

Managerial Economics

Principles and Worldwide Applications

EIGHTH EDITION

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Preface

Tastes, production, labor markets, financial markets, and competition have become highly globalized; financial and economic crises have become more frequent, and the risks of doing business have increased in a world economy that has become more sluggish (growing less rapidly than in past decades). Thoroughly recognizing and highlighting this new business environment, *Managerial Economics: Principles and Worldwide Applications*—while employing the theory of the firm as the unifying theme—examines how firms reach optimal managerial decisions in the face of these modern constraints.

As in past editions, the text balances concepts, application, and teachability. With the help of clear, concise explanations and illustrations, it surveys the time-tested as well as the many new and exciting topics in managerial economics (such as firm architecture, business ethics, the evolution of the creative firm, Porter's strategic framework, electronic commerce, the economics of information, and risk management). The book, with the support of over 100 Boxes, 14 Case Insights (at least one for each chapter of the text) on *Managerial Economics at Work*, as well as 12 more extensive, integrative cases, illustrates how firms actually behave. The tools of decision making, such as spreadsheet applications, so much in demand by students, are prominent. A flexible, modular organization makes the book suitable for both full-term and abbreviated managerial economics courses, while an extensive instructor ancillary package, including online resources, makes it the perfect choice for lecture-based, online, or hybrid managerial economics courses.

The primary aims of this text have been and remain:

- *To provide a unifying theme of managerial decision making around the theory of the firm with applications in a globalized economy.* This text shows how managerial economics is not the study of unrelated topics but the synthesis of economic theory, decision sciences, and the various fields of business administration studies, and it examines how they interact with one another.
- *To identify and apply the basic decision-making process for optimal managerial decisions.* The text spells out the five steps of the managerial decision-making process that firms ought to follow, whether firms did in fact follow these steps in specific cases, and the outcome of their application (i.e., did it lead to the best managerial decision?).
- *To introduce an international dimension into managerial economics to reflect the globalization of tastes, production, distribution, and competition in our more risky and crisis-prone, sluggish global economy.* This text fully integrates and discusses, in each chapter and for each topic, the international ramifications of managerial economics. Simply put, the twenty-first-century manager must be prepared to operate—and compete—within a global economy that has grown more risky, crisis-prone, and sluggish, no matter how large the firm.
- *To include one “Case Insight: Managerial Economics at Work” in each chapter of the text that can be used for class discussion and analysis.* The aim here is to try to simulate the firm's decision-making process in an actual real-world situation, by an actual team of managers (in our case the students in the class) led by the CEO of the firm (the professor), by trying to answer a number of leading questions that the specific firm needs to answer for the successful management of the firm. Was the actual decision of the firm correct? Why? If not, why not? Could the firm have done better? How would your team have done it?
- *To show how managerial decisions are actually made in the real world.* The text includes over 100 real-world Boxes, 14 *Case Insights* (at least one for each chapter of the text) on *Managerial Economics at Work*, as well as 12 more extensive, integrative cases. These Integrating Case Studies are substantial and are designed to be assignable by instructors. Since managerial economics is by nature an applied field, this feature can hardly be overstated. The Boxes, in contrast, are brief, engaging, and sometimes surprising illustrations of how the theory being studied has been applied: the management revolution, business ethics at Boeing, the Enron India crisis, are cigarettes over-taxed in India, the Indian business model, management

practices across countries, electronic commerce at Amazon.com, benchmarking at Xerox, reengineering at General Electric, Gillette's space-technology global razors, General Motors deciding small is better, the new U.S. digital firm, policies to drive innovations in India, open innovation at Procter & Gamble, the Euro and the international competitiveness of European firms, the exchange rate of the rupee and the profitability of Indian firms, aspects of strategic deterrence, transfer pricing by multinational corporations, and many more.

- *To present the most current topics in the discipline in a manner accessible to students.* These include firm architecture, firm governance, and business ethics; Porter's strategic framework, the virtual corporation, relationship enterprises, and the evolution of the creative company; electronic commerce, and business use of the Internet, and the economics of information; the new digital factory, the new (international) economies of scale, and learning curves; as well as total quality management, reengineering, benchmarking, and the learning organization.

THE TEXT AS A TEACHING DEVICE

The text has been thoughtfully designed to enhance the instructor's efforts:

- It offers *complete coverage of all the topics* usually encountered in actual managerial decision making and covered in any managerial economics course *in a modular format*. Thus, the text allows a great deal of *flexibility in the choice of the topics* that any instructor may wish to cover or omit.
- For an Executive MBA course, it is suggested to cover Chapters 1 and 3–12, without the appendices and *excluding* the following: all but the Boxes in Chapter 3; all but Section 7 in Chapter 5, and all but sections 1, 4, and 5 in Chapter 6. Sections 8-9, 10-2, 11-2, 11-3, and 12-1 can also be omitted. This will leave about half of the text, which covers the fundamental material for an excellent executive MBA Course.
- *The text can be used in courses with or without calculus.* In-depth coverage of the full range of optimization techniques used in managerial decision making is presented in Chapter 4. The calculus of optimization is introduced in the appendix to Chapter 4 and used only in the mathematical appendices at the end of most chapters and in footnotes.
- *While applied in nature, this text rests on sound analytical foundations.* This addresses the common criticism that texts in this field are either overly theoretical (some are really microeconomics, not managerial, texts) or are applied in nature but rest on weak theoretical foundations.
- *Diagrams are generally drawn on numerical scales to allow the reading of the answers in actual numbers rather than simply as distances*, helping to make the abstract more tangible for the student new to the material.
- *Important terms are presented in boldface in the chapters*, and a glossary giving the definition of each important term, arranged alphabetically, is provided at the end of the book.
- *A rich selection of problems follows each chapter.* The problems in each chapter ask the student to actually apply and put to use what he or she has learned from the chapter. Answers to selected problems, marked by an asterisk (*), are provided at the end of the book for the type of quick feedback that is so essential to effective learning. The Online Resource Centre (www.india.oup.com/orcs/9780199467068/) contains numerous additional assessment options.

NEW TO THE EIGHTH EDITION

Based on feedback from instructors from around the world, several important improvements have been made in the eighth edition.

- *A new chapter on Demand, Supply, and Equilibrium Analysis*

- New sections, Boxes, and Integrating Case Studies were added to examine the process of firms' decision making in a world that has grown more crisis-prone and sluggish than in past decades.
- A “*Case Insight: Managerial Economics at Work*” was added in each chapter of the text. This can be used for class discussion and analysis by simulating the firm's decision-making process in an actual real-world situation. Among these are the following: *Case Insight 1*: The Objective of an MBA: Do colleges have a strategy?; *Case Insight 5*: BlackBerry Crumbles; *Case Insight 7*: How Xerox lost and regained international competitiveness; *Case Insight 9*: De Beers abandons its diamond Monopoly.
- Among the new or most thoroughly revised sections are: 1-1 on origin of Economics, 1-4 on Homo Economicus, 1-7 on business ethics, 3-6 on electronic commerce, 6-1 on survey techniques, 7-9 on innovations (including 3-D printing) and global competitiveness, 8-6 on the new economies of scale, 8-7 on logistics and supply-chain management, 9-1 on market structure and degree of competition, 9-3 on competition in the global economy, 10-2 on oligopoly models, 10-5 on the march of global oligopolists, 10-6 on the evolution of the creative company, 11-5 on games of mixed strategy, 13-4 on competition laws and MRTP, and 13-6 on the effect of taxation on business decisions.
- About a third of the over 100 Boxes included in the text are brand new, and half of the others have been heavily revised to update them and make them more relevant. Among them are the following: 1-6: the global financial crisis, 1-9: cyber espionage, 4-6: reengineering at GE, 5-3: reaching consumers in the vanishing mass market, 7-7: policies to drive innovation in India, 10-4: firm size and profitability, 10-10: the most innovative companies in the world.
- 11 of the 12 Integrating Case Studies at the end of each of the five parts of the text are new.

ORGANIZATION OF THE BOOK

The text is organized into five parts.

- *Part One* (Chapters 1 and 2) examines the nature and scope of managerial economics, presents the theory of the firm, and reviews the basic market model. Chapter 1 illustrates for the new student, in a clear and convincing manner, how the theory of the firm provides the unifying theme to the study of managerial economics and why a global view of managerial economics is required as a result of the rapidly increasing trend towards the internationalization of tastes, production, distribution, and competition in the world today. It also introduces the use of spreadsheets to solve managerial decision problems. Chapter 2 provides an extensive review of the basics of demand, supply, and equilibrium analysis.
- *Part Two* (Chapters 3 to 6) reviews optimization techniques and analyzes demand. Separate chapters deal with measurement of demand, the empirical estimation of demand, and demand forecasting. Chapter 4 reviews optimization techniques, or the way a firm seeks to achieve its aims and objectives, subject to some constraints, most efficiently. Chapter 4 also discusses several of the new managerial tools, as well as how spreadsheets (excel) can be used to reach optimal managerial decisions. The appendix to Chapter 5 shows how regression analysis is done with excel, while the appendix to Chapter 6 shows how to forecast with excel.
- *Part Three* (Chapters 7 and 8) presents the theory and measurement of the firm's production and costs. The presentation of input substitution in production in Chapter 7 and the discussion of short-run and long-run cost curves in Chapter 8 have been made complete and clear. A brand-new chapter on linear programming is included on the Online Resource Centre for this text.
- *Part Four* (Chapters 9 to 12) brings together demand analysis (examined in Part two) and production and cost analysis (examined in Part three) in order to analyze how price and output are determined under various forms of market organization. Chapter 9 deals with perfect competition, monopoly, and monopolistic

competition; Chapter 10 examines oligopoly and firm architecture; Chapter 11 deals with game theory and strategic behavior; while Chapter 12 deals with pricing practices under various forms of market organization.

- *Part Five* (Chapter 13) examines regulation and fair competition laws, and the role of the government in the economy.
- *Chapters 14 and 15* that discuss risk analysis, long-term investment decisions, and capital budgeting are part of the Online Resource Centre.

THE INSTRUCTIONAL SUPPORT PACKAGE

An extensive set of resources have been crafted to support adopting instructors and students:

1. *An Instructor's Manual* provides the answers to all end-of-chapter questions and problems. The *Manual* was prepared by the authors with as much care as the text itself.
2. *The Computerized Test Bank* contains a total of 1,200 items (800 multiple-choice questions with answers, 150 true-and-false questions with answers, and 250 numerical problems fully worked out). The software allows for easy exam creation, formatting, and modification (e.g., producing multiple versions of the same exam, etc.). Exams can also be easily exported to many learning management system formats.
3. *PowerPoint Presentations*. All figures and tables from the text are available in PowerPoint-based slides.
4. *Case Problem Sets*: Case-based application questions provide in-depth, free-response questions for each chapter.

All instructor resources are available for download through the Online Resource Centre at www.india.oup.com/orcs/9780199467068/.

For students, the following materials found on the Online Resource Centre will aid in their studies:

1. *Web links*. A treasure trove of resources have been provided on the web to expand on the topics and applications presented in the text.
2. *Additional Chapters* on Linear Programming, Consumer Preferences and Choice, Consumer Behavior and Individual Demand, Risk Analysis, and Capital Budgeting are available in the Online Resource Centre.

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ACKNOWLEDGMENTS

This text grew out of the undergraduate and graduate courses in managerial economics that I have been teaching for over two decades at Fordham University in New York, at the Business and Economics University of Vienna and Krems, and at Peking University. I was fortunate to have had many excellent students, who with their questions and comments contributed much to the clarity and exposition of this text.

I owe a great intellectual debt to my brilliant former teachers: William Baumol (New York and Princeton Universities), Victor Fuchs (Stanford University and the National Bureau of Economic Research), Jack Johnston (University of California at Irvine), and Lawrence Klein (University of Pennsylvania and the Wharton School of Business). It is incredible how many of the insights that one gains as a student of a superb economist and teacher live on for the rest of one's life.

Many of my colleagues in the School of Business and Department of Economics at Fordham University made suggestions that significantly improved the final product. Among these are Dean Donna Rapaccioli, Dean David Gautschi, and Elhan Akbil, Victor M. Borun, Sris Chatterjee, Francis Petit, James Stoner, and Robert Wharton from the Business School; and Mary Burke, Joseph Cammarosano, Fred Campano, Edward Dowling, Duncan James, Erick Rengifo, Henry Schwalbenberg, and Greg Winczewski from the Department of Economics. My former colleague, Frank Fabozzi, also made many valuable suggestions.

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I am grateful to the literary executor of the estate of the late Sir Ronald A. Fisher, F.R.S., to Dr Frank Yates, F.R.S., and to the Longman Group Ltd., London, for permission to reprint Table A.2 from their book, *Statistical Tables for Biological, Agricultural and Medical Research*, 6th ed. (1974).

Finally, I would like to express my deep gratitude to Patrick Lynch, Editorial Director, and Maura Macdonald, Assistant Editor, at Oxford University Press, for their top-notch assistance in making this the leading text in its field. The work of my graduate assistants, Michael Mebane, Joseph Mauro, and Katie Jajtner, was invaluable. I also thank Angela Bates and Josephine Cannariato (the departmental secretaries at Fordham) for their efficiency and cheerful disposition.

Dominick Salvatore

This textbook is a culmination of the inputs from many scholars who were all kind enough to share their knowledge. I acknowledge all such giants, who lent their shoulders to stand up on. This textbook required many late nights and early hours of work—time which my wife, Nidhi, permitted me to spend in office. Without her moral support, the book would have been delayed indefinitely. I also thank my students—over the years, they have asked thought-provoking questions, all of which have helped me grow in my area of expertise. I thank the editorial team of Oxford University Press India for their valuable time, constant support, and encouragement to complete this book. This work is a result of the support and guidance from all these people. I express my sincere gratitude to each one of them.

Siddhartha K. Rastogi

Praise for the Book

“The eighth edition of Managerial Economics really excels in developing the theoretical fundamentals in the most engrossing manner as well as in linking the theory to management practice. It is thus a vast improvement over the previous edition in the way greatly desired by potential and working managers, i.e., application of fundamentals of microeconomic theory to real-life cases of business firms.”

–Dr Vijay Prakash Ojha, IMT Ghaziabad

“The book relates to the current economic environment. The cases discussed in the book solve the complexities of the markets in an extremely simplified manner and students will be able to associate concepts with trends and situations prevailing in the world today.”

–Dr Jasmeet Kaur, S P Jain School of Global Management

“The book enables comprehensive understanding of concepts of managerial economics, through its excellent narrative; integrated case studies; small cases; graphical analysis; mathematical appendices and numerical exercises.”

–Dr V. P. Singh, Great Lakes Institute of Management

“A right choice for managers and academicians to correlate economic theory with real-world applications. This book is an asset to keep and teach.”

–Dr Vishal Sarin, Lovely Professional University

“Comprehensive treatment has been given to almost all important areas thus aiming at the specific requirements of management schools”

–Dr Mrutyunjay Dash, Asian School of Business Management, Orissa

“The book deals comprehensively with economic theory and econometric aspects along with functional areas like accounting, finance and labor management.”

–Dr Anupreet Kaur Mavi, University Institute of Applied Management Sciences, Chandigarh

“Managerial Economics: Principles and Worldwide Applications is an effort to simplify complex terms of Economics and its application for future managers in highly demanding and rapidly growing Indian market.”

–Dr Neelam Tandon, Bharatiya Vidya Bhavan's Usha & Lakshmi Mittal Institute of Management

“The book Managerial Economics by Salvatore is an application-based book which contains lots of real cases from the Indian perspective. It is very useful for MBA students.”

–Dr Gauri Modwel, Dean, NDIM

Features of

Case Insights

These Case Insights on Managerial Economics at Work in each chapter of the text will help you simulate the firm's decision-making process in an actual real-world situation.

CASE INSIGHT 4 MANAGERIAL ECONOMICS AT WORK Management Practices across the World

Good management practices are closely associated with firm productivity, profitability, and survival. The bar chart in Figure 4-6 provides management prac-

Figure 4-6 shows that the highest average management s and Japan are next. They are

CHAPTER OUTLINE

3-1 Price Elasticity of Demand • Box 3-1: Demand Function for Telephone Usage in India • Point Price Elasticity of Demand • Arc Price Elasticity of Demand • Price Elasticity, Total Revenue, and Marginal Revenue • Factors Affecting the Price Elasticity of Demand • Box 3-2: Price Elasticities of Demand in the Real

Chapter Outline

All chapters begin with a chapter outline that focuses on the concepts and the knowledge you should acquire by the end of the chapter.

Key Terms

All important terms have been highlighted at the beginning of each chapter.

KEY TERMS (in the order of their appearance)

Marginal cost
Marginal revenue
Marginal analysis
Constrained optimization
Benchmarking

Learning organization
Broadbanding
Direct business model
Networking
Performance management

GLOSSARY

Accounting costs Historical explicit costs.
Adjusted R^2 (\bar{R}^2) The coefficient of multiple determination adjusted for the reduction in degrees of

Auction pricing The pricing strategy for Internet purchases in which the consumer names the price that he or she is willing to pay for an item without

Glossary

A glossary giving the definition of each important term is provided at the end of the book.

Boxes

These brief cases that are present throughout the text will help you in understanding the application part of the theory discussed in the chapter.

BOX 8-1

Per-Unit Cost Curves in Agro-Industries

Keya Sengupta (2003) studied the cost and production functions for select industries in detail for her book

general U-shape but those are not as smooth as a textbook figure. In fact, the inorganic fertilizer indust



SPREADSHEET PROBLEMS

1. Redo Problem 5 using Excel's graphing function. You can enter the schedules for the total product and then

"= C4/B4" in cell D4. For the marginal cost, you can enter the formula "= C4 - C3

APPENDIX 1 TO CHAPTER 4

OPTIMIZATION USING SPREADSHEETS

In this appendix, we examine how to use spreadsheets to reach optimal managerial decisions. A very useful, practically increasing popular tool for optimization is spreadsheets. This is shown with the following example.

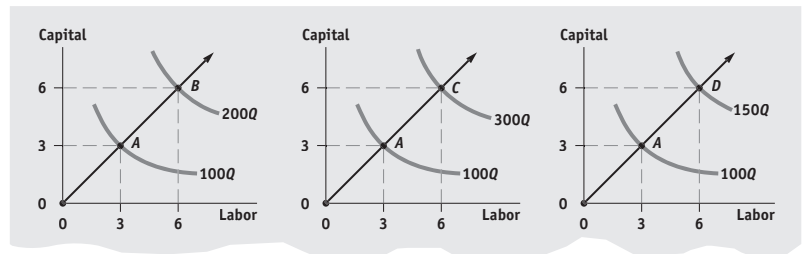
Spreadsheet Problems and Appendices

This will enable you to familiarize yourself with this decision-making technique that is being widely used in organizations.

the Book

Illustrations

Diagrams are generally drawn on numerical scales to allow the reading of the answers in actual numbers.



INTEGRATING CASE STUDY 3

Estimating and Forecasting India's Electricity Demand

Estimating and forecasting the demand for electricity is very important since it takes many years to build capacity. In the commercial sector, $s = 1$, that in commercial sector when $s = 3$, w

Integrating Case Studies

Each part ends with a case study that is designed to consolidate your understanding of the chapter subject and broaden your decision-making skills.

Summary

The summary at the end of each chapter draws together the main concepts discussed within the chapter. This will help you to reflect and evaluate important concepts.

SUMMARY

1. Economic relationships can be expressed in equational, tabular, or graphical form. Expressing an economic relationship in equational form allows the use of the powerful techniques of differential calculus to determine the optimal behavior of the firm.
2. Optimization analysis can best be examining the process of profit maximization. The firm maximizes its total value per unit change quantity.
3. Optimization analysis can best be examining the process of profit maximization. The firm maximizes its total value per unit change quantity.

DISCUSSION QUESTIONS

1. What is the meaning of average and marginal (a) revenue, (b) product, (c) cost, and (d) profit?
2. What is the shape of the marginal-revenue curve if the total-revenue curve has a concave shape?
3. What is the value of the marginal revenue when the
4. How does a firm determine the profit level of output?
5. How would you react to a sales program to maximize sales?

Discussion Questions

The questions enhance learning and can be used for review and classroom discussion.

Problems

A rich selection of problems at the end of each chapter will help you to test your conceptual knowledge.

PROBLEMS

1. Aditi is the coordinator for the annual college fest, where an entry fee is charged for the limited seating available. Based on last years' experience, she has
2. where P is price in per seat, and sold for the fest.
(a) What is the maximum number of seats that can be sold?

CHAPTER 1

$$\begin{aligned}
 3. \quad PV &= \frac{₹10,000}{(1.15)^1} + \frac{₹10,000}{(1.15)^2} + \frac{₹80,000}{(1.15)^2} \\
 &= \frac{₹10,000}{(1.15)} + \frac{₹10,000}{1.3225} + \frac{₹80,000}{1.3225}
 \end{aligned}$$

Project 2:

$$\begin{aligned}
 PV &= \frac{₹75,000}{1.10} + \frac{₹75,000}{(1.10)^2} \\
 &+ \frac{₹75,000}{(1.10)^3} + \frac{₹75,000}{(1.10)^4}
 \end{aligned}$$

Answers to Select Problems

Answers to problems marked by an asterisk (*) are provided at the end of the book for quick feedback.

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PART I INTRODUCTION 1

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CHAPTER

1

The Nature and Scope of Managerial Economics

CHAPTER OUTLINE

- 1-1 Origin of Economics** • A Discovery of Economics
- 1-2 The Scope of Managerial Economics** • Definition of Managerial Economics • Relationship to Economic Theory • Relationship to the Decision Sciences • Relationship to the Functional Areas of Business Administration Studies
- 1-3 The Basic Process of Decision Making** • Box 1-1: Peter Drucker—The Man Who Invented Management • Box 1-2: The Management Revolution
- 1-4 Homo Economicus** • Bounded Rationality • An Example of Bounded Rationality
- 1-5 The Theory of the Firm** • Reasons for the Existence of Firms and Their Functions • The Objective and Value of the Firm • The Resources the Firms employ • Constraints on the Operation of the Firm • Limitations of the Theory of the Firm • Case Insight 1: Managerial Economics At Work—The Objective of an MBA: Do Colleges Have a Strategy?
- 1-6 The Nature and Function of Profits** • Business versus Economic Profit • Theories of Profit • Function of Profit • Box 1-3: Profits in the Personal Computer Industry
- 1-7 Business Ethics** • Box 1-4: Business Ethics at Boeing • Box 1-5: The Enron India Crisis • Box 1-6: The Global Financial Crisis
- 1-8 The International Framework of Managerial Economics** • Box 1-7: The Rise of the Global Corporation • Box 1-8: The Indian Global Business Leader
- 1-9 Managerial Economics in a More Risky, Crisis-Prone, and Sluggish Global Economy** • Box 1-9: Terrorism, Cyber Espionage, Financial Crises, and Globalization
- 1-10 Managerial Economics and the Internet**

Summary • Discussion Questions • Problems

Appendix to Chapter 1: Solving Managerial Decision Problems Using Spreadsheets

• Microsoft Excel • Example • Solution • Spreadsheet Problem

Supplementary Readings

KEYTERMS (in the order of their appearance)

Managerial economics	Firm	Business profit
Economic theory	Transaction costs	Explicit costs
Microeconomics	Circular flow of economic activity	Economic profit
Macroeconomics	Theory of the firm	Implicit costs
Model	Value of the firm	Business ethics
Mathematical economics	Constrained optimization	Globalization of economic activity
Econometrics	Principal–agent problem	Internet
Functional areas of business administration studies	Satisficing behavior	Information superhighway

In this chapter we examine the nature and scope of managerial economics. We begin with tracing the origins of managerial economics and then proceed on to a definition of managerial economics and a discussion of its relationship to other fields of study. We then go on to discuss the basic process of decision making and examine the theory of the firm. Here, we discuss the reason for the existence of firms and their functions, and we define the value of the firm, point out the constraints faced by firms, and examine the limitations of the theory of the firm, including the *principal–agent problem*. Then, we examine the nature of profits by distinguishing between economic and business profits, and by analyzing their function in a free-enterprise system. Subsequently, we discuss business ethics. Finally, we examine the importance of introducing an international dimension into managerial economics to reflect the globalization of production and distribution in today’s world, as well as the importance of using the Internet as a crucial source of information and data for managerial economics. The Chapter Appendix shows how to solve managerial problems using spreadsheets.

Each section of the chapter includes one or more real-world case studies, which clearly illustrate the major concept introduced in the particular section. This is an important chapter because it defines the subject matter of managerial economics, it clearly shows its relationship to other fields of study, and it examines the great importance and relevance of managerial economics in all business and economic decision-making situations and programs in today’s global economy.

1-1 ORIGIN OF ECONOMICS

In this section, we delve into the origins of economics—how it came about to be a field of study and the influence some great economists had on the subject.

A Discovery of Economics

Who “invented” economics? The answer may range from no one to all of us. As an individual, we all are bestowed with economic sensibility and yet, no one person can claim to be

the source of economic knowledge. Many Indians like to think of *Kautilya's Arthashastra* to be the first book of economics, written in 3rd century BC. However, *Kautilya* wrote about statecraft and political science, which touch upon economic affairs as a matter of a king's duty rather than a study of economic issues. The modern-day understanding of economics began when Adam Smith, a philosopher, published his book *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776. He invoked a set of questions, contexts, and engrossing discussions that formed the basis for economic studies thereafter. Another significant contributor was David Ricardo who published his book *On the Principles of Political Economy and Taxation* in 1817. Smith and Ricardo founded an economic philosophy, which eventually came to be known as the Classical School of Economics.

Interestingly, the term "economics" was introduced by Alfred Marshall through his book *Principles of Economics* in 1890. Until then, the subject was known as Political Economy. Marshall changed the name of the subject for two reasons; first, to assert that economics can stand on its own as a social science with issues different from those of politics, and second, because political economy had become a much maligned term due to the writings of Thomas Reverend Malthus (*An Essay on the Principle of Population*, 1798) and Karl Marx (*Das Kapital*, 1867). Malthus argued that political economy was doomed to fail due to problems of geometrical progression of population and arithmetical progression of food supply, whereas Marx argued that economic system is an instrument of endless class exploitation and therefore, a violent revolution is the only way out.

Once Marshall initiated a dispassionate, ideology-free, and objective study of economics, the social science grew by leaps and bounds. The economic studies reached their pinnacle in the twentieth century, particularly between the two world wars, when John Maynard Keynes guided the war time economy of UK, guided USA out of the Great Depression, and worked as a major architect of the Bretton Woods system. In the same period, economic philosophy of Karl Marx led to the formation of the communist bloc.

The work of Keynes also led to the bifurcation of economics into microeconomics and macroeconomics, as the issues and principles of the two were recognized to be different and divergent from each other. The Second World War also contributed in the expansion of scope of economics including development economics, game theory, and network theory. There have been many more great economists since then, such as John Kenneth Galbraith, Friedrich Von Hayek, Milton Friedman, Gary Becker, Kenneth Arrow, George Akerlof, Jon Von Neumann, Joseph Schumpeter, Jean Tirole, Robert Kahn, Amartya Sen, Robert Solow, and so on. Interestingly, the more intensive economic studies became, the more the economists got divided. Some of the major divisions include classical, Keynesian, neo-classical, monetarist, fiscalist, Chicago school, Austrian school, and so on. Nevertheless, economic science continues to benefit from such discussions, discoveries, and healthy rivalry.

1-2 THE SCOPE OF MANAGERIAL ECONOMICS

In this section we define the function of managerial economics and examine its relationship to economic theory, management decision sciences, and functional areas of business administration studies.

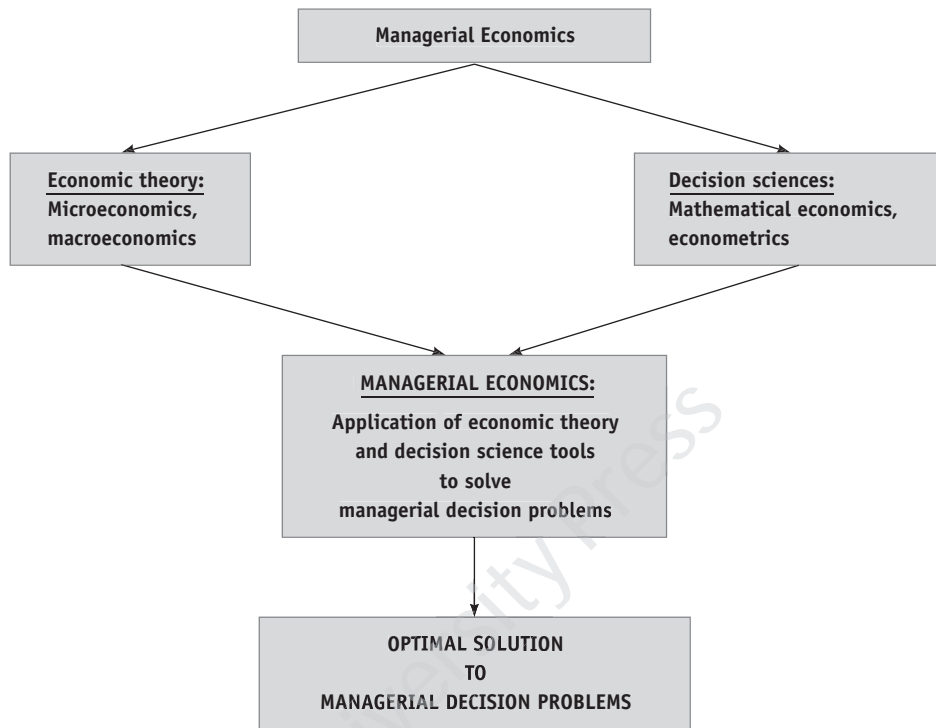


FIGURE 1-1 The Nature of Managerial Economics Managerial economics refers to the application of economic theory and decision science tools to find the optimal solution to managerial decision problems.

Definition of Managerial Economics

Managerial economics* refers to the application of economic theory and the tools of analysis of decision science to examine how an organization can achieve its aims or objectives most efficiently. The meaning of this definition can best be examined with the aid of Figure 1-1.

Management decisions need to be made in any organization—be it a firm, a not-for-profit organization (such as a hospital or a university), or a government agency—when it seeks to achieve some goal or objective subject to some constraints. For example, a firm may seek to maximize profits subject to limitations on the availability of essential inputs and in the face of legal constraints. A hospital may seek to treat as many patients as possible at an “adequate” medical standard with its limited physical resources (physicians, technicians, nurses, equipment, beds) and budget. The goal of a state university may be to provide an adequate education to as many students as possible, subject to the physical and financial constraints it faces. Similarly, a government agency may seek to provide a particular service (which cannot be provided as efficiently by business firms) to as many people as possible at the lowest possible cost. In all these cases, the organization faces management decision problems as it seeks to achieve its goal or objective, subject to the constraints it faces. The goals and constraints may differ from case to case, but the basic decision-making process is the same.

* The definition of all boldfaced terms, arranged alphabetically, is provided in the Glossary at the end of the book.

Relationship to Economic Theory

The organization can solve its management decision problems by the application of economic theory and the tools of decision science. **Economic theory** refers to microeconomics and macroeconomics. **Microeconomics** is the study of the economic behavior of *individual* decision-making units, such as individual consumers, resource owners, and business firms, in a free-enterprise system. **Macroeconomics**, on the other hand, is the study of the total or aggregate level of output, income, employment, consumption, investment, and prices for the economy *viewed as a whole*. Although the (microeconomic) theory of the firm is the single most important element in managerial economics, the general macroeconomic conditions of the economy (such as the level of aggregate demand, rate of inflation, and interest rates) within which the firm operates are also very important.

Economic theories seek to predict and explain economic behavior. Economic theories usually begin with a **model**. This abstracts from the many details surrounding an event and seeks to identify a few of the most important determinants of the event. For example, the theory of the firm assumes that the firm seeks to maximize profits, and on the basis of that it predicts how much of a particular commodity the firm should produce under different forms of market structure or organization. While the firm may have other (multiple) aims, the profit-maximization model accurately predicts the behavior of firms, and, therefore, we accept it. Thus, the methodology of economics (and science in general) is to accept a theory or model if it predicts accurately and if the predictions follow logically from the assumptions.¹

Relationship to the Decision Sciences

Managerial economics is also closely related to the decision sciences. These use the tools of mathematical economics and econometrics (see Figure 1-1) to construct and estimate decision models aimed at determining the optimal behavior of the firm (i.e., how the firm can achieve its goals most efficiently). Specifically, **mathematical economics** is used to formalize (i.e., to express in equational form) the economic models postulated by economic theory. **Econometrics** then applies statistical tools (particularly regression analysis) to real-world data to estimate the models postulated by economic theory and for forecasting.

For example, economic theory postulates that the quantity demanded (Q) of a commodity is a function of or depends on the price of the commodity (P), the income of consumers (Y), and the price of related (i.e., complementary and substitute) commodities (P_C and P_S , respectively). Assuming constant tastes, we may postulate the following formal (mathematical) model:

$$Q = f(P, Y, P_C, P_S) \quad [1-1]$$

By collecting data on Q , P , Y , P_C , and P_S for a particular commodity, we can then estimate the empirical (econometric) relationship. This will permit the firm to determine how much Q would change by a change in P , Y , P_C , and P_S , and to forecast the future demand for the commodity. This information is essential in order for management to achieve the goal or objective of the firm (profit maximization) most efficiently.

To conclude, *managerial economics* refers to the application of economic theory and decision science tools to find the optimal solution to managerial decision problems.

¹ See M. Friedman, "The Methodology of Positive Economics," in *Essays in Positive Economics* (Chicago: University of Chicago Press, 1953); and M. Blaug, *The Methodology of Economics and How Economists Explain* (Cambridge, England: Cambridge University Press, 1980).

Relationship to the Functional Areas of Business Administration Studies

Having defined the subject matter of managerial economics and its function, we can now examine the relationship between managerial economics and the **functional areas of business administration studies**. The latter include accounting, finance, marketing, personnel or human resource management, and production. These disciplines study the business environment in which the firm operates and, as such, they provide the background for managerial decision making. Thus, managerial economics can be regarded as an overview course that *integrates* economic theory, decision sciences, and the functional areas of business administration studies; and it examines how they interact with one another as the firm attempts to achieve its goal most efficiently.

Most students taking managerial economics are likely to have some knowledge (from other courses) of some of the topics presented and tools of analysis used in managerial economics. While reviewing these topics and studying the others, the student should pay particular attention to the overall decision-making process by which the firm can achieve its objective, since this is the ultimate goal of managerial economics.

In short, managerial economics is not the study of a number of independent topics but the use of economic theory and management science tools to examine how a firm can achieve its objective most efficiently within the business environment in which it operates. If all students in a managerial economics course had already taken courses in microeconomic and macroeconomic theory, in mathematical economics and econometrics, and in the functional areas of business, then managerial economics could concentrate exclusively on its integrating and synthesizing role in analyzing the decision-making process. As it is, most students have had some of those courses but not all. Thus, a managerial economics course, while stressing the process of reaching optimal managerial decisions, must also present the theories and tools required to make such optimal managerial decisions.

1-3 THE BASIC PROCESS OF DECISION MAKING

Regardless of the type, all decision-making processes involve or can be subdivided into five basic steps, as shown in Figure 1-2.

The first step involves defining the problem that the firm or organization faces. For example, in 1979 the Xerox Corporation, which invented the copying machine in 1959 and had no competition until 1969, found itself unable to compete with Japanese copiers, which were of better quality and cheaper.

1. **Define the Problem**
2. **Determine the Objective**
3. **Identify Possible Solutions**
4. **Select the Best Possible Solution**
5. **Implement the Decision**

FIGURE 1-2 The Decision-Making Process The five basic steps of the decision-making process.

The second step in the decision-making process is for the firm or organization to determine the objective of the firm. In the case of Xerox, the company had to decide whether to try to meet the competition or leave the copier market to the Japanese and move on to develop and produce some other more technologically advanced product. Xerox decided to stay in the market by trying to meet the competition head-on.

The third step is to identify the options or range of possible solutions to the problem defined in step one in order to achieve the objective set in step two. In the case of Xerox, the range of choices included trying to improve quality while reducing the costs of production in its American plants, import from Japan those parts and components that could be produced better and more cheaply in Japan, or transfer its entire production of copiers to Fuji Xerox, its Japanese subsidiary.

The fourth step in the decision-making process is for the firm or organization to select the best possible solution or course of action among the choices identified in step three. In the case of Xerox, this required reorganization and integration of development and production, and an ambitious companywide quality-control effort in its domestic plants with the direct involvement of Fuji Xerox, as well as the importation of parts or components that Fuji Xerox could best produce in Japan.

The fifth and final step is the implementation of the best possible solution identified in step four. To continue with our example, Xerox greatly increased employee involvement, brought suppliers into the early stages of product design, greatly reduced inventories and the number of suppliers, and used Fuji Xerox to produce in Japan those parts or components that could be better supplied from Japan and, more important, to monitor progress in the companywide quality-control program and customer satisfaction. By taking these drastic actions, Xerox was able to reverse the trend toward loss of market share to Japanese competitors (Xerox's experience is reported in greater detail in Case Insight 7-7).

The decision-making process analyzed above was, for the most part, introduced by Peter Drucker (see Box 1-1) and is now being revolutionized by the rapid globalization of the world economy and by the widespread use of computers and information technology (see Box 1-2). In these and in all other Boxes in the text that deal specifically with how a firm reaches a business decision, we will try to determine if the above five-step managerial decision-making process was in fact followed and will evaluate the outcome of its application (i.e., did it lead to the best managerial decision by the firm?). In other words, we want to see the managerial decision-making process at work.

Box 1-1

Peter Drucker—The Man Who Invented Modern Management



Many of the management theories and ideas examined in this and other management books have been introduced by Peter F. Drucker, who has been justly called “the man who invented management.” He was certainly the most important management thinker of the past century. (Drucker passed away in November 2005 at the age of 95.) Many of the management theories and ideas that we now consider conventional wis-

dom or commonplace were in fact first introduced by Peter Drucker, and he strongly influenced most business leaders (such as Bill Gates of Microsoft, Andrew Grove of Intel, and Jack Welch of General Electric) and many political leaders (such as President George Bush and Newt Gingrich, the former leader of the House of Representatives) not only in the United States but throughout the world.

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continued

In his 1945 landmark study of General Motors, *The Concept of the Corporation*, Drucker introduced decentralization as a principle of organization, which by the 1980s had been adopted by more than three-quarters of American companies. In his 1954 book, *The Practice of Management*, he asked the seemingly naïve but fundamental questions: “What business are we in?” “Who are our customers?” “What does the customer consider value?” In the same book Drucker emphasized the importance of managers and corporations setting clear long-term objectives and then translating them into more immediate and achievable goals. In *The Effective Executive* (1966), Drucker says that managers should focus on important matters in order to avoid wasting time on nonessentials, to focus on substance rather than style and on institutionalized practices over charismatic or cult leaders.

It was a result of the following question that Drucker asked Jack Welch soon after the latter became the CEO (corporate executive officer) of General Electric (GE) in 1981: “If you were not in a business, would you enter it today, and if the answer is no, what are you going to

do about it?” that Welch decided that GE either had to be No. 1 or No. 2 in the particular line of business or get out of it. And it was this one principle that Jack Welch followed during his 15-year tenure as GE’s CEO that was responsible for the spectacular performance of GE during those years.

Some of the other basic management principles introduced by Drucker are (1) the necessity of “empowering” workers and treating them as resources rather than just as costs in a profit-generating machine; (2) the world was moving from an “economy of goods” to an “economy of knowledge,” where value is created more by brainpower and knowledge workers than by the sweat of laborers; (3) the corporation is a human community built on trust and respect and satisfying workers’ desire for continuous training and learning; (4) change should be exploited as an opportunity rather than viewed as a threat; and (5) every decision is risky, and risk can be minimized if managers know when a decision is necessary, how to clearly define and directly tackle it, and that a decision has not been made until a way is found to implement it.

Source: “Peter F. Drucker, a Pioneer in Social and Management Theory,” *The New York Times* (November 12, 1995), p. 13; “Trusting the Teacher in the Gray-Flannel Suit,” *The Economist* (November 19, 2005), pp. 71–73; “The Man Who Invented Management,” *Business Week* (November 2, 2005), pp. 97–106; and Alan M. Kantrow, “Why Read Peter Drucker?” *Harvard Business Review* (January–February 2009), pp. 72–82.

BOX 1-2

The Management Revolution



Business and society are today in the midst of a revolution comparable to the Industrial Revolution in both scale and consequence. Today’s revolution has four components: the globalization of markets, the spread of information technology and computer networks, the dismantling of traditional managerial hierarchies, and the creation of a new information economy. These four components are all occurring quickly and simultaneously, and are affected by and affect one another.

Globalization (the first component of today’s revolution) once meant simply exporting some goods and services to other nations and maybe setting up a few production facilities abroad. Today, globalization means that more and more managerial decisions must consider

the world as a whole, rather than the region or the nation, as the relevant marketplace. Because of the tremendous improvement in communications and transportation, tastes are converging internationally, many more products than in the past are now imported and most others have parts of components made abroad, and domestic producers face ever-growing competition from abroad.

The second component of today’s revolution is the spread of the information technology and computer networks. Practically every bank teller, post office worker, retail clerk, telephone operator, bill collector, and so on works with a computer today. This greatly speeds up the delivery of goods and services, cuts waste, reduces inventory, and generally increases productivity.

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The computer has also dismantled traditional managerial hierarchies and decimated the ranks of middle management (the third component of today's revolution). In the past, middle managers were the transmission lines for information between top management and workers. Today, information can in most instances be transmitted from top management directly to workers and vice versa by a simple tap of a computer key and without any need of middle management. Surviving middle managers are today assuming more important roles and are increasingly being used to shelter senior managers from the day-to-day operations of the firm so that the latter can concentrate their energies on the strategic management of the firm.

The fourth component of today's revolution is the rapid spread of the information economy, where the

creation of value is increasingly based on knowledge and communications rather than as in the past on natural resources and physical labor. For example, many auto repairs will soon be made not by a mechanic with a wrench but by a technician who fixes an engine knock by reprogramming a computer chip, and goods and services will increasingly be marketed and distributed electronically.

Today's four-pronged revolution affects drastically not only how traditional products and services are produced and distributed but also the entire organization of production, consumption, and management in ways that are not yet fully evident or understood. Can you think of this revolution taking place in, say, Indian banking, retail, or manufacturing industries?

Source: "Welcome to the Revolution," *Fortune* (December 13, 1993), pp. 66–78; "Management's New Paradigm," *Forbes* (October 5, 1998), pp. 152–176; Q. N. Huy, "In Praise of Middle Managers," *Harvard Business Review* (September 2001), pp. 72–79; "A Management Revolution Still in the Making," *The New York Times* (March 12, 2002), p. 5; "In Defence of Globalization," *IMF Survey* (March 1, 2004), pp. 63–64; "More Employers Plan to Hire Middle Managers," *The Wall Street Journal* (February 1, 2005), p. B6; Nick Bloom and John Van Reenen, "The Economics of Management and Productivity," *NBER Reporter*, No. 4 (2008); "Middle Managers," *The Economist* (August 27, 2011), p. 56; "The Boss," *New York* (June 24, 2013), pp. 26–34; and "Building Middle-Manager Morale," *The Wall Street Journal* (August 7, 2013), p. B1.

1-4 HOMO ECONOMICUS

Economists talk of individual preferences and despite apparent and huge differences across individuals, treat all of them as the same consumer. It may ease an economist's job but is it not unfair as well as incorrect? Economists, actually, address this problem in a very simple way. That is, despite apparent differences, the way people think and act *vis-à-vis* economic transactions is very similar to each other. Therefore, economists invoke a *Homo economicus*, i.e., the economic being. This economic being serves as our representative consumer, which possesses certain characteristics that are universal and the core of each consumer throughout the world. These basic characteristics are non-satiation, clarity of preferences, selfish motive, and possession of information. It is important to note that all these assumptions are qualified assumptions and not absolute in nature. A superset of all the characteristics constitutes what economists love to call 'rationality'.

So how do we interpret each of these? Non-satiation implies that a consumer would always prefer more quantity of a good over less, and less quantity of a bad over more. For example, more of food is preferred over less but less of pollution is preferred over more. Clarity of preferences is often also called the transitivity of preferences. It implies that if good A is preferred to good B and good B is preferred to good C, then good A must be more preferred to good C. It is essential to underline that the consumer behaves in a linear fashion and the choices made are not random. As compared to the previous two, it is more difficult to accept the selfish motive. However, the economic selfish motive is different from calling people selfish. In Economics, it implies that people work in self-interest rather than with a wish to harm themselves. Finally, possession of information implies that individual consumers

make informed choices and without seeking required information, they would fail to take any economically meaningful decision.

Bounded Rationality

As mentioned, the assumptions above are collectively called rationality. In fact, rationality is so critical to economic studies, it is not a mere assumption that can be done away with but rather a postulate which must hold and cannot be assumed away. However, economists also realize that people are neither equally rational nor think in the exact same way. In recognition of reality, economists make do with some necessary existence of rationality, which is limited by individual consumers' preferences, intelligence, and environmental factors. This is called "bounded rationality". How does this work? It is rather easy to turn all the four components of rationality into quasi-conditions.

Economists turn non-satiation into acceptance of a good to the point where it fetches some non-negative satisfaction. Individuals are thought to have clarity of preferences for a given time and transaction; however, they may change their preferences over time. Again, selfish motives or actions in self-interest are difficult to understand because people do work for charities, donate their hard-earned money, and engage in many other altruistic deeds. However, the quasi-condition is that they would put their own interest over that of others. This may not be universally true but helps in explaining most worldly situations. Finally, before making consumption choices, individuals like to explore information about their consumption choices. They try to know the cost, prices at other shops, relative prices of the goods consumed, ingredients, effects, and other possible dimensions of each product. However, seeking more information is costly. Given infinite resources, intelligence, and time, we all may like to know everything about our consumption choices. However, each consumer draws a boundary on seeking information according to his/her personal interest, cost of seeking information, and the benefit that they may derive from the sought information. Those who find information more beneficial know more than those who may find information too costly as compared to the potential benefits. This way, economists mostly work and work well with bounded rationality.

An Example of Bounded Rationality

Have you ever invested in share markets? If you are given some money, how would you invest it in stocks? An economist would hope that you are rational, i.e., you would want to maximize your returns on stock and you would prefer more return over less. Your preference of stocks would be transitive, driven by a spirit to maximize your own gains rather than giving away stock gains to other buyers in the market. You would also be expected to read, understand, and apply all the knowledge you can for selecting the right stocks and constructing an appropriate portfolio.

However, an economist would point out another interesting aspect of bounded rationality. Suppose you find Stock of ABC Corp. very promising and wish to buy the same. Now, you must find someone, who is willing to sell the same. However, if you are truly a representative rational consumer, just as everyone else, then everyone else in the market would also want to buy the same stock instead of selling. Does this mean that there would be only buyers or sellers in the market at a given point in time? We know that that doesn't happen. What actually happens is that there would be someone, whose understanding or objectives differ from yours and they would be willing to sell the stock to you. In essence, both of you behave perfectly

rational yet, differently. In economic parlance, both of you behave like a *Homo economicus*—the rational economic being. The underlying lesson here is that if we do not have our respective bounded rationalities which differ from each other, we would all want to buy, sell, or want the same thing at the same time and therefore, there would be no market function at all. It is this bounded rationality that makes the whole world move.

1-5 THE THEORY OF THE FIRM

In this section, we examine first the reason for the existence of firms and their principal functions. Then we define the value of the firm and the constraints under which it operates. Finally, we discuss the limitations of the theory of the firm. This is the most important section since the theory of firm behavior is the centerpiece and central theme of managerial economics.

Reasons for the Existence of Firms and Their Functions

A **firm** is an organization that combines and organizes resources for the purpose of producing goods and/or services for sale. There are millions of firms in India. These include proprietorships (firms owned by one individual), partnerships (firms owned by two or more individuals), and corporations (owned by stockholders).

Firms exist because it would be very inefficient and costly for *entrepreneurs* to enter into and enforce contracts with workers and owners of capital, land, and other resources for each separate step of the production and distribution process. Instead, entrepreneurs usually enter into longer-term, broader contracts with labor to perform a number of tasks for specific wages and fringe benefits. Such a general contract is much less costly than numerous specific contracts and is highly advantageous both to the entrepreneurs and to the workers and other resource owners. The firm exists in order to save on such **transaction costs**. By internalizing many transactions (i.e., by performing many functions within the firm), the firm also saves on transfer pricing, taxation on multiple transactions, and reduces volatility in business by reducing dependence on outside agencies.²

Firms, however, do not continue to grow larger and larger indefinitely because of limitations on management's ability to effectively control and direct the operation of the firm as it grows. It is true that up to a point, a firm can overcome these internal disadvantages of large size or diseconomies of scale by establishing a number of semiautonomous divisions (i.e., by decentralizing). Eventually, however, the increased communication traffic that is generated, coupled with the further and further distancing of top management from the operation of each division, imposes sufficient diseconomies of scale to limit the growth of the firm. Furthermore, the firm will reach a point where the cost of supplying additional services within the firm exceeds the cost of purchasing these services from other firms. An example is provided by some highly technical (legal, medical, or engineering) service that the firm may need only occasionally.

The function of firms, therefore, is to purchase resources or inputs of labor services, capital, and raw materials in order to transform them into goods and services for sale. Resource owners (workers and owners of capital, land, and raw materials) then use the income generated

² "Why Do Firms Exist?" *The Economist* (December 18, 2010), p. 134; and "The Man Who Showed Why Firms Exist," *The Economist* (September 7, 2013), p. 13.

from the sale of their services or other resources to firms to purchase the goods and services produced by firms. The **circular flow of economic activity**³ is thus complete. In the process of supplying the goods and services that society demands, firms provide employment to workers and pay taxes, which the government uses to provide services (such as national defense, education, and fire protection) that firms could not provide at all or as efficiently.

The Objective and Value of the Firm

Managerial economics begins by postulating a theory of the firm, which it then uses to analyze managerial decision making. Originally, the theory of the firm was based on the assumption that the goal or objective of the firm was to maximize current or short-term profits. Firms, however, are often observed to sacrifice short-term profits for the sake of increasing future or long-term profits. Some examples of this are expenditures on research and development, new capital equipment, and an enhanced promotional campaign.⁴ Since both short-term as well as long-term profits are clearly important, the **theory of the firm** now postulates that the primary goal or objective of the firm is to maximize the wealth or **value of the firm**. This is given by the present value of all expected future profits of the firm. Future profits must be discounted to the present because a rupee of profit in the future is worth less than a rupee of profit today.⁵

Formally stated, the wealth or value of the firm is given by

$$PV = \frac{\pi_1}{(1+r)^1} + \frac{\pi_2}{(1+r)^2} + \cdots + \frac{\pi_n}{(1+r)^n} \quad [1-2]$$

$$= \sum_{t=1}^n \frac{\pi_t}{(1+r)^t} \quad [1-2a]$$

where PV is the present value of all expected future profits of the firm; $\pi_1, \pi_2, \dots, \pi_n$ represent the expected profits in each of the n years considered; and r is the appropriate discount rate used to find the present value of future profits. In Equation 1-2a, Σ refers to “the sum of” and t assumes the values from 1 up to the n years considered. Thus, $\Sigma_{t=1}^n$ means “sum or add” all the $\pi_t/(1+r)^t$ terms resulting from substituting the values of 1 to n for t . Hence, Equation 1-2a is an abbreviated but equivalent form of Equation 1-2. The introduction of the time dimension in Equations 1-2 and 1-2a also allows for the consideration of uncertainty. For example, the more uncertain the stream of expected future profits is, the higher is the discount rate that the firm will use, and, therefore, the smaller is the present value of the firm⁶.

Since profits are equal to total revenue (TR) minus total costs (TC), Equation 1-2a can be rewritten as

³ For a more extensive discussion, see D. Salvatore, *Microeconomics: Theory and Application*, 5th ed. (New York: Oxford University Press, 2009), pp. 7–8.

⁴ Many managers, however, complain that the pressure to report profits every year or every quarter forces them to take actions that are detrimental to the long-term profitability of the firm.

⁵ A ₹1 investment today at 10 percent interest will grow to ₹1.10 in one year. Therefore, ₹1 is defined as the present value of ₹1.10 due in one year. For the purpose of this chapter, this is all that needs to be known. A detailed presentation of the concepts of present value and compound interest, which are required for understanding risk analysis and long-run investment decisions is provided in the Online Resource Centre.

⁶ “Valuing Old and New Companies,” *Financial Times* (May 28, 2001), p. 2; and “Bringing the Future into Play,” *Business Week* (March 11, 2002), pp. 70–71.

$$\text{Value of firm} = \sum_{t=1}^n \frac{TR_t - TC_t}{(1+r)^t} \quad [1-3]$$

Equation 1-3 provides a unifying theme for the analysis of managerial decision making and, indeed, for this entire text. Specifically, TR depends on sales or the demand for the firm's output and the firm's pricing decisions. These are the major responsibility of the marketing department and are discussed in detail in Part Two (Chapters 3 through 6) and Part Four (Chapters 9 through 12), respectively. The TC depends on the technology of production and resource prices. These are the major responsibility of the production and personnel or human resources departments and are discussed in detail in Part Three (Chapters 7 and 8). The discount rate (r) depends on the perceived risk of the firm and on the cost of borrowing funds. These are the major responsibility of the finance department and are discussed in detail in Chapters 14 and 15. Please visit the ORC for accessing Chapters 14 and 15.

Equation 1-3 can also be used to organize the discussion of how the various departments within the firm interact with one another. For example, the marketing department can reduce the cost associated with a given level of output by promoting off-season sales. The production and human resources departments can stimulate sales by quality improvements and the development of new products. The accounting department can provide more timely information on sales and costs. All these activities increase the efficiency of the firm and reduce its risk, thereby allowing the firm to use a lower discount rate to determine the present value of its expected future profits (which increases the value of the firm).

The Resources the Firms Employ

Firms employ a range of resources that vary in quality and quantity too. These resources may or may not always be owned by the firms. Accordingly, they may pay an appropriate sum to the owner of the resources. We broadly classify these resources into four types: land, labor, capital, and entrepreneur. Land includes land, factory building, and office structures. For the benefits of the land, a rent is paid by the user to the owner. Labor includes all the workers in the firm, right from watchmen and shop-floor workers to technicians and the CEO. All the providers of labor are paid wages, although for some positions, accountants use the term salary. Capital is often more complicated to define and quantify than the previous two resources. This is primarily because, in addition to cash and financial capital, it includes machinery, equipment, furniture, fixtures, and even, technology. Most often, capital is required in huge amounts and therefore, the firm seeks capital from banks and investors. These external parties are paid an interest, which is like compensation for waiting to use their own money.

Entrepreneurship is the fourth and most critical factor. Its primary function is to bring all the other factors on the same platform and to organize them for productive functioning. The entrepreneur gets a wage for his/her time with the organization. In addition, he/she gets a premium for undertaking the risk of the production process. Since the firm may fail or succeed, this risk premium, which is more commonly known as profit, is deemed justified. However, there are frequent heated debates on the amount of profit that is commensurate with the risk undertaken or if there is too much "profiteering".

Behavior of all the four factors of production and the ensuing payment have been studied by economists in great detail. The theory of rent was formulated by David Ricardo in the early 1800s, and there are many theories explaining parts of labor and capital behavior. Since profit is the main motive of a business, the sustaining force behind any firm,

and the most debated subject among all four factor payments, we devote a section to it (see Section 1-6).

Constraints on the Operation of the Firm

We have seen that the goal or objective of the firm is to maximize wealth or the value of the firm. In trying to do this, however, the firm faces many constraints. Some of these constraints arise from limitations on the availability of essential inputs. Specifically, a firm might not be able to hire as many skilled workers as it wants, especially in the short run. Similarly, the firm might not be able to acquire all the specific raw materials it demands. It might also face limitations on factory and warehouse space and in the quantity of capital funds available for a given project or purpose. Government agencies and not-for-profit organizations also face similar resource constraints. Besides resource constraints, the firm also faces many legal constraints. These take the form of minimum wage laws, health and safety standards, pollution emission standards, as well as laws and regulations that prevent firms from employing unfair business practices. In general, society imposes these constraints on firms in order to modify their behavior and make it more nearly consistent with broad social welfare goals.

So important and pervasive are the constraints facing firms that we speak of **constrained optimization**.⁷ That is, the primary goal or objective of the firm is to maximize wealth or the value of the firm subject to the constraints it faces. The existence of these constraints restricts the range of possibilities or freedom of action of the firm and limits the value of the firm to a level that is lower than the one in the absence of such constraints (unconstrained optimization). Within these constraints, however, the firm seeks to maximize wealth or its value. While government agencies and not-for-profit organizations may have goals other than wealth or value maximization, they also face constraints in achieving their goals or objectives, whatever these goals or objectives might be. Most of the discussion in the rest of the text will be in terms of constrained optimization, and we will develop and use powerful techniques to examine how a firm achieves constrained optimization.

Limitations of the Theory of the Firm

The theory of the firm, which postulates that the goal or objective of the firm is to maximize wealth or the value of the firm, has been criticized as being much too narrow and unrealistic. In its place, broader theories of the firm have been proposed. The most prominent among these are models that postulate that the primary objective of the firm is the maximization of sales, the maximization of management utility, and satisficing behavior.⁸

According to the sales-maximization model introduced by William Baumol and others, managers of modern corporations seek to maximize sales after an adequate rate of profit has been earned to satisfy stockholders.⁹ Indeed, some early empirical studies found a strong correlation between executives' salaries and sales, but not between salaries and profits. More recent studies, however, found the opposite.

⁷ We refer to "optimization" rather than "maximization" in order to allow for cases where the firm wants to *minimize* costs and other objectives, subject to the constraints it faces.

⁸ Still other objectives might be to take advantage of economies of scale or scope, to pay lower prices for inputs (pecuniary economies of scale), to better face risks, to raise capital more effectively (the corporate form), to gain technological advantage, and so on.

⁹ See W. J. Baumol, *Business Behavior, Value and Growth* (New York: Macmillan, 1959).

Oliver Williamson and others have introduced a model of management utility maximization, which postulates that with the advent of the modern corporation and the resulting separation of management from ownership, managers are more interested in maximizing their utility, measured in terms of their compensation (salaries, fringe benefits, stock options, etc.), the size of their staff, the extent of control over the corporation, lavish offices, and so on, than in maximizing corporate profits.¹⁰ This is referred to as the **principal-agent problem**. That is, the agent (manager) may be more interested in maximizing his or her benefits than maximizing the principal's (the owner's) interest. This principal-agent problem can be resolved by tying the manager's reward to the firm's performance in relation to other firms in the same industry. Managers who maximize their own interests rather than the corporation's profits or value are also more likely to be replaced either by the stockholders of the corporation or as a result of the corporation's being taken over by (merged with) another firm that sees the unexploited profit potential of the first. The principal-agent problem is examined in greater detail in Section 14-8 of Chapter 14 in the ORC.

Finally, Richard Cyert and James March, building on the work of Herbert Simon, pointed out that because of the great complexity of running the large modern corporation—a task often complicated by uncertainty and a lack of adequate data—managers are not able to maximize profits but can only strive for some satisfactory goal in terms of sales, profits, growth, market share, and so on. Simon called this **satisficing behavior**. That is, the large corporation is a satisficing, rather than a maximizing, organization¹¹. This, however, is not necessarily inconsistent with profit or value maximization; presumably, with more and better data and search procedures, the modern corporation could conceivably approach profit or value maximization.

Although these alternative and broader theories of the firm stress some relevant aspect of the operation of the modern corporation, they do not provide a satisfactory alternative to the theory of the firm postulated in Section 1-5. Indeed, the stiff competition prevailing in most product and resource markets as well as in managerial and entrepreneurial talent today forces managers to pay close attention to profits—lest the firm go out of business or they be replaced. As a result, we retain our theory of the firm (in terms of profit or value maximization) in the rest of the text as the basis for analyzing managerial decisions, because it is from this vantage point that the behavior of the firm can be studied most fruitfully. The assumptions of the theory may be somewhat unrealistic, but the theory predicts the behavior of the firm more accurately than any of its alternatives.

The theory of the firm and the firm's decision-making process is analyzed in greater depth in a Case Insight titled "Managerial Economics at Work," presented in each chapter of the text, that can be the object of class discussion and analysis. The aim here is to try to simulate the firm's decision-making process in an actual real-world situation, by an actual team of managers (in our case the students in the class) led by the CEO of the firm (your professor), by trying to answer a number of leading questions that the firm needs to answer in order to successfully manage the firm. Was the actual decision of the firm correct? Why? If not, why not? Could the firm have done better? How would your team have done it? Case Insight 1 examines the objective and strategy of colleges (firms) in the MBA education industry in India over the past few decades.

¹⁰ See O. E. Williamson, "A Model of Rational Managerial Behavior," in R. M. Cyert and J. G. March, eds., *A Behavioral Theory of the Firm* (Englewood Cliffs, N.J.: Prentice-Hall, 1963).

¹¹ See R. M. Cyert and J. G. March, eds., *A Behavioral Theory of the Firm* (Englewood Cliffs, N.J.: Prentice-Hall, 1963); and H. A. Simon, "Theories of Decision-Making in Economics," *American Economic Review*, vol. 49 (June 1949).

CASE INSIGHT 1 MANAGERIAL ECONOMICS AT WORK

The Objective of an MBA: Do Colleges have a Strategy?

Master in Business Administration (MBA) education in India has become quite competitive lately. Each year, more than 200,000 aspirants appear for some 10,000 seats in reputed institutions. However, it was not always so.

The first institute for management learning in Independent India started in 1948. During the 1950s, the Indian Institute of Technology (IITs) and the heavy industries were established. However, they soon realized the apparent lack of managerial talent in the country to run these businesses and institutions. As a response, the reputed Indian Institute of Management (IIMs) at Calcutta (now Kolkata) and Ahmedabad were opened by the government of India to provide managerial talent. More IIMs were opened at Bangalore (1973) and at Lucknow (1984). However, IIMs or the MBA education was not much sought after until about 1995. The MBA education became a hot cake only due to the liberalization era that India witnessed post the 1991 crisis. When domestic businesses were freed from the clutches of the government and multinationals also appeared on the horizon, a sudden demand for managerial talent was felt. As a result, the small number of graduates from IIMs and other prominent schools could command huge compensation packages. MBA education became a ticket to overnight success.

A total of 15 new IIMs were opened in 17 years between 1997 and 2014 against four in 36 years between 1961 and 1996. A much greater number of MBA colleges mushroomed across the country. Some of these attained academic excellence; however, most just rode the bandwagon of MBA education without any quality benchmarking. As a result of this boom in MBA education, all the IIMs were dictated by the government to double their batch sizes. More interestingly, the boom in MBA education led to a lot of fake universities handing out degrees that weren't worth the paper they were printed on. The regulation was weak and it took some time to catch up with these 'degree distribution shops'.

The government regulators responded with stricter regulations and quality benchmarks. The market forces also responded by rating business schools on various parameters. Lately, accreditation by an international agency has also become a well-demanded quality

benchmark. Many other industries also came up around the MBA education boom. These include MBA entrance preparation coaching, guide books, and online examination conducting agencies.

This good run for MBA education continued until the end of 2008, when the world was hit by financial crisis. The multinational corporations as well as the Indian companies faced huge losses in business. The demand for MBA education suddenly sank and even existing jobs evaporated. The impact on MBA colleges was felt almost immediately. Many of the colleges failed to reach the critical mass of students and closed down. Many chain schools closed select campuses and some had to reduce their seats.

The 2008 financial crisis proved to be a process of creative destruction. The IIMs not only survived the crisis but also increased in number. Being an autonomous body with government funding, they maintained their academic standards. However, the MBA education market became more competitive even for IIMs. The demand for a diverse set of candidates, emphasis on specialized skills rather than a general expertise, focus on soft skills beyond mere mathematical modeling, and sensitivity towards ethical conduct changed the MBA education paradigm.

The apparent loss of demand also led to increased competition among suppliers by way of reduction in fee, special admission provisions for women candidates, and technological innovations to reduce input cost. Two major changes, which may or may not lead to a paradigm shift in Indian MBA education, include the online education as Massive Open Online Courses (MOOC) and the entrance of foreign universities in India, subject to approval from the central government.

Questions for Class Discussion and Analysis

1. What should be the aim of the colleges providing MBA education? Should they be allowed to operate if quality standards are not met? What if the quality is as per standards demanded, but the placement is not good? Would you want to be part of such a college, which has good academic standards but low placements?

2. What type of institutions must have reduced their fee to attract students? Is it possible that the coveted IIMs had

continued

continued

to reduce fee? Would there be a difference between the motivation of fee reduction between an IIM and a relatively lesser known MBA school?

3. What information would you need to determine the appropriate fee level and to make the decision of reducing the same?

4. What may be the consequences of enforcing diversity in the classrooms? Can you think of some good and bad aspects of the same on learning outcomes, batch excellence, and strategic dimensions from an MBA school's perspective?

5. Do you think MBA schools should have joined hands instead of competing? What may be the impact on students of such harmony among MBA schools?

6. How would the entry of foreign universities affect the Indian MBA education market? What may be the good or bad outcomes for the colleges and for the students?

7. Can MOOCs replace the brick-and-mortar model of present day? Would you wait for the MOOCs to become the cornerstone of MBA education? What are your reasons for the decision?

1-6 THE NATURE AND FUNCTION OF PROFITS

In this section we examine the nature and function of profits. We distinguish between business and economic profits, present various theories of profits, and examine the function of profits in a free-enterprise economy.

Business versus Economic Profit

To the general public and the business community, profit or **business profit** refers to the revenue of the firm minus the explicit or accounting costs of the firm. **Explicit costs** are the actual out-of-pocket expenditures of the firm to purchase or hire the inputs it requires in production. These expenditures include the wages to hire labor, interest on borrowed capital, rent on land and buildings, and the expenditures on raw materials. To the economist, however, **economic profit** (or above-normal profit) equals the revenue of the firm minus its explicit costs and implicit costs. **Implicit costs** refer to the value of the inputs owned and used by the firm in its own production processes.

Specifically, implicit costs include the salary that the entrepreneur could earn from working for someone else in a similar capacity (say, as the manager of another firm) and the return that the firm could earn from investing its capital and renting its land and other inputs to other firms. The inputs owned and used by the firm in its own production processes are not free to the firm, even though the firm can use them without any actual or explicit expenditures. Their implicit costs are what these same inputs could earn in their best alternative use outside the firm. Accordingly, economists include both explicit and implicit costs in their definition of costs. That is, they include a normal return on owned resources as part of costs, so that economic profit is revenue minus explicit and implicit costs. While the concept of business profit may be useful for accounting and tax purposes, it is the concept of economic profit that must be used in order to reach correct investment decisions.

For example, suppose that a firm reports a business profit of ₹30,000 during a year, but the entrepreneur could have earned ₹35,000 by managing another firm and ₹10,000 by lending out his capital to another firm facing similar risks. To the economist, this entrepreneur is actually incurring an economic loss of ₹15,000 because, from the *business* profit of ₹30,000, he would have to subtract the implicit or opportunity cost of ₹35,000 for his wages and ₹10,000 for his capital. A business profit of ₹30,000, thus, corresponds to an economic loss of ₹15,000

per year. Even if the entrepreneur owned no capital, he would still incur an economic loss of ₹5,000 per year by continuing to operate his own firm and earning a business profit of ₹30,000 rather than working for someone else in a similar capacity for ₹35,000. Thus, the entrepreneur should close his firm and work in his best alternative occupation. In other words, it is the economic, rather than the business, concept of profit that is important in directing resources to different sectors of the economy. In the rest of the text we will use the term *profit* to mean economic profit and *cost* to mean the sum of explicit and implicit costs.

Theories of Profit

Profit rates usually differ among firms in a given industry and even more widely among firms in different industries. Firms in such industries as steel, textiles, and railroads generally earn very low profits both absolutely and in relation to the profits of firms in pharmaceutical, office equipment, and other high-technology industries. Several theories attempt to explain these differences.

RISK-BEARING THEORIES OF PROFIT According to risk-bearing theories, above-normal returns (i.e., economic profits) are required by firms to enter and remain in such fields as petroleum exploration with above-average risks. Similarly, the expected return on stocks has to be higher than on bonds because of the greater risk of the former. This will be discussed in greater detail in Chapter 14 in the ORC.

FRICTIONAL THEORY OF PROFIT This theory stresses that profits arise as a result of friction or disturbances from long-run equilibrium. That is, in long-run, perfectly competitive equilibrium, firms tend to earn only a normal return (adjusted for risk) or zero (economic) profit on their investment. At any time, however, firms are not likely to be in long-run equilibrium and may earn a profit or incur a loss. For example, during the 1990s, when India started liberalization and the independent music albums became a huge hit, firms producing audio cassettes and music players enjoyed a sharp increase in demand, which led to large profits for even substandard producers. However, with the sharp advances in technology, audio devices were replaced by computer-based devices. As a result, most of these firms began to incur losses and eventually shutdown. When profits are made in an industry in the short run, more firms are attracted to the industry in the long run, and this tends to drive profits down to zero (i.e., it leads to firms earning only a normal return on investment). On the other hand, when losses are incurred, some firms leave the industry. This leads to higher prices and the elimination of the losses.

MONOPOLY THEORY OF PROFIT Some firms with monopoly power can restrict output and charge higher prices than under perfect competition, thereby earning a profit. Because of restricted entry into the industry, these firms can continue to earn profits even in the long run. Monopoly power may arise from the firm's owning and controlling the entire supply of a raw material required for the production of the commodity, from economies of large-scale production, from ownership of patents, or from government restrictions that prohibit competition. The causes, effects, and control of monopoly are examined in detail in Chapters 9, 12, and 13.

INNOVATION THEORY OF PROFIT The innovation theory of profit postulates that (economic) profit is the reward for the introduction of a successful innovation. For example, Steven Jobs,

the founder of the Apple Computer Company, became a millionaire in the course of a few years by introducing the Apple Computer in 1977. Indeed, the U.S. patent system is designed to protect the profits of a successful innovator in order to encourage the flow of innovations. Inevitably, as other firms imitate the innovation, the profit of the innovator is reduced and eventually eliminated. This is, in fact, what happened to the Apple Computer Company in the early 1980s.

MANAGERIAL EFFICIENCY THEORY OF PROFIT This theory rests on the observation that if the average firm tends to earn only a normal return on its investment in the long run, firms that are more efficient than the average would earn above-normal returns and (economic) profits.

All of these theories of profit have some element of truth, and each may be more applicable to some industries. Indeed, profits often arise from a combination of factors, including differential risk, market disequilibrium, monopoly power, innovation, and above-average managerial efficiency. This was, for example, the case of the Apple Computer Company when it was established.

In the fast-paced Internet world, where barriers to entry are very low, trying to become profitable too quickly may suggest that the company's management is not aggressive enough in pursuing growth and market share. As the web bookseller Amazon.com has shown, a company can be both healthy and unprofitable. Profits matter, but only eventually. In the meantime, the best strategy for Internet start-ups is to grow rapidly and grab as much market share as fast as possible. Venture capitalists believe that when profits eventually come, they will be huge.¹² At least so it was believed until the technological bubble burst in 2000 and many Internet start-ups went out of business.

Function of Profit

Profit serves a crucial function in a free-enterprise economy, such as our own. High profits are the signal that consumers want more of the output of the industry. High profits provide the incentive for firms to expand output and for more firms to enter the industry in the long run. For a firm of above-average efficiency, profits represent the reward for greater efficiency. On the other hand, lower profits or losses are the signal that consumers want less of the commodity and/or that production methods are not efficient. Thus, profits provide the incentive for firms to increase their efficiency and/or produce less of the commodity, and for some firms to leave the industry for more profitable ones. Profits, therefore, provide the crucial signals for the reallocation of society's resources to reflect changes in consumers' tastes and demand over time (see Box 1-3).

To be sure, the profit system is not perfect, and governments in free-enterprise economies often step in to modify the operation of the profit system to make it more nearly consistent with broad societal goals. For example, governments invariably regulate the prices charged for electricity by public utility companies to provide shareholders with only a normal return on their investment. Governments also pass minimum wage legislation and pollution emission controls to internalize to polluting firms the social cost of the pollution they create. These functions are performed in India in various ways either by regulating agencies or by laws. Electricity prices are regulated by respective state electricity boards; wages are managed by various laws including Minimum Wages Act 1948 and Payment of Bonus Act 1965; and the National Green

¹² See "Rethinking a Quaint Idea: Profits," *The Wall Street Journal* (May 19, 1999), p. B1.

Tribunal oversees the pollution control and emission regulations. While not perfect, the profit system is the most efficient form of resource allocation available. In societies such as the former Soviet Union and the People's Republic of China, where profits were not allowed, a committee of the ruling party performed this function in a much less efficient manner.

BOX 1-3

Profits in the Personal Computer Industry



In 1976, Steven Jobs, then 20 years old, dropped out of college and, with a friend, developed a prototype desktop computer. With financing from an independent investor, the Apple Computer Company was born, which revolutionized the computer industry. Sales of Apple Computers jumped from \$3 million in 1977 to over \$1.9 billion in 1986, with profits of over \$150 million. The immense success of Apple was not lost on potential competitors, and by 1984 more than 75 companies had jumped into the market. Even IBM, which had originally chosen not to enter the market, soon put all its weight and muscle behind the development of its own version of the personal computer—the IBM PC.

Because of increased competition, however, many of the early entrants had dropped out by 1986 and profits fell sharply. Profit margins for the 11 largest U.S. computer companies averaged 11.5 percent from 1980 to 1985 but only 6.5 percent from 1986 to 1990. Afterward, PC makers became engaged in a brutal price war with PC prices falling by as much as 20 to 40 percent per year, and this cut profit margins even further. PCs soon became practically a commodity, and as such, they no longer provided large profits to most of their makers as they did before.

In 1985, Jobs was ousted after a nasty power struggle with John Scully, Apple president at the time. After unsuccessfully trying a comeback with his NeXT computer in 1986, the 43-year-old Jobs was called back to lead Apple in 1997, after it had suffered years of losses and several CEO changes. Jobs revived Apple by simplifying its confusing product line to a few basic mod-

els and by introducing a series of highly successful new products, such as the iPod, iPhone, and iPad, which gave Apple huge profits.

This event in the newly born PC market is a classic example of the source, function, and importance of profits in our economy. Jobs's huge rewards from the setting up of Apple resulted from correctly anticipating, promoting, and satisfying an important type of market demand. Competitors, attracted by the huge early profits, were quick to follow, thereby causing profits in the industry to fall sharply. In the process, however, more and more of society's resources were attracted to the computer industry, which supplied consumers with rapidly improving personal computers at sharply declining prices.

Contrasted to Apple's successful application of the basic decision-making process, the PC market entered a deep sales slump in 2012 as a result of consumers' growing tastes for tablets. PC companies clearly recognized the new challenge that they were facing, set the meeting of the competition from tablets as their objective, identified the possible solutions (entering the tablet market or introducing laptop PCs equipped with touchscreens), selected what they considered to be the best possible solution (introducing laptops with touchscreens), and implemented that decision. The problem was that their strategy did not work—the slump in PC sales continued into 2013. It seems that tablets represent a disruptive technology. This means that PC companies are back at square one, starting again with a new round of the decision-making process in the hope of being more successful this time around.

Source: "Steve Jobs Vision So on Target at Apple, Now Is Falling Short," *The Wall Street Journal* (May 25, 1993), p. A1; "Apple and PCs Given for Dead Are Rising Anew," *The New York Times* (April 26, 1999), p. C1; "The New iMac," *Fortune* (June 10, 2002), p. 2; "How Low Can a PC Go?" *U.S. News & World Report* (November 4, 2002), p. 62; "Notebooks Without Wide Margins," *Business Week* (September, 5, 2005), p. 38; "The Decade of Steve," *Fortune* (November 23, 2009), pp. 93–100; "Apple Vision of the Future," *Time* (February 10, 2010), pp. 34–36; "The iPad Changes Everything," *Fortune* (March 22, 2010), p. 1; "PC Slump Gets Worse," *The Wall Street Journal* (July 11, 2013), p. B1; and "A Bruising Fight for Survival," *The Wall Street Journal* (July 29, 2013), p. B1.

1-7 BUSINESS ETHICS

Business ethics seeks to proscribe behavior that businesses, firm managers, and workers should not engage in. Ethics is a source of guidance beyond enforceable law. It is clear and uncontroversial that firms and their workers should not engage in unlawful acts, such as selling harmful or defective products, and ignorance of the law cannot be used as a justification for unlawful actions. Business and management ethics goes beyond the law to provide guidelines as to what is acceptable behavior in business transactions. Being based on values, however, it is often not clear what ethical behavior is and what it is not, since different people may have different values.

For example, should you report to your supervisor an affair between two of your co-workers? Some people would say yes, but others would think that it is none of their business. What about selling a product in India that has been found to be harmful to health and is not allowed to be sold in the United States? Or buying products made with child labor? Or polluting in a way that is not allowed in the country? These issues are important to the firm because, independent of its ethical stand, they could seriously affect its bottom line if, for example, they lead angry consumers to boycott the firm.

Today, most large companies have established codes of ethical behavior for the firm's personnel and have created "ethics officers" or guardians of corporate rectitude with the mission of keeping employees' conduct more upright than the law requires. A company with such a code of behavior and an ethics officer is more likely to hear of unethical behavior in the firm before it becomes a legal problem or before it leads to consumer reaction, both of which can harm the image and profitability of the firm. There have been many such cases, such as when it became known that Nestlé (the Swiss multinational and largest food company in the world) pushed infant formula in many poor countries when the mother's milk would have been healthier for the infant, or when Nike was exposed for paying poverty wages in many developing countries to workers making its high-priced sneakers.

An important additional incentive for many U.S. firms establishing codes of conduct for their employees and creating ethics officers was the establishment of sentencing guidelines by the courts in 1991 (revised in November 2003) that reduced fines for white-collar crimes committed by employees of companies that had established comprehensive ethics programs. In India, although much remains to be done on this frontier, two good initiatives in the right direction have taken place lately. First is the promulgation of *Vishaka* Guidelines by the Supreme Court of India in 1997, which became a law in 2013 as The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act. Second such instance is the provision of Class Action Suits under the Companies Act 2013, wherein the executives of an incorporated firm can be sued for unethical practices. Such ethics programs attempt to indicate as clearly as possible behavior that the firm regards as unethical and that employees are asked to avoid not only domestically but also around the world. These include using the company's telephone for personal use, taking office supplies home, lying about being sick for missing work, not reporting illegal behavior by other employees, giving or accepting gifts, and many others (see Box 1-4). Since it is practically impossible to list all types of hypothetical behavior that a company would regard as unethical and come up with a universally accepted code of conduct, after listing many such examples, some companies provide the broad guideline of "don't do it if it doesn't feel right or if you would be embarrassed reading about it in the local newspaper or hearing about it on the local evening news."

BOX 1-4**Business Ethics at Boeing**

For its program called “Questions of Integrity: The Boeing Ethics Challenge,” the large Chicago-based aerospace company compiled a large number of ethical situations that employees might face. Supervisors present each situation and then ask employees to choose among four possible responses, after which the correct response is discussed. Following is an example regarding the proper use of the company’s resources:

You are a manager, and one of your employees is selling Amway products to co-workers. The employee shows catalogs and takes orders during lunch. He also leaves an order form on a table in the break room and collects money and distributes products during lunch and after work. As the employee’s manager, should you say anything about this?

- A. No. Place your order.
- B. No. The employee appears not to be disrupting the workplace.
- C. Yes. Employees are not permitted to use company premises for outside business activities.
- D. Yes. You should tell your employee that he may only continue the business on the premises with your approval and discuss with him the way the business is being conducted at the workplace.

Preferred answer: C

Rationale

- A. As a manager, you should set a good example and stop this type of activity.
- B. It could be difficult to restrict this activity to break and lunch periods. There is a possibility that it will escalate and disrupt the workday.
- C. Sales for personal gain on company premises are strictly prohibited. The distributor is also taking advantage of a “captive audience.”
- D. Even a manager cannot authorize for-profit sales on company property. However, the manager can permit nonprofit activities, such as Girl Scout cookies or candies, as long as it doesn’t interfere with work.

Despite its ethics program, a Boeing manager misused Lockheed documents to win a government contract and was fired in 2003, and in 2005 Boeing’s chief executive, who had spearheaded the drive to restore the company’s reputation after a series of ethics scandals, was himself ousted for having an office affair.

Source: “Charting a Course for Ethical Profits,” *The New York Times* (February 8, 1998), sec. 3, p. 1; “The Ethics Policy: Mind Over Matter,” *The New York Times* (July 16, 2000), sec. 3, p. 4; “Boeing Probe Gets to Grips with Ethics,” *Financial Times* (August 25, 2003), p. 19; “Ethics: This Time Is Personal,” *Financial Times* (March 24, 2005), p. 7; “The New Ethics Enforces,” *Business Week* (February 13, 2006), pp. 76–77; “A Promise to Be Ethical in an Era of Temptation,” *The New York Times* (May 30, 2009), p. B1; “American Management Association,” *Business Ethics Today and Tomorrow: A Global Survey*, alfredchan@imperialconsulting.com; and “Does ‘A’ in Ethics Have Any Value?” *The Wall Street Journal*, (February 7, 2013), p. B4.

In response to the explosion of interest in ethical behavior in business during the past decade, business schools have responded with more courses and with the establishment of new centers specializing in business ethics. Nearly 20 percent of the 2009 graduating class of the Harvard Business School signed “The M.B.A. Oath” pledging to act responsibly and ethically and to serve “the greater good.” Since 2006, all students at the Columbia Business School must pledge to adhere to the principles of truth and integrity, and not to cheat, steal, or tolerate those in others. Indeed, there is a move to establish a formal professional code of business ethics, as it exists in medicine, law, and accounting. Despite this, a number of spectacular cases of unethical business behavior (profits at all costs) and fraud were exposed during the past decade, starting with the dotcom crisis and culminating with the most recent financial crisis (see Boxes 1-5 and 1-6).

BOX 1-5**The Enron India Crisis**

Enron, the Houston-based energy-trading company, was the seventh largest corporation in the United States with revenues of nearly \$140 billion. It was also the most admired of the online wonders at the height of the Internet euphoria. All this was before everything quickly unraveled and Enron became the largest bankruptcy (superseded by WorldCom's bankruptcy in July 2002) and one of the biggest business scandals in U.S. history.

In trying to live up to sky high and unrealistic expectations about its profitability, Enron started to falsify financial reports. It inflated earnings by using outside partnerships to monetize assets (and counting the proceeds as earnings) and to move its debt off its balance sheet. But deceit required growing falsification until it all became unsustainable. Enron was then forced to re-state its earnings sharply downward, and this caused its stock to collapse. By giving its auditor's stamp of approval, and then quickly shredding the evidence once Enron's troubles began, Andersen, the huge consulting firm with worldwide offices, also collapsed.

However, by the middle of the 1990s, and long before this disaster came to light, Enron had become a synonym for waste and abuse in India. Having decentralized government control over industrial licensing and opening the economy to foreign investment, India decided to invite foreign investors to develop its energy and power sector. In comes Enron, and a \$3 billion dollar deal is struck between the Maharashtra State government and Enron (with two other American companies, General Electric and Bechtel) giving birth to the Dabhol Power Company or the DPC. The deal was hailed by many as one made in heaven, promising India the ability to meet its growing energy needs and Enron grabbing the opportunity to enter the much sought-after Indian market. Amidst such optimism, there were a few voices that warned of the project not being economically viable. The World Bank, after identifying a list of problems that riddled the project, summarily refused to finance the project. It recounted

the project's lack of "overall economic justification" and termed the agreement "one-sided", in favour of Enron. However, despite growing concerns, the government of India overruled objections and gave state guarantees that the lenders could count as additional state debts.

Meanwhile, there were growing protests from the locals who were concerned with the impact that the project would have on the environment, their livelihood, and habitat. The construction of the project was said to impact over 90,000 villagers and Enron's own environmental impact report admitted that the plant construction would affect the entire population in some way. Consequently, there were widespread protests, all peaceful and non-violent but a couple, which were brutally thwarted.

Construction of the plant was set to begin by early 1994 when fresh objections pertaining to money re-emerged. "Price is becoming a sticky issue," the *Financial Times* reported. "Indian officials see the price as very high compared to domestic gas and imported and indigenous alternative fuels." [FT—International Gas Report, March 18, 1994] Protesters took to the street and government and Enron alike were blamed in what was seen as a large scale conspiracy. The deal was negotiated and re-negotiated but to no avail. After Enron filed for bankruptcy following its U.S. debacle in 2001, it also looked to sell off its stake in the DPC project. With no headway made in the project, uncertainty looms large.

The parallels that can be drawn between Enron's own downfall and the Dabhol disaster are not uncanny. A company that was adept at manipulating its own people at home could not have done any better overseas. Overcome with greed, it looked to accomplish too much, too quickly. It showed utter disregard for the needs of the common people and thought to bulldoze over all concerns and objections through its political backing. Eventually, Enron realized the hard way that even its enormous political clout could not quash the rules of economics and the resistance of the common people of India.

Source: "Lights Out: Enron's Failed Power Play," *Newsweek* (January 21, 2002), pp. 16–24; "The Biggest Casualty of Enron's Collapse: Confidence," *The New York Times* (February 10, 2002), sec. 4, p. 1; "Governance Bill Has Major Consequences for Many," *The Wall Street Journal* (July 2, 2002), p. A4; "Wall Street Banks to Pay \$1.4 Billion in Historic Deal on Analyst Abuses," *The Financial Times* (December 21, 2002), p. 1; "Crackdown Puts Corporations, Executives in New Legal Peril," *The Wall Street Journal* (June 20, 2005), p. A1; "Ebberts Is Sentenced to 25 Years for \$11 Billion WorldCom Fraud," *The Wall Street Journal* (July 14, 2005), p. A1; "Financial Chiefs Hit Out at Cost of Sarbox Compliance," *The Financial Times* (June 8, 2007), p. 20; "Goodbye to Reforms of 2002," *The New York Times* (November 6, 2009), p. A1; and "25 Biggest Scandals Ever," <http://list25.com/25-biggest-corporate-scandals-ever> (April 8, 2013); "Enron's India Disaster," *Consortium News* (December 30, 2001); "Enron does India" by Jack Rabbit, *DemocraticUnderground.com* (January 25, 2011).

BOX 1-6**The Global Financial Crisis**

The most recent financial crisis started in the U.S. subprime mortgage market and then spread to the entire financial and real sectors of the U.S. economy in 2008, and from there to the rest of the world. The event that triggered the economywide crisis was the failure of Lehman Brothers in September 2008. At the time of its failure, Lehman had sold nearly \$700 billion in bonds and derivatives, of which about \$160 billion was unsecured.

The initial underlying causes of the financial crisis are clear: huge and increasing amounts of home mortgages were given to individuals and families that clearly could not afford them. These mortgages were made at variable rates when rates were the lowest in 50 years. It was only to be expected that a rise in interest rates would cause many homeowners to be unable to make their mortgage payments and default. The crisis could only have been avoided if housing prices had continued to rise at the unrealistic high rates of 2000–2005.

These subprime home mortgages were then repackaged into mortgage-backed securities and sold to credit market investors. Rating agencies, such as Moody's and Standard & Poor, gave some of these financial instruments triple A ratings. Finally, the Securities and Exchange Commission (SEC), which was to regulate this market, was asleep at the wheel. We can thus say that the present financial crisis was caused by

deregulation or inadequate regulation of investment banking, by the inadequate application of regulations that were already on the books, by unfortunate economic policies (granting home mortgages to people who could not afford them), by economic greed (financial firms caught in a gigantic profit-seeking scheme with insufficient risk management—i.e., profit at all costs), and by outright fraud (such as the incredible \$65 billion Bernard Madoff Ponzi scheme).

There was then contagion, by which the crisis in the United States spread first to other advanced countries through the global financial system and finally to emerging markets when the former fell into recession and sharply reduced their imports from and capital investments in the latter.

The highly expansionary monetary policies and huge stimulus packages brought an end to the recession in the United States and most other advanced countries in the second half of 2009, but growth remained slow and unemployment remained very high. Plans have been drawn and some reforms of the national and international financial system have already been adopted to prevent future financial crises. But this is not sufficient. Indeed, according to the International Monetary Fund (IMF), a new global financial crisis seems to be looming. What is needed is more and better financial regulations, less fraud, and more business ethics.

Source: D. Salvatore, "The Financial Crisis: Causes, Effects, Reforms, and International Strategies," *GE Asset Management White Paper* (March 2009); D. Salvatore, "Assessing the Impact of Current Policies and Reforms on Economic Recovery," *GE Asset Management White Paper* (September 2009); "For Rebuilt Markets, a Test in 2010," *The Wall Street Journal* (January 5, 2010), p. R1; D. Salvatore, "The Causes and Effects of the Global Financial Crisis," *Journal of Politics and Society* (April 2010), pp. 7–16; and IMF, "Global Growth to Slow in 2013–4 as Financial Crisis Looms," <http://www.voxxi.com/imf-global-growth-slow-2013-crisis> (July 9, 2013).

Better would be to change the structure or architecture of the corporation so as to foster ethical behavior. This might include rewarding the company's CEO more with stock options that tie rewards to the company's *long-run* profitability than with salary ties to current profits; requiring founders of the company to retain a large position in the stock of the company to ensure that their interests are consistent with those of new investors; rewarding production workers for both quality and quantity and not just for quantity; providing bonuses for the sales force for having satisfied customers and not just for maximizing sales; and rewarding rather than punishing employees exposing illegal behavior at the firm. Many consumer groups would like corporations to go further and have a social conscience, using some of their resources

to redress social ills, for example, by aiding the poor, promoting education, funding crime-prevention programs, reducing general environmental pollution, financing public projects, and so on. Some of these actions can directly benefit the bottom line of the firm. By helping local colleges, for example, the firm gets better-trained workers than otherwise (thus saving on its training expenses), or it can benefit the firm indirectly by establishing a reputation for the firm as a “good citizen” (thus attracting more customers and leading to more sales). Going beyond that, however, would impose an economic burden on the firm and represent, in a way, double taxation for the firm and its investors, and it would only reduce the value of the firm.¹³

1-8 THE INTERNATIONAL FRAMEWORK OF MANAGERIAL ECONOMICS

Many of the commodities we consume today are imported, and Indian firms purchase many inputs abroad and sell an increasing share of their products overseas. Even more important, domestic firms face increasing competition from foreign firms in the local market and around the world. The international flow of capital, technology, and skilled labor has also reached unprecedented dimensions. In short, there is a rapid movement toward the globalization of production, consumption, and competition. Thus, it is essential to introduce a global dimension in the study of managerial economics to reflect these realities.

Specifically, as consumers, we purchase Japanese Toyotas and German Mercedes, Italian handbags and French perfumes, Hong Kong clothes and Taiwanese hand calculators, British scotch and Swiss chocolates and Brazilian coffee. Often, consumers are not even aware that the products, or parts of them, are made abroad. For example, imported cloth is used in American-made suits and many American brand-name shoes are entirely manufactured abroad. Indian multinational corporations produce and import many parts and components from abroad and export an increasing share of their output.

For example, Ranbaxy Laboratories Limited, an Indian pharmaceutical conglomerate, exports its products to over a 100 countries, has its manufacturing facilities in many countries, and generates a bulk of its revenues from sales abroad. The competition faced by U.S.-based aerospace company Boeing in commercial aircraft production is almost entirely from European Airbus Industrie. In India, Maruti competes with Hyundai, Honda, Ford, Toyota, etc. U.S. steel companies almost collapsed during the 1980s as a result of increasing foreign competition and rising steel imports, and survived only after merging with foreign steel producers, mostly Japanese and French. Box 1-7 gives a sample of global corporations and the proportion of their sales outside the home country, as well as an overall index of their “transnationality.”

In view of such a **globalization of economic activity**, it would be unrealistic to study managerial economics in an international vacuum, as if Indian firms did not face serious and increasing competition from foreign firms and as if foreign firms did not face competition from Indian firms. This requires the training of a new type of global executive, who requires many new skills that are not easy to acquire (see Box 1-8).

¹³ See “Curse of the Ethical Executive,” *The Economist* (November 17, 2001), p. 70; “Make Your Value Mean Something,” *Harvard Business Review* (July 2002), pp. 113–117; “The Good Company,” *The Economist* (January 22, 2005), p. 11; “Defining the Value of Doing Good Business,” *Financial Times* (June 3, 2005), pp. 2–3; “Just Good Business,” *The Economist* (Special Report, January 18, 2008), pp. 1–24; and “A Promise to Be Ethical in an Era of Temptation,” *The New York Times* (May 30, 2009), p. B1.

BOX 1-7**The Rise of the Global Corporation**

One of the most significant business and economic trends of the late twentieth century was the rise of global or *stateless* corporations. These are companies that have research and production facilities in many countries, are run by an international team of managers, and sell their products, finance their operation, and employ workers in many parts of the world. The trend toward global corporations is unmistakable and is accelerating. Going global has become an essential competitive strategy. Global corporations maintain a balance between functioning as a global organism and customizing products to local tastes. Both geographic and product managers report to top managers at the companies' headquarters, who reconcile differences. Companies that were entirely domestic and merely

exported some of their output as late as a decade ago are now finding that in order to remain competitive, they have to become global players. They need to be insiders in most major world markets rather than mere exporters. Even smaller companies are often finding it necessary to form joint ventures with foreign companies in order to expand abroad and remain competitive at home. Today a large number of corporations with headquarters in the United States, Europe, Japan, and China sell more of their products and earn more profits abroad than in the country where the corporations' headquarters are located.

Table 1-1 shows a sample of such corporations with yearly sales in excess of \$100 billion.

TABLE 1-1 Global Corporations in 2012

Company	Country	Total Sales (billions of dollars)	Foreign Sales (%)	Foreign Assets (%)	Foreign Employment (%)	Transnation- ality Index*
British Petroleum	United Kingdom	375.6	79.9	90.0	81.5	83.8
Total	France	234.3	77.0	94.5	64.0	78.5
Siemens AG	Germany	101.6	85.9	80.1	67.8	77.9
Royal Dutch/Shell	UK/Netherlands	467.2	60.6	85.5	83.9	76.7
Exxon Mobil	United States	420.7	71.7	64.2	60.3	65.4
Hewlett-Packard	United States	120.4	65.0	50.7	65.3	60.3
Chevron	United States	233.0	59.6	68.2	50.8	59.5
BASF	Germany	101.2	58.4	64.0	53.3	58.6
Volkswagen	Germany	247.6	80.4	38.6	55.5	58.2
Daimler AG	Germany	146.9	82.7	46.2	39.5	56.1
Toyota	Japan	265.8	64.1	61.9	37.9	54.6
General Electric	United States	144.8	52.2	49.3	56.1	52.5
General Motors	United States	152.3	42.9	50.6	50.7	48.1
Ford Motor	United States	134.3	43.1	40.0	52.0	45.0
Mitsubishi	Japan	243.4	20.2	71.7	30.0	40.6
Wal-Mart	United States	447.0	28.4	43.5	36.4	36.1

**Transnationality Index* is calculated as the average of the three ratios: foreign sales to total sales, foreign assets to total assets, and foreign employment to total employment.

Source: United Nations, *World Investment Report 2013* (New York: United Nations, 2013).

BOX 1-8**The Indian Global Business Leader**

PepsiCo, Deutsche Bank, Microsoft, Adobe, Diageo—what do all of them have in common?

Yes, they are all multinational companies with a strong presence around the globe. But more importantly, they all have an Indian manager calling the shots.

The rise of the Indian CEO is both a matter of pride and learning. In a study by S&P 500, Egon Zehnder found that India is only second to America when it comes to the most number of CEOs from a particular nationality. In August 2011, *Time* magazine ran a cover story titled “India’s leading export: CEOs” aptly capturing the growing fascination of the world with Indian business leaders.

Why is the world besotted with Indian managers? The answer lies in the unique challenges that these managers learn to face while honing their skills in the country. It was the native disadvantages—red tape, bureaucracy, faulty infrastructure—which turned out to be their biggest advantages. This, coupled with a terrific

exposure to multiculturalism and a bootstrapped developing economy, provided them with the edge to get things done in unfavorable conditions.

Having grown up in a transitioning economy which was learning to embrace liberalization and opening itself up to the world, this crop of managers experienced an astonishing level of competition from all corners.

“We had to learn to compete with international players but also with very good, extremely fast local ones,” says Vindi Banga, a partner at Clayton Dubilier & Rice. He further adds, “Liberalization unleashed a level of competition that makes you stand on your toes.” He recalls how during his tenure as the CEO of Hindustan Unilever, the company’s leading detergent *Surf* faced off with *Nirma*, a locally produced brand. “It didn’t cost 5% less, or 10% less,” says Vindi. “It cost a third of our product. We had to make a product that was better, for the same price.” Within a year, they did.

Source: “India’s Leading Export: CEOs,” *Time* (August 1, 2011).

1-9 MANAGERIAL ECONOMICS IN A MORE RISKY, CRISIS-PRONE, AND SLUGGISH GLOBAL ECONOMY

Firms operate in a world that not only has become more globalized but also more risky, crisis-prone, and sluggish (slower-growing) than in the past, and this poses additional special challenges to successful firm management. In such a new world, managers require more special managerial skills to deal with these new and serious challenges.

Since September 11, 2001, the world has faced a much greater risk of terrorism, which has imposed additional costs on firms to protect themselves against this danger. Another serious risk is cyber attacks to steal intellectual property, which has been estimated to cost many big companies hundreds of billions of dollars per year. Industrial espionage has always occurred, but with the advent of the Internet it has become much more pervasive, dangerous, and costly for a firm to protect itself against this threat. The business leader must learn to evaluate and protect the business from terroristic and cyber attacks that may be very detrimental to the firm’s bottom line and may even lead to its failure.

The world seems also to have become more prone to financial and economic crises than in the past. Again, crises have always occurred as economies went through recurring

cycles of growth and recessions, but these events have become more frequent and often also more serious and longer lasting than in past decades. We had a world stock market crash in advanced countries in 1987 and a currency crisis in Britain and Italy in 1992–1993; there was a financial crisis in Mexico in 1994–1995, South-East Asia in 1997–1999, Russia in 1998, Brazil in 1999, and Turkey and Argentina in 2001–2002; there was the dotcom crisis in the United States and other advanced countries in 2001, and in 2008–2009 the world faced the deepest global financial and economic crisis since the 1929 Great Depression (see Box 1-6). Although a crisis may start in a specific country or area, it often spreads to other countries and areas in today's globalized and highly interdependent world.

The world economy also seems to have become more sluggish or growing more slowly than before the recent crisis. For example, although the last (2008–2009) global financial and economic crisis was technically over by 2010, many large countries such as Italy, Spain, and France were again in recession in 2013 and others, such as Germany, Japan, and even the United States, were growing much more slowly than in the past.¹⁴ Many of the largest emerging market economies, such as China, India, Brazil, and Russia are also growing more slowly than before. What is even more serious is that the growth of the world economy is expected to be slow in the rest of this decade and the next. In other words, the world seems to have settled to a “new normal” sluggish growth path.¹⁵

In such a more dangerous and risky, crisis-prone, and sluggish global economy, the management of firms has become much more demanding and challenging than in the past. Not only must a manager be able to better understand and deal with the risks and uncertainty arising from terrorism, cyber attacks, and more frequent crises, but he/she must also deal with a world economy growing more slowly than in the past (see Box 1-9). Slower overall growth of the world economy requires that the manager look for markets where demand grows or is expected to grow faster than in other markets and adjust the firm's product or service line more toward necessities than luxuries in markets that grow more slowly than others. Also, because of the fragmentation of production (in today's globalized economy most products have parts and components made in many different nations) the company's success may very well depend on becoming an integral part of the global supply chain in its product or service.

All the topics examined in traditional managerial economics are covered, but the focus in this text is broadened to reflect the globalization of most economic activities and the new business reality in which firms operate today. That is, the text explicitly introduces and integrates the essential global dimension into the traditional study of the managerial decision-making process and will examine the new skills required of the business leader to successfully operate and conduct business in our new more risky, crisis-prone, and sluggish global economy.

¹⁴ The average rate of growth of real GDP of about 2 percent per year from 2010 to 2013 (as compared with more than 3 percent in the previous decade) left the United States with 2.4 million fewer jobs in 2013 than before the crisis started in 2008. The new Japanese prime minister has vowed to introduce a more powerful expansionary policy to lift the country from its two decades of stagnation, but we do not know how effective it would be to stimulate growth.

¹⁵ International Monetary Fund (IMF): *World Economic Outlook* (Washington, D.C.: May 2013); and L. Klein and D. Salvatore, “The Shift in the World Economic Center of Gravity from G7 to G20,” *Journal of Policy Modeling* (May/June 2013), pp. 416–424.

BOX 1-9**Terrorism, Cyber Espionage, Financial Crises, and Globalization**

India, like a lot of other countries in the world, faces a major threat of terrorism and cyber espionage. Rated number 6 on the Global Terrorism Index (GTI), India has seen some of the worst terror attacks in the last couple of decades. Needless to say, such activities adversely affect the economic environment of the nation.

The terrorist attack of 26/11 in Mumbai came at a time when the Indian economy was already plagued by the global recession of 2008. Mumbai, the financial capital of India, felt the impact of the attacks, much as New York City felt during 9/11.

Terrorism and the fear of terrorism have not reversed the trend toward globalization of the world economy, however. It only slowed it down by making all sorts of transactions more costly and time consuming in order to pay for the added security and the skyrocketing insurance costs. Despite all this, globalization is simply here to stay. Economic efficiency requires it and technological advances make it inevitable. There is simply no alternative model.

Today's firms also face unprecedented risks in the form of cyber attacks that expose the company to huge material and intangible losses that could even lead to its failure. Cyber security to protect its computers, data, networks, and programs is a growing concern and imposes increasing costs on the firm. Business leaders and managers need to properly evaluate the risk that their firm faces from cyber espionage and learn how

to implement cybersecurity measures. But these inevitably also lead to some restrictions on legitimate open business access and globalization.

Similarly, the world financial crisis and deepest recession of the post-World War II era have led to some restrictions on the international flow of trade, capital, and people as nations seek to protect domestic jobs from international competition. But, again, this only slows down temporarily the globalization process. Of course, globalization does have its costs or negative effects. For example, it can lead to contagion, whereby a financial and economic crisis in one nation or region of the world can spread and cause havoc in other nations and regions, which until a decade ago were to a large extent shielded by their geographical distance.

Globalization did not increase international inequalities as many anti-global demonstrators assert.

The World Bank has presented clear and undeniable evidence showing that the number of poor people in the world (those who live on less than \$1.25 or \$2.00 per day) has been greatly reduced by globalization. Globalization did not create poverty; without globalization, world poverty would be greater. No one forced Communist China to open to the world, but without such an opening China would not have obtained all the capital, technology, and markets that allowed it to grow so spectacularly during the past three decades.

Source: "Global Companies Face Up to a New Risk from Terrorism," *Global Finance* (May 2002), p. 8; "New Study Puts Sept. 11 Payout at \$38 Billion," *The New York Times* (September 11, 2004), p. 1; "Airline Passenger Traffic in 2005 Likely to Hit Pre-September 11 Level," *The Wall Street Journal* (March 8, 2005), p. A2; "What Matters: Will Globalization Be Derailed by the World Financial Crisis?" McKinsey & Company (March 26, 2009); D. Salvatore and F. Campano, "Globalization, Growth and Poverty," *Global Economic Journal* (December 2012), pp. 1–13; "Secrecy Hampers Battle for WEB," *Financial Times, Special Report* (April 24, 2013), p. 1; "Euro Zone Braces for Stagnation," *The Wall Street Journal* (June 21, 2013), p. A9; "China Slump Ripples Globally," *The Wall Street Journal* (July 15/2013), p. A1; and "Staying on the Attack," *Global Finance* (September 2013), pp. 23–24; "Global Terrorism Index," Visionofhumanity.org.

1-10 MANAGERIAL ECONOMICS AND THE INTERNET

The **Internet**, or simply the *Net*, is a collection of nearly 1 billion computers throughout the world linked together in a service called the World Wide Web (WWW). India stands at number 3 with regard to the total number of Internet users in the world while it tops the world with the highest yearly growth rate. It is amply clear that more and more Indians are now connected

to the world through increasing penetration of Internet across the nation.¹⁶ This means that individuals, researchers, firms, and consumers can hook up with libraries, databases, and marketing information and have at their fingertips a vast amount of information as never before. Information technology is being applied to fields as diverse as science, manufacturing, finance, and marketing, and it is revolutionizing the way business is conducted. An individual can use the Internet to send electronic mail (e-mail) and examine thousands of multimedia documents from anywhere in the world, browse through a firm's catalog, and be able (in an increasing number of cases) to click on a "buy" button and fill in an electronic order form, including shipping and credit-card information. (Electronic commerce, or e-commerce, will be examined in detail in Section 3-6 and Box 3-9.) The Internet has been around since the 1960s, but only during the past decade has its use been greatly simplified, leading to massive growth.

The Internet is a good place to start the search for information on managerial economics. For example, you can find information on macroeconomic trends in inflation, growth, and unemployment, as well as microeconomic information in specific sectors, industries, and companies. A number of comprehensive as well as specific directories or indices of economic information are available on the Internet. Each of these will have a particular Internet address classification, known as the "top-level domain name," which appears as the last item in an address. These classifications are ".com" for commercial, ".edu" for educational, ".gov" for government, ".net" for Internet service provider, and ".org" for nonprofit organization.

SUMMARY

1. *Managerial economics* refers to the application of economic theory (microeconomics and macroeconomics) and the tools of analysis of decision science (mathematical economics and econometrics) to examine how an organization can achieve its aims or objectives most efficiently. The functional areas of business administration studies (accounting, finance, marketing, human resources, and production) provide the environmental background for managerial decision making.
2. The five steps in the *decision-making process* are (a) define the problem, (b) determine the objective, (c) identify possible solutions, (d) select the best possible solution, and (e) implement the decision.
3. Firms exist because the economies that they generate in production and distribution confer great benefits to entrepreneurs, workers, and other resource owners. The *theory of the firm* postulates that the primary goal or objective of the firm is to maximize wealth or the value of the firm. This is given by the present value of the expected future profits of the firm. Since the firm usually faces many resource, legal, and other constraints, we speak of *constrained optimization*. Alternative theories of the firm postulate other objectives for the firm, but profit or value maximization predicts the behavior of the firm more accurately than do any of its alternatives.
4. *Business profit* refers to the revenue of the firm minus its explicit costs. The latter are the actual out-of-pocket expenditures of the firm. Economic profit equals the revenue of the firm minus its explicit and implicit costs. The latter refer to the value of the inputs owned and used by the firm in its own production processes. Economic profit can result from one or a combination of the following: risk bearing, frictional disturbances, monopoly power, the introduction of innovations, or managerial efficiency. Profits provide the signal for the efficient allocation of society's resources.
5. *Business ethics* seeks to proscribe behavior that businesses, firm managers, and workers should not engage in. Business and management ethics goes beyond the law to provide guidelines as to what is acceptable behavior in business transactions. Being based on values, however, it is often not clear what ethical behavior is and is not, since different people may have different values. Most large corporations and professional associations have ethics codes and ethics officers.

¹⁶ "Internet Users by Country," Internetlivestats.com.

6. Many of the commodities we consume are imported, and American firms purchase many inputs abroad, sell an increasing share of their output to other nations, and face increasing competition from foreign firms operating in the United States. Furthermore, the international flow of capital, technology, and skilled labor has reached unprecedented dimensions. In view of such a globalization of economic activity, it is essential to introduce a global dimension into the study of managerial economics.
7. Business leaders and managers must also be prepared to operate—and compete—within a global economy that has grown more risky, crisis-prone, and sluggish than in the past. This requires business leaders and managers to have additional special skills to succeed in this new world.
8. A good place to start the search for information on any topic, including managerial economics, is the Internet. This is a collection of more than 100,000 computers to which more than 3 billion people scattered throughout the world are connected in a sort of information superhighway. There you can find information on macroeconomic trends in inflation, growth, unemployment, and many other topics, as well as microeconomic information on specific sectors, industries, and companies.

DISCUSSION QUESTIONS

1. What is the origin of economic science? How has it evolved over time?
2. Why is The Classical School the oldest school of economic thought? What was the economic philosophy prevailing before that?
3. What is the relationship between the fields of managerial economics and (a) Microeconomics and macroeconomics? (b) Mathematical economics and econometrics? (c) Accounting, finance, marketing, personnel, and production?
4. Managerial economics is often said to help the business student integrate the knowledge gained in other courses. How is this integration accomplished?
5. What is the methodology of science in general and of managerial economics in particular?
6. What might be the objective of a museum? Of a firm? What are the basic steps in all types of decision-making processes?
7. Why do firms exist? Who benefits from their existence?
8. How does the theory of the firm differ from short-term profit maximization? Why is the former superior to the latter?
9. How does the theory of the firm provide an integrated framework for the analysis of managerial decision making across the functional areas of business?
10. What effect would each of the following have on the value of the firm? (a) A new advertising campaign increases the sales of the firm substantially. (b) A new competitor enters the market. (c) The production department achieves a technological breakthrough that reduces production costs. (d) The firm is required to install pollution-control equipment. (e) The workforce votes to unionize. (f) The rate of interest rises. (g) The rate of inflation changes.
11. How is the concept of a normal return on investment related to the distinction between business and economic profit?
12. What factors should be considered in determining whether profit levels are excessive in a particular industry?
13. What is the difference between unethical and unlawful behavior? What does an ethics officer do?
14. Why does the government regulate telephone and electric power companies if the profit motive serves such an important function in the operation of a free-enterprise system?
15. Why is it crucial to introduce an international dimension into managerial economics?
16. How does terrorism and the world financial crisis affect managerial decisions?
17. What is the use of the Internet in managerial economics?

PROBLEMS

1. Find the present value of ₹10,000 due in one year if the discount rate is 5 percent, 8 percent, 10 percent, 15 percent, 20 percent, and 25 percent.
2. Find the present value of ₹10,000 due in two years if the discount rate is 5 percent, 8 percent, 10 percent, 15 percent, 20 percent, and 25 percent.

- *3. The owner of a firm expects to make a profit of ₹10,000 for each of the next two years and to be able to sell the firm at the end of the second year for ₹80,000. The owner of the firm believes that the appropriate discount rate for the firm is 15 percent. Calculate the value of the firm.
4. A firm is contemplating an advertising campaign that promises to yield ₹12,000 one year from now for ₹10,000 spent now. Explain why the firm should or should not undertake the advertising campaign.
- *5. Determine which of two investment projects a manager should choose if the discount rate of the firm is 10 percent. The first project promises a profit of ₹100,000 in each of the next four years, while the second project promises a profit of ₹75,000 in each of the next six years.
6. Determine which of the two investment projects of Problem 5 the manager should choose if the discount rate of the firm is 20 percent.
7. Explain the effect that the timing in the receipt of the profits from Project 1 and Project 2 in Problems 5 and 6 has on the present value of the two investment projects.
- *8. The cost of attending a private college in the U.S. for one year is \$6,000 for tuition, \$2,000 for the room, \$1,500 for meals, and \$500 for books and supplies. The student could also have earned \$15,000 by getting a job instead of going to college and 10 percent interest on expenses he or she incurs at the beginning of the year. Calculate the explicit, implicit, and total economic costs of attending college.
9. A woman managing a photocopying establishment in the U.S. for \$25,000 per year decides to open her own duplicating place. Her revenue during the first year of operation is \$120,000, and her expenses are as follows:
- | | |
|------------------------|----------|
| Salaries to hired help | \$45,000 |
| Supplies | 15,000 |
| Rent | 10,000 |
| Utilities | 1,000 |
| Interest on bank loan | 10,000 |
- Calculate (a) the explicit costs, (b) the implicit costs, (c) the business profit, (d) the economic profit, and (e) the normal return on investment in this business.
10. According to Milton Friedman, “Business has only one social responsibility—to make profits (as long as it stays within the legal and moral rules of the game established by society). Few trends could so thoroughly undermine the very foundations of our society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible.” Explain why you agree or disagree with such a statement.
11. Apply the decision-making model developed in this chapter to your decision to attend college.
12. Explain why computer companies remain in the industry even though profits in the industry have been declining over the years.
13. Using the Internet site address: <http://www.fortune.com/best-companies>, find the global 50 most admired companies for 2014 and 2015. How many of the companies are Indian? How many are American?
14. From the *Financial Times* newspaper website, identify the world’s 50 best M.B.A. programs. How many schools are Indian? How many are American?
15. Samantha Roberts of California has a job as a pharmacist earning \$30,000 per year, and she is deciding whether to take another job as the manager of another pharmacy for \$40,000 per year or to purchase a pharmacy that generates a revenue of \$200,000 per year. To purchase the pharmacy, Samantha would have to use her \$20,000 savings and borrow another \$80,000 at an interest rate of 10 percent per year. The pharmacy that Samantha is contemplating purchasing has additional expenses of \$80,000 for supplies, \$40,000 for hired help, \$10,000 for rent, and \$5,000 for utilities. Assume that income and business taxes are zero and that the repayment of the principal of the loan does not start before three years. (a) What would be the business and economic profit if Samantha purchased the pharmacy? Should Samantha purchase the pharmacy? (b) Suppose that Samantha expects that another pharmacy will open nearby at the end of three years and that this will drive the economic profit of the pharmacy to zero. What would the revenue of the pharmacy be in three years? (c) What theory of profit would account for profits being earned by the pharmacy during the first three years of operation? (d) Suppose that Samantha expects to sell the pharmacy at the end of three years for \$50,000 more than the price she paid for it and that she requires a 15 percent return on her investment. Should she still purchase the pharmacy?

APPENDIX TO CHAPTER 1

SOLVING MANAGERIAL DECISION PROBLEMS USING SPREADSHEETS

One way to solve managerial decision problems is by using spreadsheets. There are numerous spreadsheet programs, including Excel, Access, Calc, Google Docs, and Lotus 123, and all work very much the same way. In this appendix, we present an overview of the most used spreadsheet package, Microsoft Excel, which we will use in subsequent chapters to solve managerial decision problems. Our aim is to give a general understanding of the programming language of Excel, as well as of the procedures to carry out calculations. We will cover the most-used Excel functions. Other functions can be found by searching within Excel Help.

MICROSOFT EXCEL

Excel is a spreadsheet package that includes functions for the most common statistical calculations. Excel uses a graphical interface, which means that the user enters data and functions in certain locations on the spreadsheet (called cells). The row number and column letter of each cell define the cell's location in Excel. Data may be imported from external files or typed directly into the cells by clicking on the cell and typing the text or number desired. Functions are designated by typing an equals sign (=) before the function and perform many statistical calculations. To identify the values for the calculation, enter each cell either individually (A1, A2) or use a colon to indicate a range of cells (A1:A10, all cells from A1 to A10). Below are some commonly used Excel functions.

Description	Excel function
Add, subtract, multiply, divide, exponent	+, -, *, /, ^
Square root	= sqrt(A1)
Summation	= sum(A1:A10)
Mean	= average(A1:A10)
Median	= median(A1:A10)
Mode	= mode(A1:A10)
Population variance	= varp(A1:A10)
Sample variance	= var(A1:A10)
Population standard deviation	= stdevp(A1:A10)
Sample standard deviation	= stdev(A1:A10)
Covariance	= covar(A1:A10,B1:B10)
Random number between 0 and 1	= rand()
Prob < A1 under standard normal distribution	= normsdist(A1)
Prob < -A1 and > A1 under t distribution (20 df, 2-tail test)	= tdist(A1,20,2)

All functions may be accessed through the toolbar Insert-Function, which includes descriptions of the function. Graphing is done through the toolbar Insert-Chart. More advanced calculations (histogram, t test, ANOVA, regression) are found in the toolbar Tools-Data Analysis. If the Data Analysis option is not present under tools, then the Analysis Tool Pack has not been installed. To add the option either go to Microsoft Office Setup or Tools-Add-Ins and install the Analysis Tool Pack.

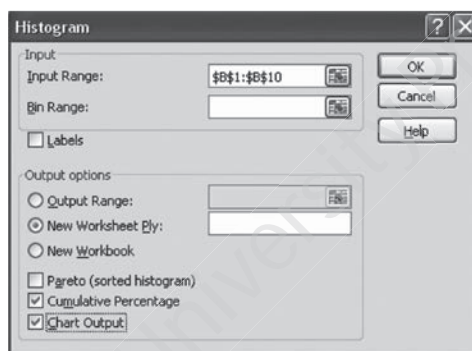
Example

Using the data below, where column A represents test numbers and column B test scores, (a) Use the data analysis tools to graph the histogram of the test scores. (b) Calculate a mean, median, mode, sample variance, sample standard deviation, and coefficient of variation to statistically describe the data. (c) Use Excel functions to standardize each test score by subtracting the mean and dividing by the standard deviation for each score.

	A	B	C
1	1	6	
2	2	7	
3	3	6	
4	4	8	
5	5	5	
6	6	7	
7	7	6	
8	8	9	
9	9	10	
10	10	6	
11			

Solution

For a histogram in Excel, choose Tools-Data Analysis. In the resulting dialog box, select “Histogram” and click “OK.” We then choose the options we want for our histogram in the following box:

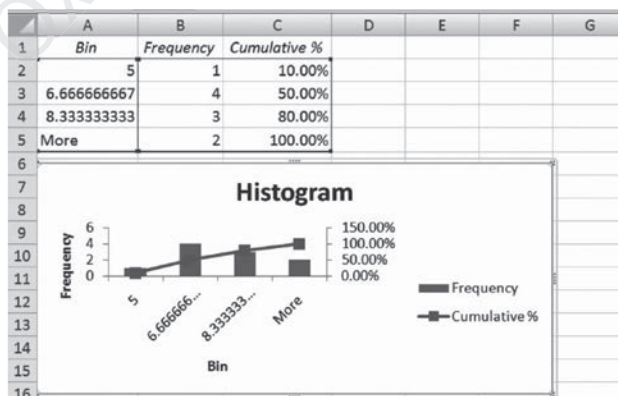


The dialog box shows the following settings:

- Input:**
 - Input Range:
 - Bin Range:
 - ☐ Labels
- Output options:**
 - ☐ Output Range:
 - ☒ New Worksheet Ply:
 - ☐ New Workbook
 - ☐ Pareto (sorted histogram)
 - ☒ Cumulative Percentage
 - ☒ Chart Output

Our data are in column B, from row 1 to row 10. The default is a frequency distribution, checking “Chart Output” draws the histogram, and checking “Cumulative Percentage” plots the results.

Custom class intervals may be typed into Excel and indicated as the “Bin Range.” The results are as follows:



Parts (b) and (c) are reported in the image below as both numerical results and Excel formulas. For (b), the descriptive statistics can all be performed through functions. The coefficient of variation is simply the standard deviation divided by its mean (dividing by the mean gives a relative measure of variation without units). For part (c), note that when formulas

are copied and pasted, the cell references adjust to the new location. In standardizing, we want to subtract the same mean and divide by the same standard deviation for all calculations. Including a dollar sign (\$) before the column and row reference keeps it from changing when pasted to a new location.

	A	B	C	D
1	1	6	c.)	= (B1-\$B\$13)/\$B\$17
2	2	7		= (B2-\$B\$13)/\$B\$17
3	3	6		= (B3-\$B\$13)/\$B\$17
4	4	8		= (B4-\$B\$13)/\$B\$17
5	5	5		= (B5-\$B\$13)/\$B\$17
6	6	7		= (B6-\$B\$13)/\$B\$17
7	7	6		= (B7-\$B\$13)/\$B\$17
8	8	9		= (B8-\$B\$13)/\$B\$17
9	9	10		= (B9-\$B\$13)/\$B\$17
10	10	6		= (B10-\$B\$13)/\$B\$17
11				
12	b.)			
13	mean	=AVERAGE(B1:B10)		
14	median	=MEDIAN(B1:B10)		
15	mode	=MODE(B1:B10)		
16	sample var	=VAR(B1:B10)		
17	sample std. dev.	=STDEV(B1:B10)		
18	coefficient of var.	=B17/B13		
19				

	A	B	C	D
1	1	6	c.)	-0.6396
2	2	7		0
3	3	6		-0.6396
4	4	8		0.639602
5	5	5		-1.2792
6	6	7		0
7	7	6		-0.6396
8	8	9		1.279204
9	9	10		1.918806
10	10	6		-0.6396
11				
12	b.)			
13	mean	7		
14	median	6.5		
15	mode	6		
16	sample var	2.4444444		
17	sample std. dev.	1.5634719		
18	coefficient of var.	0.2233531		
19				

SPREADSHEET PROBLEM

Using the data below, where column A represents student numbers, column B the finishing time for a 1 mile race for 10 students, and column C the age of the students, (a) Use the data analysis tools to plot a line graph of all the finishing times. (b) Calculate a mean, median, mode, sample

variance, sample standard deviation, and coefficient of variation to statistically describe the data. (c) Use Excel to find the covariance between the two variables. What does the covariance indicate about the relationship between finishing time and age?

	A	B	C	D
1	Number	Time	Age	
2	1	8.2	14	
3	2	7.5	16	
4	3	9.6	12	
5	4	12.1	12	
6	5	10.2	13	
7	6	8.3	14	
8	7	7.4	18	
9	8	8.1	17	
10	9	9.6	14	
11	10	11.2	13	
12				

SUPPLEMENTARY READINGS

For a general description of the scope of managerial economics and its relationship to other fields of study, see:

Bazerman, M., *Judgment in Managerial Decision Making* (New York: Wiley, 1997), chaps. 1 and 9.

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