NINTH EDITION

Managerial Economics AND Business Strategy

McGraw Hill Education

MICHAEL R. BAYE / JEFFREY T. PRINCE

NINTH EDITION

Managerial Economics and Business Strategy

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NINTH EDITION

Managerial Economics and Business Strategy

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MANAGERIAL ECONOMICS AND BUSINESS STRATEGY, NINTH EDITION

Published by McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 LWI 21 20 19 18 17 16

ISBN 978-1-259-29061-9
MHID 1-259-29061-1

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Cover Image: © *Pasieka/Getty Images*
Compositor: *SPi Global*
Typyface: *10/12 STIX MathJax Main*
Printer: *LSC Communications*

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Library of Congress Control Number: 2016042214

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DEDICATION

To my former students.

—Michael R. Baye

To Annie, Kate, and Elise.

—Jeffrey T. Prince

About the Authors

Michael R. Baye is the Bert Elwert Professor of Business Economics & Public Policy at Indiana University's Kelley School of Business, and served as the Director of the Bureau of Economics at the Federal Trade Commission from July 2007 to December 2008. He received his BS in economics from Texas A&M University in 1980 and earned a PhD in economics from Purdue University in 1983. Prior to joining Indiana University, he taught graduate and undergraduate courses at The Pennsylvania State University, Texas A&M University, and the University of Kentucky. He has held a variety of editorial posts in economics, marketing, and business, and currently serves as a co-editor for the *Journal of Economics and Management Strategy*.

Professor Baye has won numerous awards for his outstanding teaching and research, and teaches courses in managerial economics and industrial organization at the undergraduate, MBA, and PhD levels. His research has been published in the *American Economic Review, Journal of Political Economy, Econometrica, Review of Economic Studies, Economic Journal,* and *Management Science.* It has also been featured in *The Wall Street Journal, Forbes,* the *New York Times,* and numerous other outlets. When he is not teaching or engaged in research, Mike enjoys activities ranging from camping to shopping for electronic gadgets.

Jeffrey T. Prince is Associate Professor of Business Economics & Public Policy at Indiana University's Kelley School of Business. He is also the Harold A. Poling Chair in Strategic Management. He received his BA in economics and BS in mathematics and statistics from Miami University in 1998 and earned a PhD in economics from Northwestern University in 2004. Prior to joining Indiana University, he taught graduate and undergraduate courses at Cornell University.

Professor Prince has won top teaching honors as a faculty member at both Indiana University and Cornell, and as a graduate student at Northwestern. He has a broad research agenda within applied economics, having written and published on topics that include demand in technology markets, Internet diffusion, regulation in health care, risk aversion in insurance markets, and quality competition among airlines. He is one of a small number of economists to have published in both the top journal in economics (*American Economic Review*) and the top journal in management (*Academy of Management Journal*). He currently serves as a co-editor for the *Journal of Economics and Management Strategy* and on the editorial board for *Information Economics and Policy.* In his free time, Jeff enjoys activities ranging from poker and bridge to running and racquetball.

Preface

Thanks to feedback from users around the world, *Managerial Economics and Business Strategy* remains the best-selling managerial text in the market. We are grateful to all of you for allowing us to provide this updated and improved edition. Before highlighting some of the new features of the ninth edition, we would like to stress that the fundamental goal of the book—providing students with the tools from intermediate microeconomics, game theory, and industrial organization that they need to make sound managerial decisions—has not changed. What *has* changed are the examples used to make managerial economics come to life for this generation of students and the utilization of new technologies (such as *Connect*) for enhancing the teaching and learning experiences of instructors and their students.

This book begins by teaching managers the practical utility of basic economic tools such as present value analysis, supply and demand, regression, indifference curves, isoquants, production, costs, and the basic models of perfect competition, monopoly, and monopolistic competition. Adopters and reviewers also praise the book for its real-world examples and because it includes modern topics not contained in any other single managerial economics textbook: oligopoly, penetration pricing, multistage and repeated games, foreclosure, contracting, vertical and horizontal integration, networks, bargaining, predatory pricing, principal–agent problems, raising rivals' costs, adverse selection, auctions, screening and signaling, search, limit pricing, and a host of other pricing strategies for firms enjoying market power. This balanced coverage of traditional and modern microeconomic tools makes it appropriate for a wide variety of managerial economics classrooms. An increasing number of business schools are adopting this book to replace (or use alongside) managerial strategy texts laden with anecdotes but lacking the microeconomic tools needed to identify and implement the business strategies that are optimal in a given situation.

This ninth edition of *Managerial Economics and Business Strategy* has been revised to include updated examples and problems, but it retains all of the basic content that made previous editions a success. The basic structure of the textbook is unchanged to ensure a smooth transition to this edition.

KEY PEDAGOGICAL FEATURES

The ninth edition retains all of the class-tested features of previous editions that enhance students' learning experiences and make it easy to teach from this book. But this edition includes a number of new features available to those using McGraw-Hill's wonderful interactive learning products, *Connect* and *SmartBook*. *McGraw-Hill Connect*® offers hundreds of variations of end-of-chapter problems that may be electronically graded and provide students with immediate, detailed, feedback. *SmartBook*® provides an adaptive reading experience. Students and instructors can access these and other powerful resources directly from their laptops, tablets, and phones. We know how important quality and accuracy is for both instructors and students when utilizing these enhanced features. For this reason, and unlike many competing books, we are directly involved in the generation and editing of material offered through both Connect and SmartBook.

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. These *Headlines* are essentially hand-picked "mini-cases" designed to motivate students to learn the material in the chapter. Each *Headline* is answered at the end of the relevant chapter—when the student is better prepared to deal with the complications of real-world problems. Reviewers as well as users of previous editions praise the *Headline*s not only because they motivate students to learn the material in the chapter, but also because the answers at the end of each chapter help students learn how to use economics to make business decisions.

Learning Objectives

Each chapter includes learning objectives designed to enhance the learning experience. End-of-chapter problems are denoted with the learning objective(s) to which they relate.

Demonstration Problems

The best way to learn economics is to practice solving economic problems. So, in addition to the *Headlines,* each chapter contains many *Demonstration Problems* sprinkled throughout the text, along with detailed answers. This provides students with a mechanism to verify that they have mastered the material, and reduces the cost to students and instructors of having to meet during office hours to discuss answers to problems. Some of the more challenging demonstration problems have an accompanying video tutorial that walks through the solution step-by-step. These videos are available via *Connect* and at www.mhhe.com/baye9e.

Inside Business Applications

Most chapters contain boxed material (called *Inside Business* applications) to illustrate how theories explained in the text relate to a host of different business situations. As in previous editions, we 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-based and non-calculus-based formula. More detailed calculus derivations are relegated to chapter *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.

Variety of End-of-Chapter Problems

Three types of problems are offered. Highly structured but nonetheless challenging *Conceptual and Computational Questions* stress fundamentals. These are followed by *Problems and*

Applications, which are far less structured and, like real-world decision environments, may contain more information than is actually needed to solve the problem. Many of these applied problems are based on actual business events.

Additionally, the *Time Warner Cable* case that follows Chapter 14 includes 13 problems called Memos that have a "real-world feel" and complement the text. All of these case-based problems may be assigned on a chapter-by-chapter basis as specific skills are introduced, or as part of a capstone experience.

Detailed answers to all problems can be found among the instructor resource material available via *Connect.*

Case Study

A case study in business strategy—*Time Warner Cable*—follows Chapter 14 and was prepared especially for this text. It can be used either as a capstone case for the course or to supplement individual chapters. The case allows students to apply core elements from managerial economics to a remarkably rich business environment. Instructors can use the case as the basis for an "open-ended" discussion of business strategy, or they can assign specific "memos" (contained at the end of the case) that require students to apply specific tools from managerial economics to the case. Teaching notes, as well as solutions to all of the memos, are provided among the instructor resource material available via *Connect.*

Flexibility

Instructors of managerial economics have genuinely heterogeneous textbook needs. Reviewers and users continue to praise the book for its flexibility, and they assure us that sections or even entire chapters can be excluded without losing continuity. For instance, an instructor wishing to stress microeconomic fundamentals might choose to cover Chapters 2, 3, 4, 5, 8, 9, 10, 11, and 12. An instructor teaching a more applied course that stresses business strategy might choose to cover Chapters 1, 2, 3, 5, 6, 7, 8, 10, 11, and 13. Each may choose to include additional chapters (for example, Chapter 14 or the *Time Warner Cable* case) as time permits. More generally, instructors can easily omit topics such as present value analysis, regression, indifference curves, isoquants, or reaction functions without losing continuity.

CHANGES IN THE NINTH EDITION

We have made every effort to update and improve *Managerial Economics and Business Strategy* while assuring a smooth transition to the ninth edition. Following is a summary of the pedagogical improvements, enhanced supplements, and content changes that make the ninth edition an even more powerful tool for teaching and learning managerial economics and business strategy.

- A brand new Case Study—*Time Warner Cable*—which introduces a whole new set of managerial challenges beyond those posed in our previous case, *Challenges at Time Warner.*
- New and updated end-of-chapter problems.
- Learning objective labels for each end-of-chapter problem, to help foster targeted learning.
- New and updated *Headlines.*
- New and updated *Inside Business* applications.

Chapter-by-Chapter Changes

- **Chapter 1** contains new and updated examples, several updated end-of-chapter problems, and a new end-of-chapter problem that carefully distinguishes total benefits and total costs from marginal benefits and marginal costs in an applied setting.
- **Chapter 2** contains updated demonstration problems and an expanded discussion of price floors in the text and demonstration problems.
- **Chapter 3** contains a new *Headline* and an updated table with accompanying discussion. It also has several updated end-of-chapter problems.
- **Chapter 4** contains an updated *Headline* and updated *Inside Business* applications. It also has several updated end-of-chapter problems.
- **Chapter 5** contains an updated *Inside Business* application with details about the Affordable Care Act. It also includes a formal definition of the law of diminishing marginal returns and has several updated end-of-chapter problems.
- **Chapter 6** offers a new *Inside Business* on the duration of franchise contracts, updated examples, and several updated end-of-chapter problems.
- **Chapter 7** contains a new *Headline,* updated examples and industry data, as well as several updated end-of-chapter problems.
- **Chapter 8** contains an updated *Inside Business* concerning automobile competition in China, updated examples, and several updated end-of-chapter problems.
- **Chapter 9** contains an updated end-of-chapter problem, as well as a new end-of-chapter problem looking at contestability within airline markets.
- **Chapter 10** contains a new *Inside Business* application examining airline competition, as well as improved *Demonstration Problem* exposition. It also has several updated end-of-chapter problems.
- **Chapter 11** contains a new *Inside Business* application discussing the use of fuel points by major U.S. grocery chains. It also has several updated end-of-chapter problems.
- **Chapter 12** includes a new discussion of online reviews as a means of attracting risk-averse customers. It also includes a new *Inside Business* application, as well as several updated end-of-chapter problems.
- **Chapter 13** contains a new *Inside Business* on limit pricing and the "Southwest Effect." It also has two updated end-of-chapter problems.
- **Chapter 14** contains a new *Inside Business* application discussing the Small Business Act for Europe as a key distinction in competition policy between Europe and the United States. In addition, it has two updated end-of-chapter problems, including one discussing the Trans-Pacific Partnership (TPP).

ORGANIZED LEARNING IN THE NINTH EDITION

Chapter Learning Objectives

Students and instructors can be confident that the organization of each chapter reflects common themes outlined by four to seven learning objectives listed on the first page of each chapter. These objectives, along with AACSB and Bloom's taxonomy learning categories, are connected to all end-of-chapter material and test bank questions to offer a comprehensive and thorough teaching and learning experience.

Assurance of Learning Ready

Many educational institutions today are focused on the notion of *assurance of learning,* an important element of some accreditation standards. *Managerial Economics and Business Strategy* is designed specifically to support your assurance of learning initiatives with a simple, yet powerful solution.

Instructors can use *Connect* to easily query for learning outcomes/objectives that directly relate to the learning objectives of the course. You can then use the reporting features of *Connect* to aggregate student results in similar fashion, making the collection and presentation of assurance of learning data simple and easy.

AACSB Statement

McGraw-Hill Global Education is a proud corporate member of AACSB International. Understanding the importance and value of AACSB accreditation, *Managerial Economics and Business Strategy,* 9/e, has sought to recognize the curricula guidelines detailed in the AACSB standards for business accreditation by connecting questions in the test bank and end-of-chapter material to the general knowledge and skill guidelines found in the AACSB standards.

It is important to note that the statements contained in *Managerial Economics and Business Strategy,* 9/e, are provided only as a guide for the users of this text. The AACSB leaves content coverage and assessment within the purview of individual schools, the mission of the school, and the faculty. While *Managerial Economics and Business Strategy,* 9/e, and the teaching package make no claim of any specific AACSB qualification or evaluation, we have labeled questions according to the general knowledge and skill areas.

ACKNOWLEDGMENTS

We thank the many users of *Managerial Economics and Business Strategy* who provided both direct and indirect feedback that has helped improve *your* book. This includes thousands of students at Indiana University's Kelley School of Business and instructors worldwide who have used this book in their own classrooms, colleagues who unselfishly gave up their own time to provide comments and suggestions, and reviewers who provided detailed suggestions to improve this and previous editions of the book. We especially thank the following professors, past and present, for enlightening us on the market's diverse needs and for providing suggestions and constructive criticisms to improve this book.

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We thank Katie Hoenicke, Christina Kouvelis, James Heine, and Doug Ruby at McGraw-Hill for all they have done to make this project a success. We also thank Mitchell Baye, Patrick Scholten, Eric Schmidbauer, Susan Kayser, Kyle Anderson, and Vikram Ahuja for suggestions and assistance during various stages of the revision, and Ellie Mafi-Kreft, Haizhen Lin, and Steven Kreft, who graciously agreed to class test the *Connect* features in their classrooms. Finally, we thank our families for their continued love and support.

As always, we welcome your comments and suggestions for the next edition. Please feel free to write to us directly at *mbaye@indiana.edu* or *jeffprin@indiana.edu.*

Michael R. Baye
Jeffrey T. Prince

SUPPLEMENTS

We know the content and reliability of new editions and book supplements are of utmost importance to users of our book. Because of this, and unlike most other managerial economics books, we personally are involved in crafting and accuracy checking virtually every content update and supplement for our book. Below we discuss popular features of some of the supplements that have been greatly expanded for this edition. The following ancillaries are available for quick download and convenient access via the instructor resource material available through *Connect.*

Cases

In addition to the Time Warner Cable case, nearly a dozen full-length cases were updated and prepared to accompany *Managerial Economics and Business Strategy.* These cases complement the textbook by showing how real-world businesses use tools like demand elasticities, markup pricing, third-degree price discrimination, bundling, Herfindahl indices, game theory, and predatory pricing to enhance profits or shape business strategies. The cases are based on actual decisions by companies that include Microsoft, Heinz, Visa, Staples, American Airlines, and Nasdaq. Expanded teaching notes and solutions for all of the cases—including the Time Warner Cable case—are also provided.

PowerPoint Slides

Thoroughly updated and fully editable PowerPoint presentations with animated figures and graphs, 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, and the like).

Solutions Manual

We have prepared a solutions manual that provides detailed answers to all end-of-chapter problems, all of which have been class-tested for accuracy.

Test Bank

An updated test bank, offers well over 1,000 multiple-choice questions categorized by learning objectives, AACSB learning categories, Bloom's taxonomy objectives, and level of difficulty.

Computerized Test Bank

TestGen is a complete, state-of-the-art test generator and editing application software that allows instructors to quickly and easily select test items from McGraw Hill's test bank content. The instructors can then organize, edit and customize questions and answers to rapidly generate tests for paper or online administration. Questions can include stylized text, symbols, graphics, and equations that are inserted directly into questions using built-in mathematical templates. TestGen's random generator provides the option to display different text or calculated number values each time questions are used. With both quick-and-simple test creation and flexible and robust editing tools, TestGen is a complete test generator system for today's educators.

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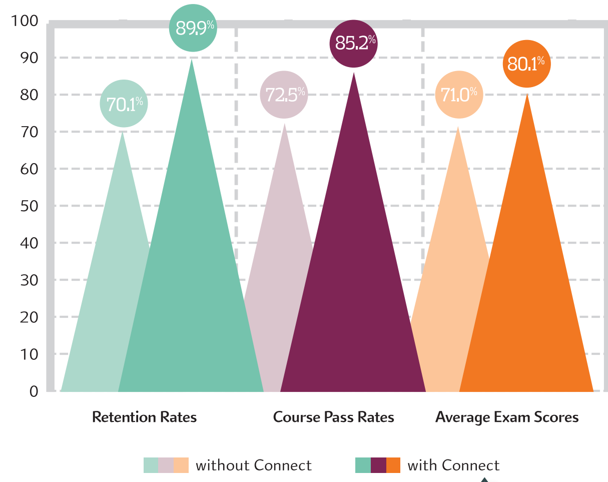

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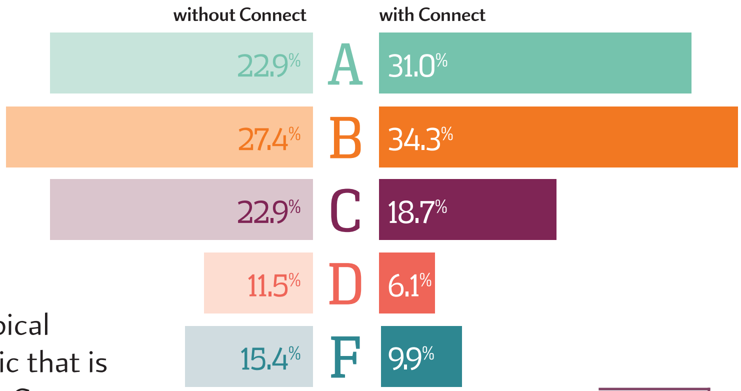

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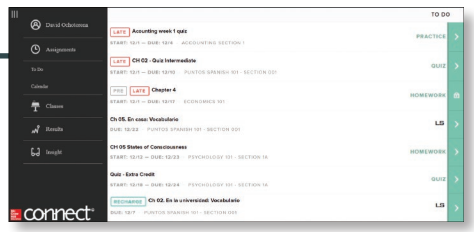

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1

The Fundamentals of Managerial Economics

LEARNING OBJECTIVES

After completing this chapter, you will be able to:

- **LO1** Summarize how goals, constraints, incentives, and market rivalry affect economic decisions.
- **LO2** Distinguish economic versus accounting profits and costs.
- **LO3** Explain the role of profits in a market economy.
- **LO4** Apply the five forces framework to analyze the sustainability of an industry's profits.
- **LO5** Apply present value analysis to make decisions and value assets.
- **LO6** Apply marginal analysis to determine the optimal level of a managerial control variable.
- **LO7** Identify and apply six principles of effective managerial decision making.

headLINE

Amcott Loses $3.5 Million; Manager Fired

On Tuesday software giant Amcott posted a year-end operating loss of $3.5 million. Reportedly, $1.7 million of the loss stemmed from its foreign language division.

At a time when Amcott was paying First National a hefty 7 percent rate to borrow short-term funds, Amcott decided to use $20 million of its retained earnings to purchase three-year rights to Magicword, a software package that converts generic word processor files saved as French text into English. First-year sales revenue from the software was $7 million, but thereafter sales were halted pending a copyright infringement suit filed by Foreign, Inc. Amcott lost the suit and paid damages of $1.7 million. Industry insiders say that the copyright violation pertained to "a very small component of Magicword."

Ralph, the Amcott manager who was fired over the incident, was quoted as saying, "I'm a scapegoat for the attorneys [at Amcott] who didn't do their homework before buying the rights to Magicword. I projected annual sales of $7 million per year for three years. My sales forecasts were right on target."

Do you know why Ralph was fired?[1]

[1]Each chapter concludes with an answer to the question posed in that chapter's opening headline. After you read each chapter, you should attempt to solve the opening headline on your own and then compare your solution to that presented at the end of the chapter.

INTRODUCTION

Many students taking managerial economics ask, “Why should I study economics? Will it tell me what the stock market will do tomorrow? Will it tell me where to invest my money or how to get rich?” Unfortunately, managerial economics by itself is unlikely to provide definitive answers to such questions. Obtaining the answers would require an accurate crystal ball. Nevertheless, managerial economics is a valuable tool for analyzing business situations such as the ones raised in the headlines that open each chapter of this book.

In fact, if you surf the Internet, browse a business publication such as *Bloomberg Businessweek* or *The Wall Street Journal,* or read a trade publication like *Restaurant News* or *Supermarket Business News,* you will find a host of stories that involve managerial economics. A recent search generated the following headlines:

“From iPhones to Automobiles: Apple Car Reportedly Ready to Hit the Streets in 2019”

“Ferrari Spinoff Generates $4 Billion Windfall for Fiat Chrysler”

“Target to Match Online Prices with Online Rivals”

“U.S. Indicts Three in Auto Parts Price-Fixing Probe”

“Competition Heats Up for Northwest Wine Shipping”

“U.S. Government Steps Up Challenges to Hospital Mergers”

“Brands Rethink Social Media Strategy”

“Comcast Calls Off Time Warner Cable Merger”

Sadly, billions of dollars are lost each year because many existing managers fail to use basic tools from managerial economics to shape pricing and output decisions, optimize the production process and input mix, choose product quality, guide horizontal and vertical merger decisions, or optimally design internal and external incentives. Happily, if you learn a few basic principles from managerial economics, you will be poised to drive the inept managers out of their jobs! You will also understand why the latest recession was great news to some firms and why some software firms spend millions on the development of applications for smartphones but permit consumers to download them for free.

Managerial economics is not only valuable to managers of *Fortune* 500 companies; it is also valuable to managers of not-for-profit organizations. It is useful to the manager of a food bank who must decide the best means for distributing food to the needy. It is valuable to the coordinator of a shelter for the homeless whose goal is to help the largest possible number of homeless, given a very tight budget. In fact, managerial economics provides useful insights into every facet of the business and nonbusiness world in which we live—including household decision making.

Why is managerial economics so valuable to such a diverse group of decision makers? The answer to this question lies in the meaning of the term *managerial economics.*

The Manager

manager
A person who directs resources to achieve a stated goal.

A **manager** is a person who directs resources to achieve a stated goal. This definition includes all individuals who (1) direct the efforts of others, including those who delegate tasks within an organization such as a firm, a family, or a club; (2) purchase inputs to be used in the production of goods and services such as the output of a firm, food for the needy, or shelter for the homeless; or (3) are in charge of making other decisions, such as product price or quality.

A manager generally has responsibility for his or her own actions as well as for the actions of individuals, machines, and other inputs under the manager's control. This control may involve responsibilities for the resources of a multinational corporation or for those of a single household. In each instance, however, a manager must direct resources and the behavior of individuals for the purpose of accomplishing some task. While much of this book assumes the manager's task is to maximize the profits of the firm that employs the manager, the underlying principles are valid for virtually any decision process.

Economics

The primary focus of this book is on the second word in *managerial economics*. **Economics** is the science of making decisions in the presence of scarce resources. *Resources* are simply anything used to produce a good or service or, more generally, to achieve a goal. Decisions are important because scarcity implies that by making one choice, you give up another. A computer firm that spends more resources on advertising has fewer resources to invest in research and development. A food bank that spends more on soup has less to spend on fruit. Economic decisions thus involve the allocation of scarce resources, and a manager's task is to allocate resources so as to best meet the manager's goals.

economics
The science of making decisions in the presence of scarce resources.

One of the best ways to comprehend the pervasive nature of scarcity is to imagine that a genie has appeared and offered to grant you three wishes. If resources were not scarce, you would tell the genie you have absolutely nothing to wish for; you already have everything you want. Surely, as you begin this course, you recognize that time is one of the scarcest resources of all. Your primary decision problem is to allocate a scarce resource—time—to achieve a goal—such as mastering the subject matter or earning an A in the course.

Managerial Economics Defined

Managerial economics, therefore, is the study of how to direct scarce resources in the way that most efficiently achieves a managerial goal. It is a very broad discipline in that it describes methods useful for directing everything from the resources of a household to maximize household welfare to the resources of a firm to maximize profits.

managerial economics
The study of how to direct scarce resources in the way that most efficiently achieves a managerial goal.

To understand the nature of decisions that confront managers of firms, imagine that you are the manager of a *Fortune* 500 company that makes computers. You must make a host of decisions to succeed as a manager: Should you purchase components such as disk drives and chips from other manufacturers or produce them within your own firm? Should you specialize in making one type of computer or produce several different types? How many computers should you produce, and at what price should you sell them? How many employees should you hire, and how should you compensate them? How can you ensure that employees work hard and produce quality products? How will the actions of rival computer firms affect your decisions?

The key to making sound decisions is to know what information is needed to make an informed decision and then to collect and process the data. If you work for a large firm, your legal department can provide data about the legal ramifications of alternative decisions; your accounting department can provide tax advice and basic cost data; your marketing department can provide you with data on the characteristics of the market for your product; and your firm's financial analysts can provide summary data for alternative methods of obtaining financial capital. Ultimately, however, the manager must integrate all of this information, process it, and arrive at a decision. The remainder of this book will show you how to perform this important managerial function by using six principles that comprise effective management.

THE ECONOMICS OF EFFECTIVE MANAGEMENT

The nature of sound managerial decisions varies depending on the underlying goals of the manager. Since this course is designed primarily for managers of firms, this book focuses on managerial decisions as they relate to maximizing profits or, more generally, the value of the firm. Before embarking on this special use of managerial economics, we provide an overview of the basic principles that comprise effective management. In particular, an effective manager must (1) identify goals and constraints, (2) recognize the nature and importance of profits, (3) understand incentives, (4) understand markets, (5) recognize the time value of money, and (6) use marginal analysis.

Identify Goals and Constraints

The first step in making sound decisions is to have well-defined *goals* because achieving different goals entails making different decisions. If your goal is to maximize your grade in this course rather than maximize your overall grade point average, your study habits will differ accordingly. Similarly, if the goal of a food bank is to distribute food to needy people in rural areas, its decisions and optimal distribution network will differ from those it would use to distribute food to needy inner-city residents. Notice that, in both instances, the decision maker faces *constraints* that affect the ability to achieve a goal. The 24-hour day affects your ability to earn an A in this course; a budget affects the ability of the food bank to distribute food to the needy. Constraints are an artifact of scarcity.

Different units within a firm may be given different goals; those in a firm's marketing department might be instructed to use their resources to maximize sales or market share, while those in the firm's financial group might focus on earnings growth or risk-reduction strategies. Later in this book we will see how the firm's overall goal—maximizing profits—can be achieved by giving each unit within the firm an incentive to achieve potentially different goals.

Unfortunately, constraints make it difficult for managers to achieve goals such as maximizing profits or increasing market share. These constraints include such things as the available technology and the prices of inputs used in production. The goal of maximizing profits requires the manager to decide the optimal price to charge for a product, how much to produce, which technology to use, how much of each input to use, how to react to decisions made by competitors, and so on. This book provides tools for answering these types of questions.

Recognize the Nature and Importance of Profits

The overall goal of most firms is to maximize profits or the firm's value, and the remainder of this book will detail strategies managers can use to achieve this goal. Before we provide these details, let us examine the nature and importance of profits in a free-market economy.

Economic versus Accounting Profits

accounting profits
The total amount of money taken in from sales (total revenue, or price times quantity sold) minus the dollar cost of producing goods or services.

When most people hear the word *profit,* they think of accounting profits. **Accounting profits** are the total amount of money taken in from sales (total revenue, or price times quantity sold) minus the dollar cost of producing goods or services. Accounting profits are what show up on the firm's income statement and are typically reported to the manager by the firm's accounting department.

A more general way to define profits is in terms of what economists refer to as economic profits. **Economic profits** are the difference between the total revenue and the total opportunity cost of producing the firm's goods or services. The **opportunity cost** of using a resource includes both the *explicit* (or *accounting*) *cost* of the resource and the *implicit cost* of giving up the best alternative use of the resource. The opportunity cost of producing a good or service generally is higher than accounting costs because it includes both the dollar value of costs (explicit, or accounting, costs) and any implicit costs.

economic profits
The difference between total revenue and total opportunity cost.

opportunity cost
The explicit cost of a resource plus the implicit cost of giving up its best alternative use.

Implicit costs are very hard to measure and therefore managers often overlook them. Effective managers, however, continually seek out data from other sources to identify and quantify implicit costs. Managers of large firms can use sources within the company, including the firm's finance, marketing, and/or legal departments, to obtain data about the implicit costs of decisions. In other instances managers must collect data on their own. For example, what does it cost you to read this book? The price you paid the bookseller for this book is an explicit (or accounting) cost, while the implicit cost is the value of what you are giving up by reading the book. You could be studying some other subject or watching TV, and each of these alternatives has some value to you. The "best" of these alternatives is your implicit cost of reading this book; you are giving up this alternative to read the book. Similarly, the opportunity cost of going to school is much higher than the cost of tuition and books; it also includes the amount of money you would earn had you decided to work rather than go to school.

In the business world, the opportunity cost of opening a restaurant is the best alternative use of the resources used to establish the restaurant—say, opening a hair salon. Again, these resources include not only the explicit financial resources needed to open the business but any implicit costs as well. Suppose you own a building in New York that you use to run a small pizzeria. Food supplies are your only accounting costs. At the end of the year, your accountant informs you that these costs were \$20,000 and that your revenues were \$100,000. Thus, your accounting profits are \$80,000.

However, these accounting profits overstate your economic profits because the costs include only accounting costs. First, the costs do not include the time you spent running the business. Had you not run the business, you could have worked for someone else, and this fact reflects an economic cost not accounted for in accounting profits. To be concrete, suppose you could have worked for someone else for \$30,000. Your opportunity cost of time would have been \$30,000 for the year. Thus, \$30,000 of your accounting profits are not profits at all but one of the implicit costs of running the pizzeria.

Second, accounting costs do not account for the fact that, had you not run the pizzeria, you could have rented the building to someone else. If the rental value of the building is \$100,000 per year, you gave up this amount to run your own business. Thus, the costs of running the pizzeria include not only the costs of supplies (\$20,000) but the \$30,000 you could have earned in some other business *and* the \$100,000 you could have earned in renting the building to someone else. The economic cost of running the pizzeria is \$150,000—the amount you gave up to run your business. Considering the revenue of \$100,000, you actually lost \$50,000 by running the pizzeria; your *economic profits* were –\$50,000.

Throughout this book, when we speak of costs, we mean economic costs. Economic costs are opportunity costs and include not only the explicit (accounting) costs but also the implicit costs of the resources used in production.

The Role of Profits

A common misconception is that the firm's goal of maximizing profits is necessarily bad for society. Individuals who want to maximize profits often are considered self-interested, a

INSIDE BUSINESS 1–1

The Goals of Firms in Our Global Economy

Recent trends in globalization have forced businesses around the world to more keenly focus on profitability. This trend is also present in Japan, where historical links between banks and businesses have traditionally blurred the goals of firms. For example, the Japanese business engineering firm Mitsui & Co. Ltd. launched "Challenge 21," a plan directed at helping the company emerge as Japan's leading business engineering group. According to a spokesperson for the company, "[This plan permits us to] create new value and maximize profitability by taking steps such as renewing our management framework and prioritizing the allocation of our resources into strategic areas. We are committed to maximizing shareholder value through business conduct that balances the pursuit of earnings with socially responsible behavior."

Ultimately, the goal of any continuing company must be to maximize the value of the firm. This goal is often achieved by trying to hit intermediate targets, such as minimizing costs or increasing market share. If you—as a manager—do not maximize your firm's value over time, you will be in danger of either going out of business, being taken over by other owners (as in a leveraged buyout), or having stockholders elect to replace you and other managers.

Source: "Mitsui & Co., Ltd. UK Regulatory Announcement: Final Results," *Business Wire,* May 13, 2004.

quality that many people view as undesirable. However, consider Adam Smith's classic line from *The Wealth of Nations:* "It is not out of the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest."[2]

Smith is saying that by pursuing its self-interest—the goal of maximizing profits—a firm ultimately meets the needs of society. If you cannot make a living as a rock singer, it is probably because society does not appreciate your singing; society would more highly value your talents in some other employment. If you break five dishes each time you clean up after dinner, your talents are perhaps better suited for filing paperwork or mowing the lawn. Similarly, the profits of businesses signal where society's scarce resources are best allocated. When firms in a given industry earn economic profits, the opportunity cost to resource holders outside the industry increases. Owners of other resources soon recognize that, by continuing to operate their existing businesses, they are giving up profits. This induces new firms to enter the markets in which economic profits are available. As more firms enter the industry, the market price falls, and economic profits decline.

Thus, profits signal the owners of resources where the resources are most highly valued by society. By moving scarce resources toward the production of goods most valued by society, the total welfare of society is improved. As Adam Smith first noted, this phenomenon is due not to benevolence on the part of the firms' managers but to the self-interested goal of maximizing the firms' profits.

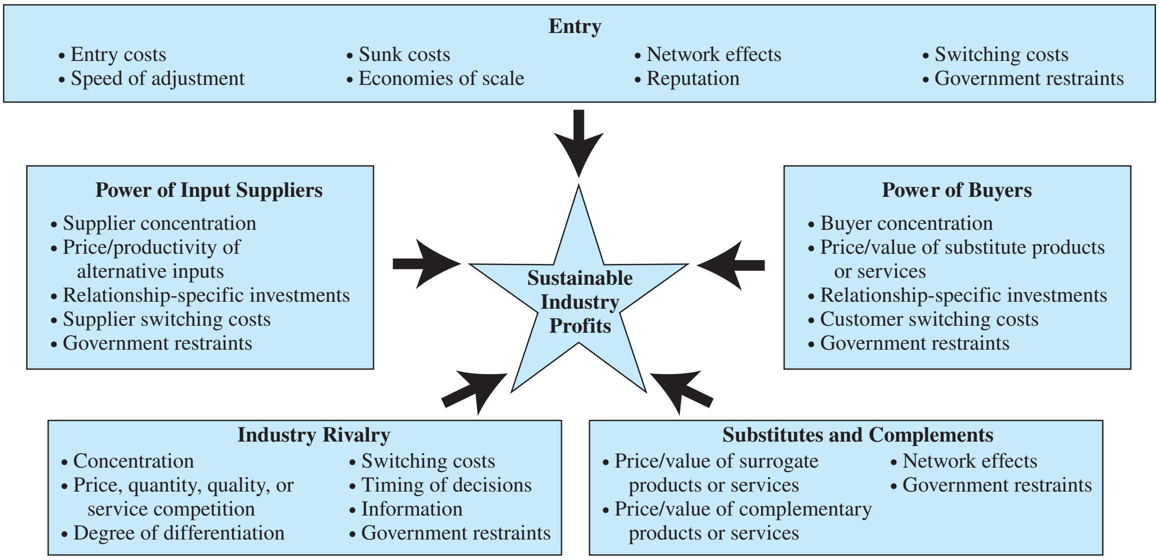
PRINCIPLE

Profits Are a Signal

Profits signal to resource holders where resources are most highly valued by society.

[2]Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations,* 1776.

Figure 1–1
The Five Forces Framework



The Five Forces Framework and Industry Profitability

A key theme of this textbook is that many interrelated forces and decisions influence the level, growth, and sustainability of profits. If you or other managers in the industry are clever enough to identify strategies that yield a windfall to shareholders this quarter, there is no guarantee that these profits will be sustained in the long run. You must recognize that profits are a signal—if your business earns superior profits, existing and potential competitors will do their best to get a piece of the action. In the remaining chapters, we will examine a variety of business strategies designed to enhance your prospects of earning and sustaining profits. Before we do so, however, it is constructive to provide a conceptual framework for thinking about some of the factors that impact industry profitability.

Figure 1–1 illustrates the *"five forces" framework* pioneered by Michael Porter.[3] This framework organizes many complex managerial economics issues into five categories or "forces" that impact the sustainability of industry profits: (1) entry, (2) power of input suppliers, (3) power of buyers, (4) industry rivalry, and (5) substitutes and complements. The following discussion explains how these forces influence industry profitability and highlights the connections among these forces and material covered in the remaining chapters of the text.

Entry. As we will see in Chapters 2, 7, and 8, entry heightens competition and reduces the margins of existing firms in a wide variety of industry settings. For this reason, the ability of existing firms to sustain profits depends on how barriers to entry affect the ease with which other firms can enter the industry. Entry can come from a number of directions, including the formation of new companies (Wendy's entered the fast-food industry in the 1970s after its founder, Dave Thomas, left KFC); globalization strategies by foreign companies (Toyota has sold vehicles in Japan since the 1930s but waited until the middle of the last century to

[3]Michael Porter, *Competitive Strategy* (New York: Free Press, 1980).

enter the U.S. automobile market); and the introduction of new product lines by existing firms (computer manufacturer Apple now also sells the popular iPhone).

As shown in Figure 1–1, a number of economic factors affect the ability of entrants to erode existing industry profits. In subsequent chapters, you will learn why entrants are less likely to capture market share quickly enough to justify the costs of entry in environments where there are sizeable sunk costs (Chapters 5 and 9), significant economies of scale (Chapters 5 and 8), or significant network effects (Chapter 13), or where existing firms have invested in strong reputations for providing value to a sizeable base of loyal consumers (Chapter 11) or to aggressively fight entrants (Chapters 10 and 13). In addition, you will gain a better appreciation for the role that governments play in shaping entry through patents and licenses (Chapter 8), trade policies (Chapters 5 and 14), and environmental legislation (Chapter 14). We will also identify a variety of strategies to raise the costs to consumers of "switching" to would-be entrants, thereby lowering the threat that entrants will erode your profits.

Power of Input Suppliers. Industry profits tend to be lower when suppliers have the power to negotiate favorable terms for their inputs. Supplier power tends to be low when inputs are relatively standardized and relationship-specific investments are minimal (Chapter 6), input markets are not highly concentrated (Chapter 7), or alternative inputs are available with similar marginal productivities per dollar spent (Chapter 5). In many countries, the government constrains the prices of inputs through price ceilings and other controls (Chapters 2 and 14), which limits to some extent the ability of suppliers to expropriate profits from firms in the industry.

Power of Buyers. Similar to the case of suppliers, industry profits tend to be lower when customers or buyers have the power to negotiate favorable terms for the products or services produced in the industry. In most consumer markets, buyers are fragmented and thus buyer concentration is low. Buyer concentration and hence customer power tend to be higher in industries that serve relatively few "high-volume" customers. Buyer power tends to be lower in industries where the cost to customers of switching to other products is high—as is often the case when there are relationship-specific investments and hold-up problems (Chapter 6), imperfect information that leads to costly consumer search (Chapter 12), or few close substitutes for the product (Chapters 2, 3, 4, and 11). Government regulations, such as price floors or price ceilings (Chapters 2 and 14), can also impact the ability of buyers to obtain more favorable terms.

Industry Rivalry. The sustainability of industry profits also depends on the nature and intensity of rivalry among firms competing in the industry. Rivalry tends to be less intense (and hence the likelihood of sustaining profits is higher) in concentrated industries—that is, those with relatively few firms. In Chapter 7 we will take a closer look at various measures that can be used to gauge industry concentration.

The level of product differentiation and the nature of the game being played—whether firms' strategies involve prices, quantities, capacity, or quality/service attributes, for example—also impact profitability. In later chapters you will learn why rivalry tends to be more intense in industry settings where there is little product differentiation and firms compete in price (Chapters 8, 9, 10, and 11) and where consumer switching costs are low (Chapters 11 and 12). You will also learn how imperfect information and the timing of decisions affect rivalry among firms (Chapters 10, 12, and 13).

Substitutes and Complements. The level and sustainability of industry profits also depend on the price and value of interrelated products and services. Porter's original five forces framework emphasized that the presence of close substitutes erodes industry profitability.

INSIDE BUSINESS 1–2

Profits and the Evolution of the Computer Industry

When profits in a given industry are higher than in other industries, new firms will attempt to enter that industry. When losses are recorded, some firms will likely leave the industry. This sort of "evolution" has changed the global landscape of personal computer markets.

At the start of the PC era, personal computer makers enjoyed positive economic profits. These higher profits led to new entry and heightened competition. Over the past two decades, entry has led to declines in PC prices and industry profitability despite significant increases in the speed and storage capacities of PCs. Less efficient firms have been forced to exit the market.

In the early 2000s, IBM—the company that launched the PC era when it introduced the IBM PC in the early 1980s—sold its PC business to China-based Lenovo. Compaq—an early leader in the market for PCs—was acquired by Hewlett-Packard. A handful of small PC makers have enjoyed some success competing against the remaining traditional players, which include Dell and Hewlett-Packard. By the late 2000s, Dell's strategy switched from selling computers directly to consumers to entering into relationships with retailers such as Best Buy and Staples. While only time will tell how these strategies will impact the long-run viability of traditional players, competitive pressures continue to push PC prices and industry profits downward as consumers increasingly shift toward tablets and smartphones.

In Chapters 2, 3, 4, and 11 you will learn how to quantify the degree to which surrogate products are close substitutes by using elasticity analysis and models of consumer behavior. We will also see that government policies (such as restrictions limiting the importation of prescription drugs from Canada into the United States) can directly impact the availability of substitutes and thus industry profits.

More recent work by economists and business strategists emphasizes that complementarities also affect industry profitability.[4] For example, Microsoft's profitability in the market for operating systems is enhanced by the presence of complementary products ranging from relatively inexpensive computer hardware to a plethora of Windows-compatible application software. Analogously, Apple's profitability in the cell phone market is enhanced by the tens of thousands of complementary applications ("apps") that are compatible with its iPhone. In Chapters 3, 5, 10, and 13 you will learn how to quantify these complementarities or "synergies" and identify strategies to create and exploit complementarities and network effects.

Many forces that impact the level and sustainability of industry profits are interrelated. For instance, the U.S. automobile industry suffered a sharp decline in industry profitability during the 1970s as a result of sharp increases in the price of gasoline (a complement to automobiles). This change in the price of a complementary product enabled Japanese automakers to *enter* the U.S. market through a differentiation strategy of marketing their fuel-efficient cars, which sold like hotcakes compared to the gas-guzzlers American automakers produced at that time. These events, in turn, have had a profound impact on industry rivalry in the automotive industry—not just in the United States, but worldwide.

It is also important to stress that the five forces framework is primarily a tool for helping managers see the "big picture"; it is a schematic you can use to organize various industry conditions that affect industry profitability and assess the efficacy of alternative business

[4]See, for example, Barry J. Nalebuff and Adam M. Brandenburger, *Co-Opetition* (New York: Doubleday, 1996), as well as R. Preston McAfee, *Competitive Solutions* (Princeton: Princeton University Press, 2002).