

Managerial Economics

First Canadian Edition



APPLICATIONS
STRATEGY
AND TACTICS

McGuigan

Rentz

Kahl

Moyer

Harris

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APPLICATIONS STRATEGY AND TACTICS

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Managerial Economics: Applications, Strategy, and Tactics, First Canadian Edition

by James R. McGuigan, William F. Rentz, Alfred L. Kahl, R. Charles Moyer, and Frederick H. deB. Harris

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Cover Design: Peter Papayanakis

Cover Image:
Peter Papayanakis/Thomson Nelson

Compositor:
Interactive Composition Corporation

Printer:
Transcontinental

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Adapted from *Managerial Economics*,
10th Edition, by James R. McGuigan,
R. Charles Moyer, and Frederick H. deB.
Harris, published by South-Western,
part of the Thomson Corporation.
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Printed and bound in Canada
1 2 3 4 08 07 06 05

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Library and Archives Canada Cataloguing in Publication

Managerial economics : applications,
strategy, and tactics / James R. McGuigan ..
[et al.].—1st Canadian ed.

Includes bibliographical references
and index.
ISBN 0-17-622428-9

1. Managerial economics—Textbooks.
2. Managerial economics—Problems,
exercises, etc. I. McGuigan, James R.

HD30.22.M35 2005 338.5'024'658
C2005-906859-0

Managerial Economics

First Canadian Edition

APPLICATIONS
STRATEGY
AND TACTICS

To my family

J.R.M.

To Claudette

W.F.R.

To Lola

A.L.K.

To Sally, Laura, and Craig

R.C.M.

To my family, Roger Sherman, and Ken Elzinga

F.H.B.H.

Preface

Managerial economics is concerned with resource-allocation, strategic, and tactical decisions that are made by managers, analysts, and consultants in the private, public, and not-for-profit sectors of the economy. Managerial economic techniques seek to achieve the objectives of the organization in the most efficient manner, while considering both explicit and implicit constraints.

This first Canadian edition of *Managerial Economics* is organized around the twin themes of product-line rivalry and shareholder wealth maximization, with major emphasis on analytical tools and managerial insights.

Pedagogical Approach: Theory in Context

Managerial economics is an applied branch of microeconomics. Along a continuum of pedagogical methods from abstract theory lecturing at one extreme to pure case teaching at the other, our theory-in-context approach fits squarely in the middle. Conceptual frameworks based on microeconomic theory provide the ever-present skeletal backbone of discipline-specific knowledge. But because of our emphasis on real-world business applications, new economic theory in *Managerial Economics* is always presented in a deep fact-situation context.

Teaching potential managers using this theory-in-context approach is far preferable to teaching either applications alone or theory alone. This approach not only stimulates student interest at the inception of the learning process, but also promotes mastery of challenging analytical tools and facilitates the acquisition of complex managerial insights. Perhaps most importantly, the theory-in-context approach empowers students to spot analogous real-world situations and apply appropriate tools and insights outside of the classroom and beyond the final exam.

Real-world management decision problems seldom have simple, uniquely correct answers that apply to all future contingencies. To convey some of this complexity, we have incorporated a feature entitled *What Went Right/What Went Wrong*, documenting situations at a variety of companies. Also, we continue to stimulate interest in the topics in each chapter with a *Managerial Challenge* taken from the business press or our own management

consulting experience. The individual topics within chapters are then illustrated with many real-world applications, in-depth examples, or case exercises. We have deliberately increased the number of such applications, examples, and exercises relative to other books while retaining a focus on rigorous analytical tools. We believe this theory-in-context approach elicits the students' commitment to the lifelong learning required for best-practices management throughout their careers. An appreciation for best practices, the application of careful analysis, and a healthy dose of managerial insight provide the winning formula for students who can make a difference as employees and managers.

Course Content

Our surveys of adopters, conducted at a wide variety of universities and in degree programs, suggest great diversity of use for this book. The very broad topical coverage is intended to give instructors much flexibility in designing a course suited to the needs of their students.

Organization of This Book

Managerial Economics provides an introduction to both analytical tools and descriptive materials that are useful in managerial economics. Although the subject matter in this book is divided into distinct parts, in reality and practice, the various types of managerial economics decisions are interrelated.

Each chapter begins with a **preview** of the material to be covered and **learning objectives**. This is followed by a **managerial challenge** faced by a real organization that is related to the material in the chapter. This **challenge is revisited** at the end of the chapter. In addition, there is a **point-by-point summary** at the end of each chapter. The chapters end with some **self-test exercises**, as well as other **exercises** and **short cases** that provide opportunities to solve realistic decision problems. A **glossary** of key terms used in the book, as well as complete **solutions to the self-test exercises** and **check answers** to selected exercises all appear at the back of the book. Red boldfaced numbers or letters indicate the exercises for which answers are provided at the back of the book or, in the case of Web chapters and appendixes, on the website for this book at www.mcguigan.nelson.com.

Parts of This Book



Part 1: Introduction and Demand Analysis Part 1 provides an introductory overview of managerial economics along with a review of some fundamental concepts that are used in later chapters. Chapter 1 provides an introduction to managerial economics and strategic decision making. Chapter 2 reviews some fundamental economic concepts, including marginal analysis and supply and demand analysis, while Web Appendix 2A provides a self-contained introduction to optimization and constrained optimization techniques, including applications of basic calculus. (*Note:* All appendixes and Chapters 13–19 can be accessed at www.mcguigan.nelson.com.) Chapter 3 develops the theory of demand and introduces the elasticity properties of the demand function. It also covers indifference curve analysis as well as income and substitution effects and attribute analysis.

Part 2: Production and Cost Part 2 deals with production and cost analysis decisions. Chapter 4 develops the theory of production decisions using primarily graphical tools of analysis. Production decisions include the determination of the

type and amount of resources that are used in the production of a desired amount of output. Web Appendix 4A looks at real-world process choice decisions in a linear programming framework. Chapter 5 develops the theory of cost analysis. Cost measures are combined with revenue estimates to determine optimal levels and mixes of output. Web Appendix 5A discusses break-even and contribution analyses. Web Appendix 5B discusses long-run costs with a Cobb–Douglas production function.

Part 3: Pricing and Output Decisions Part 3 covers profit-maximizing price–output decisions as they relate to the firm’s strategic choices. Asymmetric information conditions as well as ideal full information exchanges are discussed. Chapter 6 discusses price and output decisions in pure and monopolistically competitive markets. Game-theoretic applications are also introduced. Chapter 7 covers price and output decisions for monopolistic and dominant firms. Chapter 8 covers price and output decisions in oligopolistic markets and extends the game-theoretic approach to decision making. Chapter 9 examines value-based rather than cost-based differential pricing in theory and practice. Web Appendix 9A presents some fundamental revenue management concepts. Web Appendix 9B addresses specialized pricing problems, including those of a multiproduct firm, as well as pricing of joint products and transfer pricing.

Part 4: Special Topics Part 4 addresses the most important special topics in managerial economics. Chapter 10 discusses the theory of business contracting, the principal–agent problem and corporate governance, vertical integration, and more generally, the choice of organizational form. This chapter further extends the game-theoretic framework to decision making. Chapter 11 addresses the economic regulation of business, including competition legislation, patenting, and licensing, as well as externalities. Chapter 12 introduces international managerial economics, including the determination of exchange rates, trade policy, and other factors that are crucial for effectively managing import–export trade.

Part 5: Web Chapters—Estimating and Forecasting Part 5 deals with the topics of estimating and forecasting demand and costs. Web Chapter 13 examines the procedures that may be used in making empirical estimates of demand relationships. Web Appendix 13A discusses applications of the linear regression model. Web Appendix 13B provides some statistical tables to support both Web Chapter 13 and Web Appendix 13A. Web Chapter 14 discusses the applications of cost theory, including measurement of short- and long- run cost relationships. Web Appendix 14A discusses the learning curve concept as applied to manufacturing. Web Chapter 15 covers business and economic forecasting.

Part 6: Web Chapters—Game-Theory Extensions Part 6 further extends the game-theory concepts introduced in Part 3. Chapter 16 presents a game-theoretic framework for analyzing rival firms’ response tactics. Chapter 17 uses game theory to explore the optimal mechanism design in servicing queues, in designing auctions, and in incentive-compatible revelation mechanisms for joint ventures and partnerships.

Part 7: Web Chapters—Long-Term Investment Decisions and Risk Management Part 7 deals with capital investment decisions. Investments in new, long-term assets have a major impact on a firm’s future stream of cash flows and the

riskiness of those cash flows. Web Chapter 18 discusses the net present value of a project, benefit–cost analysis, and cost-effectiveness analysis. Web Appendix 18A presents some fundamental time value of money concepts. Web Appendix 18B provides some time value of money tables to support both Web Chapter 18 and Web Appendix 18A. Web Chapter 19 examines decision making under risk and uncertainty. It also reviews the techniques for managing risk.

Student Preparation

This text is designed for use by undergraduate and graduate students in departments of economics, and in schools of business management, public administration, and information technology. Students are presumed to have a background in the basic principles of economics. Prior course work in statistics and quantitative methods is desirable but not essential. All statistical material is confined to Web Chapters 13–15. The book makes occasional use of elementary concepts of differential calculus. A review of these basic concepts is provided in Web Appendix 2A. In all cases where calculus is employed, one or more alternative approaches, such as graphical, algebraic, or tabular analysis, are also presented. Spreadsheet applications have become so prominent in the practice of managerial economics that we now explain many concepts of optimization in this context.

Pedagogical Features of the First Canadian Edition

The first Canadian edition of *Managerial Economics* makes extensive use of pedagogical learning aids to enhance student learning. The key features of the book are:

- **Part Openers:** Each major section of the book opens with a brief discussion of the material contained in the following chapters.
- **Chapter Preview:** Each chapter begins with a *Chapter Preview* that briefly summarizes the major issues that are covered in the chapter.
- **Learning Objectives:** Each chapter begins with a list of the main learning objectives of the chapter.
- **Managerial Challenge:** Each chapter opens with a *Managerial Challenge* illustrating a real-life economic analysis problem faced by Canadian managers that is related to the material to be covered in the chapter.
- **Key Terms:** In the margins of the text, new terms are defined as they are introduced. The placement of the glossary terms next to the location where the term is first used reinforces the importance of these new concepts and aids in later studying. These terms also appear in the *Glossary* at the back of the book.
- **Extensive Use of Examples:** Many real-world applications and examples derived from actual practice are provided and highlighted throughout the text. These examples help to bring the tools and concepts alive, thereby enhancing student learning. The Internet URL of each real firm is included the first time the firm is mentioned.
- **Diversity of Presentation Approaches:** Important analytical concepts are presented in several different ways, including tabular analysis, graphical analysis, and algebraic analysis. When elementary differential calculus is used, at least one alternative mode of analysis also is presented.

- **What Went Right | What Went Wrong:** Most chapters contain a *What Went Right | What Went Wrong* feature that allows students to relate real-world business decisions to what they have learned, and to show how management decisions can have positive and negative outcomes.
- **International Perspectives:** Throughout *Managerial Economics*, special *International Perspectives* sections are provided that illustrate the application of managerial economics concepts to problems faced by managers in an increasingly global economy.
- **Managerial Challenge Revisited:** At the end of the chapters, the *Managerial Challenge* mentioned at the beginning of the chapter is revisited, based on the knowledge gained in studying the chapter.
- **Point-by-Point Chapter Summaries:** Each chapter ends with a detailed, point-by-point summary of important concepts from the chapter.
- **Self-Test Exercises:** Each chapter in the book contains self-test exercises that students can use to test their learning. Detailed solutions are provided at the back of the book.
- **Exercises:** Each chapter contains a large set of exercises. Check answers to selected exercises, colour-coded in red boldfaced type, are provided at the end of the book.
- **Short Case Exercises:** Most chapters include short case exercises that extend the concepts and tools developed in the chapter.
- **Internet Margin Notes:** Internet URLs in the margins tie applications and examples to the websites of the real firms being discussed or to other relevant sites. Students gain not only the additional information and data found at the sites, but also the experience of using the Internet to find relevant information.

Ancillary Materials

A complete set of ancillary materials is available to adopters to supplement the text, including:

- The *Managerial Economics* support website is at www.mcguigan.nelson.com. Web appendixes and Chapters 13–19 are available at this site, along with instructor resources and student resources like online quizzing and Internet application links and updates.
- An *Instructor's Solutions Manual with Test Bank*, prepared by the authors, contains suggested answers to the end-of-chapter exercises and cases. The authors have taken great care to provide an error-free manual for instructors to use. The Test Bank contains a large collection of true–false, multiple-choice, and numerical problems.
- *ExamView* software for the test bank is available to simplify the preparation of quizzes and exams. *ExamView* contains all of the questions in the printed test bank and is an easy-to-use test-creation software compatible with Microsoft Windows. Instructors can add or edit questions, instructions, and answers, and select questions by previewing them on the screen; selecting them randomly, or selecting them by number. Instructors can also create and administer quizzes online.

- *Microsoft® PowerPoint®* presentation packages are available for students as study aids, and for the instructor as a lecture aid. These slides can be customized by instructors to meet their specific course needs.
- *Excel for Economics* is an interactive stand-alone spreadsheet package, created by Thomas Palm, Professor Emeritus, Portland State University. *Excel for Economics* lifts static, printed textbook models, equations, and graphs, and changes them into dynamic spreadsheets. Users can enter numerical values and change them at will in *what-if* entries that simulate managerial decision making. Multiple linked spreadsheets can be used simultaneously, and calculations and graphing are done automatically to allow the student to focus on the meanings, implications, and applicability of the decisions.

Acknowledgments

A number of reviewers, users, and colleagues have been particularly helpful in providing us with many worthwhile comments and suggestions at various stages in the development of this and earlier editions of the book. Included among these individuals are:

Swati Basu, McGill University
 Dick Beason, University of Alberta
 Byron Eastman, Laurentian University
 Alan Hochstein, Concordia University
 Joseph Kushner, Brock University
 Alan Matadeen, Simon Fraser University
 Richard Mueller, University of Lethbridge

People who were especially helpful in the preparation of the first Canadian edition include Lloyd Atkinson and Richard Zind, both of whom are independent economic consultants.

We wish to express our appreciation to the members of the Thomson Nelson staff—particularly Anthony Rezek, Natalia Denesiuk, and Charmaine Sherlock—for their help in the preparation and promotion of this book. Most of all we would like to thank our developmental editor, Elke Price, who is a constant source of excellent advice and encouragement. Her high standards of performance and her total knowledge of the publishing field have helped immensely with this project. We also want to thank June Trusty for her excellent copy-editing work.

We are grateful to the Literary Executor of the late Sir Ronald A. Fisher, FRS; to Dr. Frank Yates, FRS.; and to Longman Group, Ltd., London, for permission to reprint Table III from their book *Statistical Tables for Biological, Agricultural, and Medical Research* (6th ed., 1974).

James R. McGuigan
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James R. McGuigan owns and operates his own numismatic investment firm. Prior to this activity, he was Associate Professor of Finance and Business Economics in the School of Business Administration at Wayne State University. He also taught at the University of Pittsburgh.

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Professor Rentz has published extensively in leading academic and professional journals, including the *Journal of Finance*, *Journal of Business Finance and Accounting*, *Journal of Risk and Insurance*, *Financial Review*, *American Economic Review*, *Management Science*, and many others.

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
Professor Harris has published widely in financial and economics journals, including the *Review of Economics and Statistics*, *Journal of Financial and Quantitative Analysis*, *Journal of Financial Markets*, and *Journal of Industrial Economics*. From 1988–1993, he served on the Board of Associate Editors of the *Journal of Industrial Economics*. In addition, Professor Harris often benchmarks the revenue management functions of large companies and writes about his findings in management practice journals such as *Marketing Management* and the *Journal of Operations Management*.

His awards and recognitions include several awards for Best Academic Publication of the Year, Babcock School Professor of the Year, and Most Popular Courses designations. Additionally, *Inc. Magazine* (2000) and *BusinessWeek's Guide to the Best Business Schools* (1997–2003) identify Professor Harris as among outstanding faculty members.




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
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