline, has several new Inside Business Applications, and many new End-of-Chapter Problems. Expanded coverage of cross-price elasticities shows how managers of multiproduct firms can use cross subsidies to enhance their revenues. For professors who cover regression analysis, several problems are based on new data contained on the learning diskette that accompanies the textbook. These problems permit students to use a spreadsheet to estimate demand functions.
- **Chapters 4–6** offer several new Inside Business Applications, End-of-Chapter Problems, and Headlines. Chapter 5 contains a thoroughly revised section on sunk costs that makes the irrelevance of sunk costs in decision making crystal-clear to students.
- **Chapter 7** has been revised to include totally updated data on concentration, advertising, profits, R&D, and trends in mergers and acquisitions. A new Inside Business Application discusses the ramifications of the new North American Industry Classification System (NAICS) that recently replaced the Standard Industrial Classification (SIC) system.
- **Chapter 8** contains new material throughout that relates pricing, output, and advertising decisions to terms students are familiar from other business disciplines, such as marketing. A new section on advertising is included which shows students how own-price and advertising elasticities of demand can be used to determine the optimal advertising to sales ratio. Also included are several new Demonstration Problems and End-of-Chapter Problems.
- **Chapter 9** has been revised to include real-world examples that make different oligopoly models come to life. A new Inside Business Application shows students how they can use spreadsheet files contained on the learning diskette to compute Cournot and Stackelberg equilibrium outputs, prices, and profits with a few clicks of the mouse.
- **Chapter 10** opens with a new Headline that is guaranteed to motivate students to learn game theory. The chapter also includes a new Inside Business Application that discusses collusion among NASDAQ dealers, and many new problems that are based on real-world business scenarios.
- **Chapter 11** opens with a new Headline and contains new Inside Business Applications and End-of-Chapter Problems. The treatment of peak-load pricing has been improved.
- **Chapter 12** has been thoroughly revised and expanded to provide an up-to-date treatment of issues surrounding asymmetric information, including

moral hazard (hidden actions), adverse selection (hidden characteristics), screening, signaling, self-selection devices, and optimal bidding strategies in auctions with both independent private values and affiliated (or correlated) value estimates. A number of new problems and Inside Business Applications have also been added.

- **Chapter 13** has been revised to reflect the 1997 revision to the Department of Justice and Federal Trade Commission *Merger Guidelines*, the *Hart-Scott-Rodino Antitrust Improvement Act*, merger pre-notification requirements, and the merger approval process. Coverage of the Clean Air Act, quotas, and false advertisements has been simplified and improved.

## Acknowledgments

First and foremost, I thank the many users of this book for the feedback you provided to help me improve *Managerial Economics and Business Strategy*. This includes several cohorts of students at Indiana University, the many instructors who have used my book in their own classrooms, and the following reviewers who provided detailed suggestions to improve this and previous editions of the book: Dean Baim, Barbara C. Beliveau, Dan Black, Robert L. Chapman, Ian Cromb, Audrey B. Davidson, Robert DeCotret, Martine Duchatelet, Kevin C. Duncan, David Ely, Lynn G. Gillette, Otis Gilley, Andrea Mays Griffith, Gail Heyne Hafer, Karen Hallows, Robert Hansen, Mehdi Harian, Jack Hou, Lowell R. Jacobsen, Jaswant R. Jindia, W. J. Lane, Khalid Mehtabin, Dennis Muraoka, James Perry, Dwight Porter, Craig Schulman, Peter Schwartz, Edward Shinnick, Dean Showalter, William Simeone, Mark Stegeman, Barbara M. Suleski, Roger Tutterow, John Wade, Leonard White, Mike Williams, and Richard Winkelman.

In addition, I thank my team at Irwin/McGraw-Hill—Nelson Black, Michelle Munn, Miller Murray, and Paul Shensa—for supporting this project and helping to make it a success. I owe a special debt to Patrick Scholten for the countless hours he spent helping with this revision. I also thank M'Lissa Baye, Michael Benavidez, and Christopher Pope for assisting me during various stages of the revision. As planning for the fourth edition will begin all too soon, I welcome your comments and suggestions. Visit my webpage at <http://php.indiana.edu/~mbaye> or write to me directly at my internet address: [mbaye@indiana.edu](mailto:mbaye@indiana.edu).

Michael R. Baye  
Bloomington Indiana  
May 28, 1999



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