# MANAGERIAL ECONOMICS

FIFTH EDITION

MAURICE / THOMAS

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To Niccie and Shelly

# PREFACE

## Our Underlying Philosophy

Three main goals have guided the development of this book from its conception through this newly revised fifth edition.

- Our primary objective has always been to develop and set forth the fundamentals of microeconomic theory while focusing on the use of theory in managerial decision making. Our purpose is to teach business students the economic way of thinking when making business and personal decisions.
- Another related fundamental goal of this text is to show students (future entrepreneurs and business managers) how the theoretical concepts can actually be used and implemented in real-world decision making.
- Finally, our text demonstrates the relation of managerial economics to other courses in a business school curriculum, such as finance, marketing, business policy, and quantitative analysis. Our aim is to reinforce what students have learned in other courses and provide a foundation of analysis for future coursework.

Indeed, these three objectives illuminate the primary distinguishing characteristics of our approach to managerial economics.

## Audience

*Managerial Economics* is essentially an economics text designed especially for business students. A majority of students, including both undergraduates and students in MBA programs, will enroll in courses with the same title as this book. However, many instructors and students use this text for courses in applied microeconomics.

This text can stand alone in the sense that it contains all of the principles of microeconomics theory needed to understand specific managerial economics concepts; no supplemental text is necessary. By presenting the basic theory and the specific managerial economics constructs together, we demonstrate that managerial economics is simply an application of microeconomics.

## Coverage, Pedagogy, and Changes to the Fifth Edition

We stress that the theoretical principles of microeconomics are useful for managerial decision makers. In order to make this crucial point, we emphasize that the principles of microeconomics will invariably enable a manager to make decisions that will lead to economically efficient solutions, maximize profits, or maximize the value of the firm. Using simple numerical examples, we show that the implementation of microeconomic principles is not all that hard. We do point out that the information used in these examples is more complete than would probably be available to actual business decision makers. These examples of the implementation of the theory are designed to teach the economic way of obtaining solutions to problems if complete information is available. In this way, we develop analytical tools that will be useful when making decisions based upon information that is not so complete. To reinforce further the economic way of thinking about business problems, we draw upon articles in publications such as *The Wall Street*

*Journal* in order to show that actual managers really do use the theoretical principles set forth in the text when making decisions on a day-to-day basis. Almost every one of the chapters includes at least one of these illustrations.

We often relate managerial economics to other courses in business; for example, we use concepts from finance courses in the development of the theories of maximizing the value of the firm and investment. We use marketing concepts in developing the principles of demand forecasting and the effects of advertising. We rely extensively on the concepts developed in courses on quantitative analysis when implementing the theoretical principles of microeconomics.

Because the previous edition of *Managerial Economics* represented a major revision that included a reorganization and some change of emphasis, this edition was not revised as extensively as the last. We have, however, made a few important changes that we believe will make the text easier to follow and more accessible to students. We have also made some additions that we feel are useful. First, we have added a chapter on the fundamentals of risk and uncertainty in the preliminary material (Chapter 6). In that chapter we discuss risk analysis and decision making under uncertainty and risk. We then implement this analysis at several points throughout the text. All of the material on decision making under risk or uncertainty is presented separately so that those who wish to omit it may do so without any loss of continuity. We do think, however, this new material gives an added flavor to the other material on managerial decision making.

The chapters on production and cost have been reorganized in order to present short-run production and cost together in Chapter 10, and long-run production and cost together in Chapter 11. With this restructuring, we can show more easily and directly the relation between a firm's production function and its cost function. This linkage is often not set forth and demonstrated in such a straightforward manner. We have expanded and reorganized the introductory chapter on demand, supply, and market equilibrium. Our aim is to show how ordinary demand and supply functions are derived from the generalized form of these functions that include variables other than price. Although much of the material in this chapter will be a review for most students, the discussion of the relation between demand curves and the generalized form will give considerable insight into the chapters on demand and supply estimation and forecasting, which include exogenous variables in the equations.

We have also streamlined and tightened most of the material throughout the text. Chapter 4, which discusses optimization theory, has been tightened a great deal. For example, we have dropped the discussion on unconstrained minimization and instead demonstrate that all unconstrained problems can be cast as maximization problems. The emphasis upon optimization as the fundamental underpinning of most managerial decision making is introduced in Chapter 4 and is carried throughout much of the remainder of the text. Chapter 12, which discusses production and cost estimation, has been streamlined primarily by moving Cobb-Douglas estimation to the appendix and using instead the traditional U-shaped or inverted U-shaped functions, which conform to the theoretical functions, as the function to be estimated. Cubic and quadratic functions are used exclusively in the chapters on implementation of the theory of the firm.

We have also placed more emphasis on estimation of firm demand functions rather than market demand function. This type of estimation is more relevant to managerial decision making and does not necessitate the use of the more complex two-stage least squares. Finally, we have made many minor but beneficial changes throughout all of the chapters; for example, we have dropped many out-of-date illustrations and have added a number of new ones to illustrate and reinforce the theoretical and empirical material.

Notwithstanding these changes, many—or perhaps most—aspects of the text remain unchanged, as we continue to focus upon the use of economic theory and empirical analysis in decision making. As noted, we continue to stress the importance of optimization theory and the importance of marginal benefits and marginal cost in decision making. The text continues to focus on the use, understanding, and interpretation of statistical analysis rather than on calculating the statistical results. We continue to relegate mathematical proofs of the theories and some of the more complex theoretical and empirical estimation to the appendixes. Although the theoretical analysis in the text is rigorous and thorough, only graphical, verbal, and algebraic analysis is used in developing the theories. In this development we frequently refer students back to the fundamentals of the theory of optimization, which provides the foundation of those theories.

We frequently implement the theories using numerical examples in order to reinforce students' understanding and demonstrate that these theories are useful and relevant for business decision making. Many adopters of previous editions have told us that the problems at the end of each chapter are one of the most useful parts of the text, and so we have revised many of these problems. We continue to use technical problems to help students learn mechanics. The applied problems emphasize the use of economics in business decision making and frequently require the use of hypothetical data to obtain solutions to relevant business problems. In order to make the material less abstract, we continue to use numbers rather than letters in much of the graphical analysis of the theoretical material.

In addition to all changes noted here, we have tried to make improvements in every chapter. These changes are generally designed to reinforce the focus of text, which is that managerial economics is extremely useful for decision making, and to make the material more accessible and easier to digest.

We would like to thank many adopters of the previous edition of this text for useful comments and suggestions. In particular, we want to thank Dr. Ki Soo Kim of the Pusan Fisheries University for his help on the development and exposition of the new material on risk and uncertainty.

*S. Charles Maurice*
*Christopher R. Thomas*

# BRIEF CONTENTS

# C O N T E N T S

CHAPTER

# 1 The Scope of Managerial Economics

The fundamental task of a manager is to make decisions. Every type of manager in every type of organization must continually make decisions that affect the performance of the organization. The best—or more precisely, the most successful—managers are those who make decisions that enable the organization to achieve its goals. The objective of managerial economics is to provide a framework for analyzing business decisions. Instead of presenting a detailed list of rules for specific decision-making problems, such as how to design a successful laundry detergent advertisement or how to obtain venture capital, managerial economics addresses the larger economic forces that shape day-to-day decision making. By applying economic theory to business problems, managerial economics develops general principles that can be applied to business decision making. Although economic theory is not the only tool used by successful managers, it is a powerful and essential tool. The objective of this text is to show you how managers can use economics in making decisions that will achieve the firm's goals—in particular, maximization of profit.

As the subtitle of the text suggests, managerial economics focuses on the application of *microeconomic* theory, a basic tool used by economists. Microeconomics is the study and analysis of the behavior of individual segments of the economy: individual consumers, workers and owners of resources, individual firms, industries, and markets for goods, services, and productive resources. Microeconomics is concerned with topics such as how consumers choose the goods and services they purchase and how firms make hiring, pricing, production, and advertising decisions. Let us emphasize at the beginning that while these theories are relatively simple, they are the same theoretical methods used by real-world decision makers.