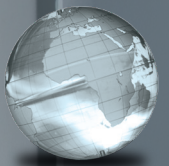


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# Economics for Managers

THIRD EDITION

Paul G. Farnham

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Third  
Edition

# Economics for Managers

Global Edition

**Paul G. Farnham**

**Georgia State University**

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## Dedication

*To my friend and colleague, Dr. Jon Mansfield, who continues to excel at teaching economics for managers.*



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# Preface

The third edition of *Economics for Managers* builds on the strengths of the first two editions, while updating the case studies and examples, the data, and the references supporting the discussion. *Economics for Managers*, Third Edition, does not attempt to cover all the topics in traditional principles of economics texts or in intermediate microeconomic and macroeconomic theory texts. As in the previous editions, the goal of this text is to present the fundamental ideas of microeconomics and macroeconomics and then integrate them from a managerial decision-making perspective into a framework that can be used in a single-semester course for Master of Business Administration (MBA), Executive MBA (EMBA), and other business students.

## What's New in This Edition?

---

This edition has been completely revised to update the industry cases and examples in the microeconomics section and the data and analysis in the macroeconomics section.

- Twelve of the sixteen chapters have entirely new cases, while the cases in the remaining four chapters have been updated extensively.
- New cases include: Micro- and Macroeconomic Influences on the Global Automobile Industry; Demand Elasticity and Procter & Gamble's Pricing Strategies; The iPhone in China; Changing Market Power for Eastman Kodak Co.; Airline Pricing Strategies: Will They Start Charging for the Use of the Lavatories?; Mixed Signals on the U.S. Economy in Summer 2012; The Chairman's Quandary; and Strong Headwinds for McDonald's.
- Linkage to the marketing literature, particularly in Chapter 4, Techniques for Understanding Consumer Demand and Behavior, and in Chapter 10, Pricing Strategies for the Firm, has been increased.
- The macroeconomics section of the text has been completely rewritten, given the changes in the macroeconomy since 2008, when the second edition was drafted.
- The macroeconomic data in the tables have been updated to 2011, and the data in the figures show trends from 2000 to first quarter 2012.
- The macroeconomics discussion, which makes extensive use of Federal Reserve Monetary Policy Reports to Congress and reports and analyses by the Congressional Budget Office, includes recent policy issues such as the impact of the American Recovery and Reinvestment Act of 2009, the fiscal cliff debates in 2012, and the Federal Reserve's use of nontraditional policy tools to stimulate the economy.
- An extensive discussion of the situation in the European Union from 2010 to 2012, which includes the banking, sovereign debt, and growth crises and the impact of these events on managerial decision making, is presented.

## Motivation for the Text

---

Most micro/managerial economics and intermediate macroeconomics texts are written for economics students who will spend an entire semester using each text. The level of detail and style of writing in these texts are not appropriate for business students or for the time frame of a single-semester course. However, business students need more than a principles of economics treatment of these topics because they have often been exposed to that level of material already. The third edition of *Economics for Managers* will continue to present economic theory that goes beyond principles of economics, but the text is not as detailed or theoretical as a standard intermediate economics text given the coverage of both micro- and macroeconomics and the additional applications and examples included in this text. The compactness of the text and the style of writing are more appropriate for MBA students than what is typically found in large, comprehensive principles texts.

As in the previous editions, each chapter of *Economics for Managers*, Third Edition, begins with a “Case for Analysis” section, which examines events drawn from the current news media that illustrate the issues in the chapter. Thus, students begin the study of each chapter with a concrete, real-world example that highlights relevant economic concepts, which are then explained with the appropriate economic theory. Numerous real-world examples are used to illustrate the theoretical discussion. This approach appeals to MBA students who typically want to know the relevance and applicability of basic economic concepts and how these concepts can be used to analyze and explain events in the business environment.

## Intended Audience

---

This text is designed to teach economics for business decision making to students in MBA and EMBA programs. It includes fundamental microeconomic and macroeconomic topics that can be covered in a single quarter or semester or that can be combined with other readers and case studies for an academic year course. The book is purposely titled *Economics for Managers* and not *Managerial Economics* to emphasize that this is *not* another applied microeconomics text with heavy emphasis on linear programming, multiple regression analysis, and other quantitative tools. This text is written for business students, most of whom will not take another course in economics, but who will work in firms and industries that are influenced by the economic forces discussed in the text.

A course using this text would ideally require principles of microeconomics and macroeconomics as prerequisites. However, the text is structured so that it can be used without these prerequisites. Coverage of the material in this text in one semester does require a substantial degree of motivation and maturity on the part of the students. However, the style of writing and coverage of topics in *Economics for Managers* will facilitate this process and are intended to generate student interest in these issues that lasts well beyond the end of the course.

*Economics for Managers* can be used with other industry case study books, such as *The Structure of American Industry* by James Brock. These books present extensive discussions of industry details from an economic perspective. Although they focus primarily on microeconomic and managerial topics, these texts can be used with *Economics for Managers* to integrate influences from the larger macroeconomic environment with the microeconomic analysis of different firms and industries.

## Organization of the Text

---

The text is divided into three parts. Part 1, Microeconomic Analysis, focuses on how individual consumers and businesses interact with each other in a market economy. Part 2, Macroeconomic Analysis, looks at the aggregate behavior of different sectors of the economy to determine how changes in behavior in each of these sectors influence the overall level of economic activity. And finally, Part 3, Integration of the Frameworks, draws linkages between Parts 1 and 2.

Although many of the micro- and macroeconomic topics are treated similarly in other textbooks, this text emphasizes the connections between the frameworks, particularly in the first and last chapters. Changes in macroeconomic variables, such as interest rates, exchange rates, and the overall level of income, usually affect a firm through microeconomic variables such as consumer income, the price of the inputs of production, and the sales revenue the firm receives. Managers must be able to analyze factors relating to both market competition and changes in the overall economic environment so they can develop the best competitive strategies for their firms.

To cover all this material in one text, much of the detail and some topics found in other micro and macro texts have been omitted, most of which are not directly relevant for MBA students. There is no calculus in this text, only basic algebra and graphs. Algebraic examples are kept to a minimum and used only after the basic concepts are presented intuitively with examples. Statistical and econometric techniques are covered, particularly for demand estimation, at a very basic level, while references are provided to the standard sources on these topics. The text places greater emphasis than other texts on how managers use nonstatistical and marketing strategies to make decisions about the demand for their products, and it draws linkages between the statistical and nonstatistical approaches.

*Economics for Managers*, Third Edition, includes little formal analysis of input or resource markets, either from the viewpoint of standard marginal productivity theory or from the literature on the economics of organization, ownership and control, and human resource management. The latter are interesting topics that are covered in other texts with a focus quite different from this one. The macroeconomics portion of this text omits many of the details of alternative macro theories discussed elsewhere. Students are given the basic tools that will help them understand macroeconomics as presented in business sources, such as the *Wall Street Journal*, that emphasize how the national government and the Federal Reserve manage the economy to promote full employment, a stable price level, and economic growth.

## Chapter-by-Chapter Breakdown: What's New in This Edition?

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### Part 1: Microeconomic Analysis

The third edition of *Economics for Managers* includes new and updated cases from 2010 to 2012 that introduce each chapter. In some chapters, the cases are on the same topic as in previous editions (e.g., the copper industry in Chapter 2) to facilitate the transition for current users of the text.

Chapter 1 introduces an entirely new case on the global automobile industry, which includes a discussion of the microeconomic factors influencing competition among the major players in the industry, and the impact of macroeconomic

changes on the entire industry. The chapter focuses on the competition between Japanese and American auto makers, how the American industry has been making a comeback in recent years, and how that change intensified competition among the American producers. I also discuss the impact of the 2011 earthquake and tsunami on the Japanese auto industry and the effect of the 2010 recall and quality issues on Toyota. Automobile production and demand changes in China are major issues in this chapter. Moreover, the role of China regarding both individual firms' strategies and in the larger macroeconomic environment will be a significant factor throughout this text.

Another theme introduced in this chapter is the impact of the global financial crisis and recession on managerial strategies. General Motors and Chrysler received a bailout from the U.S. government to help them survive. The ongoing economic crisis in Europe, which I discuss throughout the text, created major challenges for all players in the global automobile industry. I also discuss the role of currency exchange rates, particularly the impact of the strong yen on the Japanese auto industry.

As in previous editions, this chapter presents the frameworks for the microeconomic and macroeconomic analyses used throughout the text. I introduce the role of relative prices and discuss the different models of market competition. I also present the circular flow macroeconomic model that focuses on consumption (C), investment (I), and government spending (G), and spending on exports (X) and imports (M). I introduce macro policy issues, including the U.S. Federal Reserve policy since 2008 of targeting historically low interest rates and fiscal policy issues such as the American Recovery and Reinvestment Act of 2009.

These microeconomic and macroeconomic issues will be discussed again in the context of the fast-food industry in Chapter 16. The use of two well-known industries to frame both the microeconomic and macroeconomic discussion is a unique feature of *Economics for Managers*, Third Edition.

Chapter 2 updates the case on the copper industry that introduces the concepts of demand and supply and shows the extreme volatility of prices in a competitive industry. The current discussion highlights the issues of the global demand for copper, the particular influence of China, and the problem of copper thefts due to its high price. I have retained much of the discussion of the copper industry from previous editions to illustrate the impact of these changes over time. Even though this chapter focuses on the microeconomic concepts of demand and supply, the copper industry has been given the name "Dr. Copper," because strong demand and high prices can indicate the overall health of the economy.

New examples of the non-price factors influencing demand include (1) the impact on the Zippo Manufacturing Co. of changing attitudes on cigarette smoking; (2) the Chinese demand for pecans; (3) the effect of the Japanese earthquake on the demand for luxury goods in that country; (4) the increased marketing of beer and other products to the Hispanic community; (5) the return of the practice of layaway in department stores; and (6) the effect of substitutes on Nestle bottled water.

New examples of the non-price factors influencing supply include (1) the effect of new technology on pecan growers; (2) the impact of high pecan prices as inputs for bakers; (3) the impact of high oil prices on the supply of natural gas; and (4) the effect of Chinese demand on the number of lumber producers. The extensive numerical example on the copper industry that is used throughout Chapter 2 has been updated to reflect recent events in the copper industry.

Chapter 3 begins with a new case on the relationship between Procter & Gamble's pricing strategy and the price elasticity of demand. I have updated information on price elasticity for airline prices, gasoline, and illegal substances such as cocaine and heroin. The discussion of income elasticity now includes the demand for wines, while the cross-elasticity discussion includes the relationship between airline and automobile travel, which influenced the regulation of child airline safety seats, and

consumer demand for wireline and wireless phones. I have updated Table 3.7 with recent estimates of demand elasticity for food, water, and higher education. I have also increased the discussion of the relationship between the economic and marketing approaches to consumer demand, and I have updated an earlier marketing demand elasticity study included in previous editions.

Chapter 4 presents a new case on how firms use cable television and Visa/MasterCard information to better understand and impact consumer behavior. Although successful from the firm's viewpoint, these strategies have raised concerns over the invasion of consumer privacy. In the discussion of marketing techniques to estimate consumer demand, I have drawn extensively on two major marketing references: Vithala R. Rao, *Handbook of Pricing Research in Marketing*, 2009, and Thomas T. Nagle et al., *The Strategy and Tactics of Pricing*, 5th ed., 2011. I have also updated the econometric references on estimating consumer demand, and I added a new case, "Case Study III: The Demand for Cheese in the United States." I retained the case study of automobile demand and the illustrations of the use of consumer market data in econometric demand studies from the previous editions.

In Chapter 5, I updated the opening case, "Production and Cost Analysis in the Fast-Food Industry," by adding a discussion of fast-food delivery in various parts of the world. New productivity examples in the chapter include (1) the use of additional workers versus robots by Amazon and Crate & Barrel; (2) eliminating diminishing returns in hospital emergency rooms; (3) a discussion of Toyota's quality problems; and (4) an updated discussion of overall industry productivity increases.

Chapter 6 begins with a new case, "The iPhone in China," that focuses on the long-run decisions of Apple Inc. to produce iPhones in China and the controversy that followed over working conditions in those Chinese factories. I also discuss the location and production decisions of smaller manufacturers such as Standard Motor Products of North Carolina. New examples of long-run production and cost decisions include (1) the use of robots in mining operations and hospitals; (2) crowdsourcing or farming out production tasks to the general public; (3) law firms' increased use of software for the discovery process; (4) the trade-off between airline use of smaller jets to cut costs and increased time for refueling; and (5) the decreased use of bags in grocery stores. I also describe the limits of lean production that arose during the Japanese earthquake and tsunami, and I update the discussion of the use of nurse-to-patient ratios to regulate hospital staffing decisions.

Chapter 7 begins with an update of the case of the potato industry from the previous editions of the book. Earlier editions focused on how potato farmers attempted to move away from the competitive market, where they had very little control over price. They formed farmers' cooperatives to help control production and keep prices high. These moves recently faced consumer challenges as price-fixing arrangements. I discuss other recent influences on the potato industry, including obesity concerns resulting from potato consumption and a move to eliminate white potatoes from federally subsidized school breakfasts and lunches. I also update the analysis of competitive strategies in the broiler chicken, red meat, milk, and trucking industries. The red meat industry discussion includes both the issues of "pink slime" and the National Cattlemen's Beef Association's MBA or Master of Beef Advocacy, a training program to promote and defend red meat. The theme in all of these cases is how firms deal with the volatility of the competitive market.

Chapter 8 begins with a new case, "Changing Market Power for Eastman Kodak Co.," which illustrates how the changing markets for cameras and film eroded the market power of this well-known company. In the section on the sources of market power, I have updated the discussion of mergers in the banking, beer, and airlines industries and examined mergers among pharmacy-benefit managers and law firms. New licensing examples include the case of interior decorators and the controversy over who can perform teeth whitening. I have updated the patent discussion with the case of Pfizer's blockbuster drug Lipitor and the patent infringement

case between Apple Inc. and Samsung Electronics Co. The changing market power section now includes a discussion of how bricks-and-mortar retailers are fighting showrooming and the consumer use of phone apps to compare prices and then purchase online.

I have updated the antitrust section with a discussion of the August 2010 revisions in the antitrust guidelines and the use of the Herfindahl-Hirschman Index (HHI). I also provided new references on the guidelines. Although the Microsoft antitrust case was an important illustrative example in the two previous editions of the text, it has become dated. I replaced this case with a discussion of the failed merger of AT&T and T-Mobile in 2011. This case clearly illustrates for students the controversies over the existence and use of market power. This discussion is extended in the monopolistic competition section with an update on the cases of independent drugstores and booksellers.

The opening case in Chapter 9 builds on the previous case of interdependent airline pricing behavior by adding current examples of oligopolistic strategies. I have also updated the examples of oligopolistic behavior between Coke and Pepsi; in the doughnut industry; and among DHL, Federal Express, and UPS. I added a discussion of the predatory pricing case of Spirit Airlines versus Northwest Airlines, included new references on cartel behavior, and updated the discussion of OPEC and the diamond cartel.

Chapter 10 begins with the case, “Airline Pricing Strategies: Will They Start Charging for the Use of the Lavatories?” This case illustrates revenue or yield management strategies where the airlines have unbundled their services and are charging separately for different services based on demand elasticity and consumer willingness to pay. I have extended this discussion throughout the chapter and have drawn extensively on articles in the *Journal of Revenue and Pricing Management*, a source that would be very useful for MBA students. As in Chapter 4, I have included more linkages with the marketing literature by including examples and citations from Vithala R. Rao, *Handbook of Pricing Research in Marketing*, and Thomas T. Nagle et al., *The Strategy and Tactics of Pricing, 5th ed.* I updated the discussion of major league baseball ticket pricing and peak load pricing with smart electric meters, and I added an example of revenue management by the Atlanta Symphony Orchestra. At the end of the chapter, I added material to the discussion of the macro impacts on pricing in 2011–2012.

## Part 2: Macroeconomic Analysis

Part 2, Macroeconomic Analysis, continues with the framework in the second edition. After introducing the macroeconomic variables in Chapter 11, the text discusses real spending by individuals, firms, and governments ( $C + I + G + X - M$ ) in Chapter 12. This material draws on the analyses students see daily in the *Wall Street Journal* and other business publications. A discussion of money, money markets, and Federal Reserve policy is presented in Chapter 13. These elements are combined using the aggregate demand–aggregate supply ( $AD-AS$ ) model in Chapter 14. Monetary and fiscal policy implementation issues are also presented in this chapter. Chapter 15 continues to focus on exchange rate and balance of payments issues and presents an updated discussion of controversies over the role of the euro and the Chinese yuan. The text continues to describe the impacts of policy changes in these areas on the U.S. and foreign economies. However, *as in the previous editions, and unlike the presentation in other texts, Economics for Managers, Third Edition*, has an extensive discussion in both Chapters 14 and 15 of the impact of macro policy changes on the competitive strategies of both domestic and international firms. *This is a unique feature of this textbook*, which makes it most appropriate for MBA students who will probably never make macroeconomic policy, but who will work in firms and industries influenced by these policy changes.

The macro section of the second edition of *Economics for Managers* was revised just as the U.S. economy was slipping into recession in 2008. Given that the third edition was revised in 2012, I rewrote most of the macro discussion to reflect the substantial economic and policy changes during that period. I updated the references for the national income and product accounts and for the underground economy (Chapter 11). I used 2011 data for all the tables, while the figures show trends from 2000 to the first quarter of 2012. I updated the discussion of each component of GDP with recent data and events (Chapter 12), and I made extensive use of Federal Reserve Monetary Policy Reports to Congress and the reports and analyses by the Congressional Budget Office. All of the cases reflect the uncertainty about the U.S. and global economies in 2011–2012 and the slow recovery from the recession of 2007–2009. In the case in Chapter 13, “The Chairman’s Quandary,” I discuss the dilemma facing Federal Reserve officials in summer 2012 as they made decisions on future monetary policy. This discussion includes issues related to the continuation of historically low targeted interest rates, Operation Twist, future bond buying, and the use of public statements to achieve monetary policy goals. I also refer students to Federal Reserve Chairman Ben Bernanke’s 2012 College Lecture Series, *The Federal Reserve and the Financial Crisis*.

In Chapter 14, I discuss recent fiscal policy issues, including the American Recovery and Reinvestment Act of 2009, the fiscal cliff debate in 2012, the impacts of fiscal multipliers and how they are estimated, the role of automatic stabilizers, and the interactions between fiscal and monetary policies. On the supply side, I updated the discussion of productivity growth and the natural rate of unemployment. I kept the section on the use of the aggregate macro model to explain changes in the economy from 2007 to 2008, but I added a similar discussion for the period 2011–2012. I also added a summary of the U.S. auto bailout in 2008–2009, and I discussed the impact of the uncertain economic recovery on managerial decisions in 2011–2012.

Chapter 15, which is built around the opening case, “Uncertainty in the World Economy in 2012,” focuses on the U.S. economy and international issues from 2010 to 2012. The chapter includes an analysis of the weakness in the Chinese economy, the worsening situation in Europe, and capital flows among industrialized and emerging economies. I have updated all tables and figures, included balance of payments data for 2011, and I updated the discussion and references on balance of payment issues and the role of fixed versus flexible exchange rates. I include a discussion and extensive references on the euro zone situation that involves the banking crisis, the sovereign debt crisis, the growth crisis, and the issue of the sustainability of the euro, and I show the impact of the euro crisis on managerial decision making. I also updated the discussion of the Southeast Asia crisis from the second edition, and I have included recent policy issues related to the Chinese yuan.

### Part 3: Integration of the Frameworks

As noted earlier in this section, in Part 3 we return to the issues first discussed in Chapter 1, the relationship between microeconomic and macroeconomic influences on managerial decision making. Chapter 16 presents the case, “Strong Headwinds for McDonald’s,” which examines the effects of changes in the microeconomic and macroeconomic environment on McDonald’s competitive strategies. I discuss current challenges facing the company and how these challenges were met in the past. I then broaden the discussion to include McDonald’s major rivals in the fast-food industry, Burger King, Subway, Wendy’s, and Starbucks, and I discuss the opportunities and challenges facing all of these companies as they enter emerging markets. I have added a discussion of how these companies are facing public health concerns over obesity, and I present a detailed discussion of the impact of regulations requiring calorie counts on menus. I have also kept a statistical study

of fast-food industry demand that was included in previous editions of the text. I discuss macroeconomic influences on the fast-food industry with details from the International Monetary Fund Global Economic Report in October 2012.

The text ends by emphasizing its major theme: *Changes in the macro environment affect individual firms and industries through the microeconomic factors of demand, production, cost, and profitability.* Firms can either try to adapt to these changes or undertake policies to try to modify the environment itself. This theme is particularly important in this third edition of *Economics for Managers*, given the impact of the slow recovery from the 2007–2009 recession on the overall economy and on the strategies of different firms operating in this environment.

## Unique Features of the Text

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### Chapter Opening Cases for Analysis

Each chapter begins with a “Case for Analysis” section, which examines a case drawn from the current news media that illustrates the issues in the chapter. Thus, students begin the study of each chapter with a concrete, real-world example that highlights relevant economic issues, which are then explained with the appropriate economic theory. For example, Chapter 2 begins with a case on the copper industry that illustrates forces on both the demand and supply sides of the market that influence the price of copper and have caused that price to change over time. This example leads directly to a discussion of demand and supply functions and curves, the concept of equilibrium price and quantity, and changes in those equilibria. Within this discussion, I include numerous real-world examples to illustrate demand and supply shifters. The chapter concludes by reviewing how formal demand and supply analysis relates to the introductory case. Students thus go from concrete examples to the relevant economic theory and then back to real-world examples.

### Interdisciplinary Focus

*Economics for Managers*, Third Edition, continues to have an interdisciplinary focus. For example, Chapter 3 presents demand price elasticity estimates drawn from both the economics and marketing literature. Empirical marketing and economic approaches to understanding consumer demand are both discussed in Chapter 4. The production and cost analysis in Chapters 5 and 6 relates to topics covered in management courses, while the pricing discussion in Chapter 10 draws extensively on the marketing literature. Thus, the third edition of *Economics for Managers* is uniquely positioned to serve the needs of instructors who are trying to integrate both micro- and macroeconomic topics and who want to relate this material to other parts of the business curriculum.

### Focus on Global Issues

Global and international examples are included in both the microeconomic and macroeconomic sections of the text. For example, Chapter 2 discusses how demand from China, an earthquake in Chile, and the financial crisis in Europe affected the copper industry. I revisit these international issues again in Chapters 15 and 16. Analyses of the impact of changing consumer demand, new production technologies, and rising input costs on both U.S. and international firms are included in many of the microeconomic chapters. Chapters 14 and 15 include discussions of the effects of U.S. and international macroeconomic policy changes on firms located around the world.

As noted previously, *Economics for Managers*, Third Edition, takes the unique approach in Chapters 1 and 16 to discuss the impact of both microeconomic and macroeconomic factors on firms' competitive strategies in international markets. The analysis of the global automobile industry in Chapter 1 and the fast-food industry in Chapter 16 helps students see how economic and political issues around the world impact managerial decision making. This *integration of micro and macro tools* in the global setting has been a key feature of all editions of *Economics for Managers*.

## Managerial Decision-Making Perspective

*Economics for Managers* is developed from a firm and industry decision-making perspective. Thus, the demand and elasticity chapters focus on the implications of elasticity for pricing policies, not on abstract models of consumer behavior. To illustrate the basic models of production and cost, the text presents examples of cost-cutting and productivity-improving strategies that firms actually use. It discusses the concept of input substitution intuitively with examples, but places the formal isoquant model in an appendix to Chapter 6. The text then compares and contrasts the various models of market behavior, incorporating discussions and examples of the measurement and use of market power, most of which are drawn from the current news media and the industrial organization literature.

Throughout the chapters you will find “Managerial Rule of Thumb” features, which are shortcuts for using specific concepts and brief descriptions of important issues for managers. For example, Chapter 3 contains several quick approaches for determining price and income elasticities of demand. Chapter 4 includes some key points for managers to consider when using different approaches to understanding consumer behavior.

Macroeconomics presents a particular challenge for managers because the subject matter is traditionally presented from the viewpoint of the decision makers, either the Federal Reserve or the U.S. Congress and presidential administration. Although *Economics for Managers*, Third Edition, covers the models that include this policy-making perspective, the text also illustrates how the actions of these policy makers influence the decisions managers make in various firms and industries. This emphasis is important because most students taking an MBA economics course will never work or make policy decisions for the Federal Reserve or the U.S. government, but they are or will be employed by firms that are affected by these decisions and policies.

## End-of-Chapter Exercises

As you will see, some of the end-of-chapter exercises are straightforward calculation problems that ask students to compute demand-supply equilibria, price elasticities, and profit-maximizing levels of output, for example. However, many exercises are broader analyses of cases and examples drawn from the news media. These exercises have a managerial perspective similar to the examples in the text. The goal is to make students realize that managerial decisions usually involve far more analysis than the calculation of a specific number or an “optimal” mathematical result. One of the exercises at the end of each chapter is related to the “Case for Analysis” discussed at the beginning of that chapter.

## Instructor Resource Center

*Economics for Managers* is connected to the Instructor Resource Center available at [www.pearsonglobaleditions.com/farnham](http://www.pearsonglobaleditions.com/farnham). Instructors can access a variety of print, digital, and presentation resources available with this text in downloadable

format. Registration is simple and gives you immediate access to new titles and new editions. As a registered faculty member, you can download resource files and receive immediate access and instructions for installing course management content on your campus server. If you ever need assistance, our dedicated technical support team is ready to help with the media supplements that accompany this text. Visit <http://247pearsoned.custhelp.com/> for answers to frequently asked questions and toll-free user support phone numbers. The following supplements are available to adopting instructors:

- Instructor's Manual
- Test Item File also available in TestGen software for both Windows and Mac computers
- PowerPoint Presentations containing all figures and tables from the text

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# About the Author

Paul G. Farnham is Associate Professor Emeritus of Economics at Georgia State University. He received his B.A. in economics from Union College, Schenectady, New York, and his M.A. and Ph.D. in economics from the University of California, Berkeley. For over 30 years, he specialized in teaching economics to students in professional master's degree programs including the Master of Business Administration and Executive MBA, Master of Public Administration, Master of Health Administration, and Master of Public Health. He has received both teaching awards and outstanding student evaluations at Georgia State. Dr. Farnham's research focused first on issues related to the economics of state and local governments and then on public health economic evaluation issues where he has published articles in a variety of journals. He co-authored three editions of *Cases in Public Policy Analysis* (1989, 2000, and 2011), contributed to both editions of *Prevention Effectiveness: A Guide to Decision Analysis and Economic Evaluation* (1996, 2003), and wrote a chapter for the *Handbook of Economic Evaluation of HIV Prevention Programs* (1998). He is currently a Senior Service Fellow in the Division of HIV/AIDS Prevention at the Centers for Disease Control and Prevention in Atlanta. Dr. Farnham can be reached at [pfarnham@gsu.edu](mailto:pfarnham@gsu.edu).





# Economics for Managers

## 1

# Managers and Economics

**W**hy should managers study economics? Many of you are probably asking yourself this question as you open this text. Students in Master of Business Administration (MBA) and Executive MBA programs usually have some knowledge of the topics that will be covered in their accounting, marketing, finance, and management courses. You may have already used many of those skills on the job or have decided that you want to concentrate in one of those areas in your program of study.

But economics is different. Although you may have taken one or two introductory economics courses at some point in the past, most of you are not going to *become* economists. From these economics classes, you probably have vague memories of different graphs, algebraic equations, and terms such as *elasticity of demand* and *marginal propensity to consume*. However, you may have never really understood how economics is relevant to managerial decision making. As you'll learn in this chapter, managers need to understand the insights of both *microeconomics*, which focuses on the behavior of individual consumers, firms, and industries, and *macroeconomics*, which analyzes issues in the overall economic environment. Although these subjects are typically taught separately, this text presents the ideas from both approaches and then integrates them from a managerial decision-making perspective.

As in all chapters in this text, we begin our analysis with a case study. The case in this chapter, which focuses on the global automobile industry, provides an overview of the issues we'll discuss throughout this text. In particular, the case illustrates how the automobile industry is influenced by both the microeconomic issues related to production, cost, and consumer demand and the larger macroeconomic issues including the uncertainty in global economic activity, particularly in Europe, and the value of various countries' currencies relative to the U.S. dollar.



## Case for Analysis

### Micro- and Macroeconomic Influences on the Global Automobile Industry

In September 2012, U.S. automobile sales increased to 1.19 million cars and light trucks per month, a 12.8 percent increase from a year earlier. This increase represented an annualized rate of 14.94 million vehicles, the highest sales rate since March 2008 before the recession began in the United States. Much of the increase was driven by passenger car sales at Toyota Motor Corp., Honda Motor Co., and Chrysler Group LLC. There was a significant increase in sales for Toyota and Honda from the previous year, as both companies were recovering from the earthquake that hit Japan in March 2011.<sup>1</sup> Analysts noted similar increases in August 2012 that were attributed to pent-up consumer demand for replacing aging vehicles and the low-interest financing and other incentives Japanese auto makers offered to regain market share lost in 2011 due to the lack of availability of their cars.<sup>2</sup>

Automobile production in the United States had expanded in 2012, given favorable foreign exchange rates and a plentiful supply of affordable labor. Toyota, Honda, and Nissan Motor Co. all increased their production capacity in the United States with the goal of shipping automobiles to Europe, Korea, the Middle East, and other countries. The strong value of the yen, and conversely the weak U.S. dollar, gave Japanese producers the incentive to produce cars in the United States for export around the world. This investment by foreign automobile producers helped the U.S. economy that was still struggling to recover from the recession of 2007–2009. Automobile industry employment in the United States was estimated to increase from 566,400 in 2010 to 756,800 in 2015. Although these estimates were well below the 1.1 million automobile workers employed in 1999, they indicated that the economic recovery was moving forward. General Motors Co., which had once encouraged auto parts

suppliers to relocate in low-wage countries, now encouraged them to locate near U.S. auto plants.<sup>3</sup>

U.S. auto producers, who had once essentially lost the competition to their Japanese rivals in the 1980s and 1990s and who went through government-backed (GM and Chrysler) or private (Ford) restructurings during the U.S. recession, regained profitability and invested in the engineering and redesign of their cars. Several Fords were designed with a voice-operated Sync entertainment system, and the Chevrolet Cruze that was launched in 2010 came with 10 air bags compared with 6 for the Toyota Corolla. As the U.S. economy recovered, Americans also began purchasing more trucks and sport-utility vehicles (SUVs), which helped to restore profits and market share for the Detroit auto makers. Trucks and SUVs made up 47.3 percent of the U.S. market in 2009, 50.2 percent in 2010, and 50.8 percent in 2011. This segment of the market had been hit particularly hard during the U.S. recession.<sup>4</sup>

As the U.S. automobile industry revived, the competition between Ford and GM again became more intense. In 2008, Ford supported the government bailout for GM and Chrysler because Ford was worried that a collapse of these companies would also impact the auto parts industry. As the domestic auto industry recovered, Ford, which had often focused just on Toyota as its key competitor, began developing strategies to counter GM. Ford realized that customers who had long been loyal to Asian brands were again looking at U.S. cars, given the generally perceived quality increases in the U.S. auto industry.<sup>5</sup>

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<sup>1</sup>Jeff Bennett, "Corporate News: Passenger Cars Lift U.S. Sales—Big Gains for Toyota, Honda, Chrysler: Pickup Weakness Weighs on GM, Ford," *Wall Street Journal (Online)*, October 3, 2012.

<sup>2</sup>Christina Rogers, "August U.S. Car Sales Surge," *Wall Street Journal (Online)*, September 4, 2012.

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<sup>3</sup>Joseph B. White, Jeff Bennett, and Lauren Weber, "Car Makers' U-Turn Steers Job Gains," *Wall Street Journal (Online)*, January 23, 2012; Neal Boudette, "New U.S. Car Plants Signal Renewal for Manufacturing," *Wall Street Journal (Online)*, January 26, 2012.

<sup>4</sup>Mike Ramsey and Sharon Terlep, "Americans Embrace SUVs Again," *Wall Street Journal (Online)*, December 2, 2011; Jeff Bennett and Neal E. Boudette, "Revitalized Detroit Makes Bold Bets on New Models," *Wall Street Journal (Online)*, January 9, 2012.

<sup>5</sup>Sharon Terlep and Mike Ramsey, "Ford and GM Renew a Bitter Rivalry," *Wall Street Journal (Online)*, November 23, 2011.

Japanese auto makers in 2011 and 2012 faced managerial decisions that were influenced both by the nature of the competition from their rivals and by macroeconomic conditions, most importantly the value of the exchange rate between the yen and the U.S. dollar.<sup>6</sup> Production by both Toyota and Honda was hit by the earthquake and tsunami in Japan in March 2011 and by subsequent flooding in Thailand that disrupted the supply of electronics and other auto parts made there. Toyota sales were also influenced by the recall and quality issues in 2010 related to the gas pedal and floor mat design. Honda's redesigned 2012 Civic was criticized for its technology and less-than-luxurious interior. The car was dropped from Consumer Reports' recommended list in August 2011. Honda officials acknowledged that they had underestimated the competition from U.S. producers.

The strong yen, which made exports from Japan less price competitive, also gave the Japanese producers the incentive to produce their cars in the United States. Honda, which had produced 1.29 million vehicles in North America in 2010, planned to open a new plant in Mexico and expand production in all seven of its existing assembly plants to 2 million cars and trucks per year. Production abroad was a particular issue for Toyota, which made half of its automobiles in Japan, compared to Honda and Nissan, which produced about one-third of their output in Japan. The president of Toyota, Akio Toyoda, grandson of the company founder, had made a public commitment to build at least 3 million cars in Japan annually, half of which would be for export. Some company officials argued for streamlining production in Japan by decreasing production without raising costs, essentially redefining the economies of scale in the company's production process. These officials believed the company could meet domestic goals with high-precision production, cost-cutting, and collaboration on new technology with parts suppliers.

Auto producers also focused on China during this period, although there was concern about the slowing Chinese economy.<sup>7</sup> Auto sales in China increased only 2.5 percent in 2011 compared with increases of 46 percent in 2009 and 32 percent

in 2010. However, the size of the Chinese economy continued to be the major incentive for expansion in that country. In April 2012, Ford announced that it would build its fifth factory in eastern China as part of its plan to double its production capacity and sales outlets in the country by 2015. This production increase would make the company capable of producing 1.2 million passenger cars in China, approximately half of the number of cars it built in North America in 2011. Ford lagged behind other major auto producers in entering the world's largest car market. Ford's strategy was to build cars from platforms developed elsewhere to minimize costs. However, these platforms might not provide enough space in the back seats to appeal to affluent Chinese, who often employed drivers. General Motors developed a partnership with Chinese SAIC Motor Corp. to become the dominant foreign competitor in China. This partnership resulted in production changes such as designing Cadillacs with softer corners, dashboards with more gadgets, and increasing the comfort of the rear seats to appeal to Chinese consumers. The challenge for GM was that SAIC could also use GM's expertise and technology to make itself a major competitor with the U.S. company. In 2012, the Chinese automobile industry began increasing exports, although these were not thought to be a threat in developed markets in the United States and Europe, given perceived quality issues including lack of air-conditioning and power windows. However, Chinese producers were making inroads into emerging markets in Africa, Asia, and Latin America.

The other major influence on the global auto industry in 2011 and 2012 was the recession and economic crisis in Europe.<sup>8</sup> In October 2012, Ford announced a plan to cut its operating losses in Europe by closing three auto-assembly and parts factories in the region, reduce its workforce by 13 percent, and decrease automobile production by 18 percent. Ford predicted a loss of \$1.5 billion in Europe in 2012 and a similar loss in 2013. The cost-cutting in Europe was combined with the introduction of several new commercial vans and SUVs and the introduction of the Mustang sports car for the first time. All European auto makers faced decreased car sales and chronic overcapacity at this time. Daimler AG, maker of Mercedes-Benz automobiles, announced that it would not achieve its profit targets, while PSA Peugeot Citroen SA announced a government bailout of its financing arm and a cost-sharing pact with General Motors. There had been a smaller decrease in auto-producing capacity in Europe since the 2008 financial crisis compared with that during the restructuring of the U.S. auto industry that was influenced by the federal government bailout.

<sup>6</sup>The following discussion is based on Jeff Bennett and Neal E. Boudette, "Revitalized Detroit Makes Bold Bets on New Models"; Mike Ramsey and Yoshio Takahashi, "Car Wreck: Honda and Toyota," *Wall Street Journal (Online)*, November 1, 2011; Chester Dawson, "For Toyota, Patriotism and Profits May Not Mix," *Wall Street Journal (Online)*, November 29, 2011; Mike Ramsey and Neal E. Boudette, "Honda Revs Up Outside Japan," *Wall Street Journal (Online)*, December 21, 2011; and Yoshio Takahashi and Chester Dawson, "Japan Auto Makers on a Roll," *Wall Street Journal (Online)*, April 22, 2012.

<sup>7</sup>This discussion is based on Andrew Galbraith, "Car Makers Still Look to China," *Wall Street Journal (Online)*, April 19, 2012; Sharon Terlep and Mike Ramsey, "Ford Bets \$5 Billion on Made in China," *Wall Street Journal (Online)*, April 20, 2012; Chester Dawson and Sharon Terlep, "China Ramps Up Auto Exports," *Wall Street Journal (Online)*, April 24, 2012; and Sharon Terlep, "Balancing the Give and Take in GM's Chinese Partnership," *Wall Street Journal (Online)*, August 19, 2012.

<sup>8</sup>This discussion is based on Sharon Terlep and Sam Schechner, "GM, Peugeot Take Aim at Europe Woes," *Wall Street Journal (Online)*, July 12, 2012; Mike Ramsey, David Pearson, and Matthew Curtin, "Daimler Warns as Europe Car Makers Cut Back," *Wall Street Journal (Online)*, October 24, 2012; and Marietta Cauchi and Mike Ramsey, "Ford to Shut 3 Europe Plants," *Wall Street Journal (Online)*, October 25, 2012.

## Two Perspectives: Microeconomics and Macroeconomics

As noted above, **microeconomics** is the branch of economics that analyzes the decisions that individual consumers and producers make as they operate in a market economy. When microeconomics is applied to business decision making, it is called **managerial economics**. The key element in any market system is pricing, because this type of system is based on the buying and selling of goods and services. As we'll discuss later in the chapter, **prices**—the amounts of money that are charged for different goods and services in a market economy—act as signals that influence the behavior of both consumers and producers of these goods and services. Managers must understand how prices are determined—for both the **outputs**, or products sold by a firm, and the **inputs**, or resources (such as land, labor, capital, raw materials, and entrepreneurship) that the firm must purchase in order to produce its output. Output prices influence the revenue a firm derives from the sale of its products, while input prices influence a firm's costs of production. As you'll learn throughout this text, many managerial actions and decisions are based on expected responses to changes in these prices and on the ability of a manager to influence these prices.

Managerial decisions are also influenced by events that occur in the larger economic environment in which businesses operate. Changes in the overall level of economic activity, interest rates, unemployment rates, and exchange rates both at home and abroad create new opportunities and challenges for a firm's competitive strategy. This is the subject matter of **macroeconomics**, which we'll cover in the second half of this text. Managers need to be familiar with the underlying macroeconomic models that economic forecasters use to predict changes in the macroeconomy and with how different firms and industries respond to these changes. Most of these changes affect individual firms via the pricing mechanism, so there is a strong connection between microeconomic and macroeconomic analysis.<sup>9</sup>

In essence, macroeconomic analysis can be thought of as viewing the economy from an airplane 30,000 feet in the air, whereas with microeconomics the observer is on the ground walking among the firms and consumers. While on the ground, an observer can see the interaction between individual firms and consumers and the competitive strategies that various firms develop. At 30,000 feet, however, an observer doesn't see the same level of detail. In macroeconomics, we analyze the behavior of individuals aggregated into different sectors in the economy to determine the impact of changes in this behavior on the overall level of economic activity. In turn, this overall level of activity combines with changes in various macro variables, such as interest rates and exchange rates, to affect the competitive strategies of individual firms and industries, the subject matter of microeconomics. Let's now look at these microeconomic influences on managers in more detail.

### Microeconomics

The branch of economics that analyzes the decisions that individual consumers, firms, and industries make as they produce, buy, and sell goods and services.

### Managerial economics

Microeconomics applied to business decision making.

### Prices

The amounts of money that are charged for goods and services in a market economy. Prices act as signals that influence the behavior of both consumers and producers of these goods and services.

### Outputs

The final goods and services produced and sold by firms in a market economy.

### Inputs

The factors of production, such as land, labor, capital, raw materials, and entrepreneurship, that are used to produce the outputs, or final goods and services, that are bought and sold in a market economy.

### Macroeconomics

The branch of economics that focuses on the overall level of economic activity, changes in the price level, and the amount of unemployment by analyzing group or aggregate behavior in different sectors of the economy.

<sup>9</sup>Note that the terms *micro* and *macro* are used differently in various business disciplines. For example, in *Marketing Management, The Millennium Edition* (Prentice Hall, 2000), Philip Kotler describes the "macro environment" as dealing with *all* forces external to the firm. His examples include both (1) the gradual opening of new markets in many countries and the growth in global brands of various products (microeconomic factors for the economist) and (2) the debt problems of many countries and the fragility of the international financial system (macroeconomic problems from the economic perspective). In each business discipline, you need to learn how these terms and concepts are defined.

## Microeconomic Influences on Managers

The discussion of the global automobile industry in the opening case illustrates several microeconomic factors influencing managerial decisions. In 2012, Japanese auto makers used low-interest financing and other incentives to regain market share lost in previous years. Toyota had to recover from the impact of its recall and negative quality issues in 2010, while Honda stumbled on the redesign of its 2012 Civic by not incorporating features offered by its competitors. U.S. auto makers reengineered and redesigned their production processes to add features with greater customer appeal. They also responded to the increased demand for trucks and SUVs, a market segment that had been negatively impacted by the recession. Ford and GM began reengaging in their traditional market rivalry. All producers who planned to sell in China, the world's largest automobile market, had to recognize the difference in tastes and preferences of Chinese consumers, such as the desire for larger back seats.

Decisions about demand, supply, production, and market structure are all microeconomic choices that managers must make. Some decisions focus on the factors that affect consumer behavior and the willingness of consumers to buy one firm's product as opposed to that of a competitor. Thus, managers need to understand the variables influencing consumer demand for their products. Because consumers typically have a choice among competing products, these choices and the demand for each product are influenced by **relative prices**, the price of one good in relation to that of another, similar good. Relative prices are the focus of microeconomic analysis. The Japanese auto makers' use of low-interest financing and other pricing incentives noted above is an example of a strategy based on influencing relative prices. All auto makers discussed in the case had to respond to changing consumer demand over time and to variations in consumer tastes and preferences that influenced demand in different countries.

Production technology and the prices paid for the resources used in production influence a company's final costs of production. The relative prices of these resources or factors of production will influence the choices that managers make among different production methods. Whether a production process uses large amounts of plant and equipment relative to the amount of workers and whether a business operates out of a small office or a giant factory are microeconomic production and cost decisions managers must make. As noted in the case, Ford Motor Co. used production platforms developed elsewhere to minimize its production costs as it entered the Chinese market. However, this cost-minimizing strategy was not appropriate for producing cars with larger back seats that appealed to affluent Chinese customers. General Motors also had to redesign its Cadillac to meet Chinese demand.

### Markets

All of the auto makers in the opening case made strategic decisions in light of their knowledge of the market environment or structure. **Markets**, the institutions and mechanisms used for the buying and selling of goods and services, vary in structure from those with hundreds or thousands of buyers and sellers to those with very few participants. These different types of markets influence the strategic decisions that managers make because markets affect both the ability of a given firm to influence the price of its product and the amount of independent control the firm has over its actions.

There are four major types of markets in microeconomic analysis:

1. Perfect competition
2. Monopolistic competition
3. Oligopoly
4. Monopoly

#### Relative prices

The price of one good in relation to the price of another, similar good, which is the way prices are defined in microeconomics.

#### Markets

The institutions and mechanisms used for the buying and selling of goods and services. The four major types of markets in microeconomic analysis are perfect competition, monopolistic competition, oligopoly, and monopoly.



**FIGURE 1.1**  
Market Structure

These market structures can be located along a continuum, as shown in Figure 1.1. At the left end of the continuum, there are a large number of firms in the market, whereas at the right end of the continuum there is only one firm. (We'll discuss other characteristics that distinguish the markets later in the chapter.)

The two market structures at the ends of the continuum, perfect competition and monopoly, are essentially hypothetical models. No real-world firms meet all the assumptions of perfect competition, and few could be classified as monopolies. However, these models serve as benchmarks for analysis. All real-world firms contain combinations of the characteristics of these two models. Managers need to know where their firm lies along this continuum because market structure will influence the strategic variables that a firm can use to face its competition.

The major characteristics that distinguish these market structures are

1. The number of firms competing with one another that influences the firm's control over its price
2. Whether the products sold in the markets are differentiated or undifferentiated
3. Whether entry into and exit from the market by other firms is easy or difficult
4. The amount of information available to market participants

**The Perfect Competition Model** The model of **perfect competition**, which is on the left end of the continuum in Figure 1.1, is a market structure characterized by

1. A large number of firms in the market
2. An undifferentiated product
3. Ease of entry into the market
4. Complete information available to all market participants

In perfect competition, we distinguish between the behavior of an individual firm and the outcomes for the entire market or industry, which represents all firms producing the product. Economists make the assumption that there are so many firms in a perfectly competitive industry that no single firm has any influence on the price of the product. For example, in many agricultural industries, whether an individual farmer produces more or less product in a given season has no influence on the price of these products. The individual farmer's output is small relative to the entire market, so the market price is determined by the actions of *all* farmers supplying the product and *all* consumers who purchase the goods. Because individual producers can sell any amount of output they bring to market at that price, we characterize the perfectly competitive firm as a **price-taker**. This firm does not have to lower its price to sell more output. In fact, it cannot influence the price of its product. However, if the price for the entire amount of output in the market increases, consumers will buy less, and if the market price of the product decreases, they will buy more.

In the model of perfect competition, economists also assume that all firms in an industry produce the same homogeneous product, so there is no product differentiation. For example, within a given grade of an agricultural product, potatoes or peaches are undifferentiated. This market characteristic means that consumers do not care about the identity of the specific supplier of the product they purchase. They may not even know who supplies the product, and that knowledge would be irrelevant to their purchase decision, which will be based largely on the price of the product.

### Perfect competition

A market structure characterized by a large number of firms in an industry, an undifferentiated product, ease of entry into the market, and complete information available to participants.

### Price-taker

A characteristic of a perfectly competitive firm in which the firm cannot influence the price of its product, but can sell any amount of its output at the price established by the market.

**Profit**

The difference between the total revenue that a firm receives for selling its product and the total cost of producing that product.

**Market power**

The ability of a firm to influence the prices of its products and develop other competitive strategies that enable it to earn large profits over longer periods of time.

**Imperfect competition**

Market structures of monopolistic competition, oligopoly, and monopoly, in which firms have some degree of market power.

**Monopoly**

A market structure characterized by a single firm producing a product with no close substitutes.

**Barriers to entry**

Structural, legal, or regulatory characteristics of a firm and its market that keep other firms from easily producing the same or similar products at the same cost.

**Monopolistic competition**

A market structure characterized by a large number of small firms that have some market power as a result of producing differentiated products. This market power can be competed away over time.

**Oligopoly**

A market structure characterized by competition among a small number of large firms that have market power, but that must take their rivals' actions into account when developing their own competitive strategies.

The third assumption of the perfectly competitive model is that entry into the industry by other firms is costless. This means that if a perfectly competitive firm is making a **profit** (earning revenues in excess of its costs), other firms will also enter the industry in an attempt to earn profits. However, these actions will compete away excess profits for all firms in a perfectly competitive industry.

The final assumption of the perfectly competitive model is that complete information is available to all market participants. This means that all participants know which firms are earning the greatest profits and how they are doing so. Thus, other firms can easily emulate the strategies and techniques of the profitable firms, which will result in greater competition and further pressure on any excess profits.

While the details of this process will be described in later chapters, these four assumptions mean that perfectly competitive firms have no **market power**—the ability to influence their prices and develop other competitive strategies that allow them to earn large profits over longer periods of time. All of the other market structures in Figure 1.1 represent **imperfect competition**, in which firms have some degree of market power. How much market power these firms have and how they are able to maintain it differ among the market structures.

**The Monopoly Model** At the right end of the market structure continuum in Figure 1.1 is the **monopoly** model, in which a single firm produces a product for which there are no close substitutes. Thus, as we move rightward along the continuum, the number of firms producing the product keeps decreasing until we reach the monopoly model of one firm. A monopoly firm typically produces a product that has characteristics and qualities different from the products of its competitors. This product differentiation often means that consumers are willing to pay more for this product because similar products are not considered to be close substitutes.

In the monopoly model, there are also **barriers to entry**, which are structural, legal, or regulatory characteristics of the market that keep other firms from easily producing the same or similar products at the same cost and that give a firm market power. However, while market power allows a firm to influence the prices of its products and develop competitive strategies that enable it to earn larger profits, a firm with market power cannot sell any amount of output at a given market price, as in perfect competition. If a monopoly firm raises its price, it will sell less output, whereas if it lowers its price, it will sell more output.

**The Monopolistic Competition and Oligopoly Models** The intermediate models of monopolistic competition and oligopoly in Figure 1.1 better characterize the behavior of real-world firms and industries because they represent a blend of competitive and monopolistic behavior. In **monopolistic competition**, firms produce differentiated products, so they have some degree of market power. However, because these firms are closer to the left end of the continuum in Figure 1.1, there are many firms competing with one another. Each firm has only limited ability to earn above-average profits before they are competed away over time. In **oligopoly** markets, a small number of large firms dominate the market, even if other producers are present. Mutual interdependence is the key characteristic of this market structure because firms need to take the actions of their rivals into account when developing their own competitive strategies. Oligopoly firms typically have market power, but how they use that power may be limited by the actions and reactions of their competitors.

The opening case of this chapter did not explicitly discuss the market structure of the major auto producers. However, because all of these firms are large multinational companies that sell globally, they obviously have substantial market power

and are located far from the model of perfect competition on the continuum in Figure 1.1. The case noted that U.S. automobile sales were at an annualized rate of 14.94 million vehicles in 2012.

Large national or multinational companies typically find themselves operating in multiple markets, making the analysis of market structure more complicated as the market environment may differ substantially among these markets. Each of these markets has its own characteristics in terms of the number and size of the competitors and product characteristics. Differences between the Chinese and U.S. markets were discussed throughout the case.

**The Goal of Profit Maximization** In all of the market models we have just presented, we assume that the goal of firms is **profit maximization**, or earning the largest amount of profit possible. Because profit, as defined above, represents the difference between the revenues a firm receives for selling its output and its costs of production, firms may develop strategies to either increase revenues or reduce costs in an effort to increase profits. Profits act as a signal in a market economy. If firms in one sector of the economy earn above-average profits, other firms will attempt to produce the same or similar products to increase their profitability. Thus, resources will flow from areas of low to high profitability. As we will see, however, the increased competition that results from this process will eventually lead to lower prices and revenues, thus eliminating most or all of these excess profits.

Profitability is the standard by which firms are judged in a market economy. Profitability affects stock prices and investor decisions. If firms are unprofitable, they will go out of business, be taken over by other more profitable companies, or have their management replaced. Subsequently, we model a firm's profit-maximization decision largely in terms of static, single-period models where information on consumer behavior, revenues, and costs is known with certainty. Real-world managers must deal with uncertainty in all of these areas, which may lead to less-than-optimal decisions, and managers must be concerned with maximizing the firm's value over time. The models we present illustrate the basic forces influencing managerial decisions and the key role of profits as a motivating incentive.

### Profit maximization

The assumed goal of firms, which is to develop strategies to earn the largest amount of profit possible. This can be accomplished by focusing on revenues, costs, or both.

## Managerial Rule of Thumb

### Microeconomic Influences on Managers

To develop a competitive advantage and increase their firm's profitability, managers need to understand:

- How consumer behavior affects their revenues
- How production technology and input prices affect their costs
- How the market and regulatory environment in which managers operate influences their ability to set prices and to respond to the strategies of their competitors ■

## Macroeconomic Influences on Managers

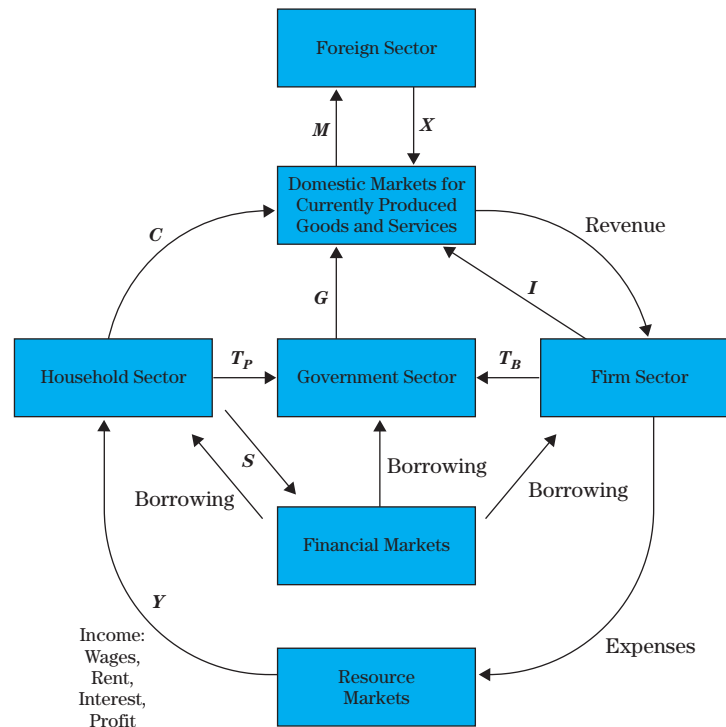
The discussion of the impact of the global recession, the continued problems in Europe's financial recovery, and the role of currency exchange rates in the case that opened this chapter can be placed within the **circular flow model** of

### Circular flow model

The macroeconomic model that portrays the level of economic activity as a flow of expenditures from consumers to firms, or producers, as consumers purchase goods and services produced by these firms. This flow then returns to consumers as income received from the production process.

**FIGURE 1.2****GDP and the Circular Flow**

$C$  = consumption spending  
 $I$  = investment spending  
 $G$  = government spending  
 $X$  = export spending  
 $M$  = import spending  
 $Y$  = household income  
 $S$  = household saving  
 $T_P$  = personal taxes  
 $T_B$  = business taxes



macroeconomics, shown in Figure 1.2. This model portrays the level of economic activity in a country as a flow of expenditures from the household sector to business firms as consumers purchase goods and services currently produced by these firms and sold in the country's output markets. This flow then returns to consumers as income received for supplying firms with the inputs or factors of production, including land, labor, capital, raw materials, and entrepreneurship, which are bought and sold in the resource markets. These payments, which include wages, rents, interest, and profits, become consumer income, which is again used to purchase goods and services—hence, the name *circular flow*. Figure 1.2 also shows spending by firms, by governments, and by the foreign sector of the economy. Corresponding to these total levels of expenditures and income are the amounts of output produced and resources employed.

The levels of expenditures, income, output, and employment in relation to the total capacity of the economy to produce goods and services will determine whether resources are fully employed in the economy or whether there is unemployed labor and excess plant capacity. This relationship will also determine whether and how much the absolute price level in the economy is increasing. The **absolute price level** is a measure of the *overall* price level in the economy as compared with the microeconomic concept of relative prices, which refers to the price of one particular good compared to that of another, as we discussed earlier.

Economists use the circular flow model in Figure 1.2 to define and analyze the spending behavior of different sectors of the economy, including

- **Personal consumption expenditures ( $C$ )** by all households on durable goods, nondurable goods, and services
- **Gross private domestic investment spending ( $I$ )** by households and firms on nonresidential structures, equipment, software, residential structures, and inventories

**Absolute price level**

A measure of the overall level of prices in the economy.

**Personal consumption expenditures ( $C$ )**

The total amount of spending by households on durable goods, nondurable goods, and services in a given period of time.

**Gross private domestic investment spending ( $I$ )**

The total amount of spending on nonresidential structures, equipment, software, residential structures, and business inventories in a given period of time.

- Federal, state, and local **government consumption expenditures and gross investment ( $G$ )**
- **Net export spending ( $F$ )** or total **export spending ( $X$ )** minus total **import spending ( $M$ )**

Consumption spending ( $C$ ) is largely determined by consumer income ( $Y$ ), but it is also influenced by other factors such as consumer confidence, as noted below. Much business investment spending ( $I$ ) is derived from borrowing in the financial markets and is, therefore, affected by prevailing interest rates. The availability of funds for borrowing is influenced by the amount of income that consumers save ( $S$ ) or do not spend on goods and services.<sup>10</sup> Some consumer income ( $Y$ ) is also used to pay personal taxes ( $T_P$ ) to the government sector to finance the purchase of its goods and services. The government also imposes taxes on business ( $T_B$ ). If government spending ( $G$ ) exceeds the total amount of taxes collected ( $T = T_P + T_B$ ), the resulting deficit must be financed by borrowing in the financial markets. This government borrowing may affect the amount of funds available for business investment, which in turn may cause interest rates to change, influencing firms' costs of production.

The foreign sector also plays a role in a country's circular flow of expenditures because some currently produced goods and services are purchased by residents of other countries, exports ( $X$ ), while a given country's residents use some of their income to purchase goods and services produced in other countries, imports ( $M$ ). Net export spending ( $F$ ), or export spending ( $X$ ) minus import spending ( $M$ ), measures the net effect of the foreign sector on the domestic economy. Import spending is subtracted from export spending because it represents a flow of expenditures out of the domestic economy to the rest of the world.<sup>11</sup>

Spending by all these sectors equals **gross domestic product (GDP)**, the comprehensive measure of overall economic activity that is used to judge how an economy is performing. Gross domestic product measures the market value of all currently produced final goods and services within a country in a given period of time by domestic and foreign-supplied resources. GDP equals the sum of consumption spending ( $C$ ), investment spending ( $I$ ), government spending ( $G$ ), and export spending ( $X$ ) minus import spending ( $M$ ).

### Government consumption expenditures and gross investment ( $G$ )

The total amount of spending by federal, state, and local governments on consumption outlays for goods and services, depreciation charges for existing structures and equipment, and investment capital outlays for newly acquired structures and equipment in a given period of time.

### Net export spending ( $F$ )

The total amount of spending on exports ( $X$ ) minus the total amount of spending on imports ( $M$ ) or ( $F = X - M$ ) in a given period of time.

### Export spending ( $X$ )

The total amount of spending on goods and services currently produced in one country and sold abroad to residents of other countries in a given period of time.

### Import spending ( $M$ )

The total amount of spending on goods and services currently produced in other countries and sold to residents of a given country in a given period of time.

### Gross domestic product (GDP)

The comprehensive measure of the total market value of all currently produced final goods and services within a country in a given period of time by domestic and foreign-supplied resources.

## Factors Affecting Macro Spending Behavior

In macroeconomics, we develop models that explain the behavior of these different sectors of the economy and how changes in this behavior influence the overall level of economic activity, or GDP. These behavior changes arise from

1. Changes in the consumption and investment behavior of individuals and firms in the private sector of the economy
2. New directions taken by a country's monetary or fiscal policy-making institutions (its central bank and national government)
3. Developments that occur in the rest of the world that influence the domestic economy

<sup>10</sup>Households also borrow from the financial markets, but they are net savers on balance.

<sup>11</sup>If a country's export spending and import spending do not balance, there will be a flow of financial capital among different countries. This flow will affect a country's currency exchange rate, the rate at which one country's currency can be exchanged for another (Chapter 15).

**Changes in Private-Sector Behavior** Although there are many factors that influence consumption spending ( $C$ ) and investment spending ( $I$ ), credit availability, consumer wealth in the housing and stock markets, and confidence on the part of both consumers and businesspeople were extremely important factors influencing the U.S. economy in the recession of 2007–2009 and the slow economic recovery since that time.

**Monetary Policies** In response to the slowing U.S. economy in 2007, the Federal Reserve, the central bank in the United States, began lowering its targeted interest rate, which had been 5.25 percent since June 2006. In December 2008, the Federal Reserve cut the targeted rate to historic lows of between 0 and 0.25 percent. This policy has been maintained up through the writing of this chapter. These rate changes were reactions to sluggish growth in consumer spending, employment and manufacturing activity, continued turmoil in the housing and financial markets, and sharp drops in the stock market. Managers in any economy must be aware of the **monetary policies** of their country's central bank that influence interest rates and the amount of funds available for consumer and business loans.

### Monetary policies

Policies adopted by a country's central bank that influence the money supply, interest rates, and the amount of funds available for loans, which, in turn, influence consumer and business spending.

### Fiscal policy

Changes in taxing and spending by the executive and legislative branches of a country's national government that can be used to either stimulate or restrain the economy.

**Fiscal Policies** To respond to the recession and financial crisis in the United States, Congress passed the American Recovery and Reinvestment Act (ARRA) in February 2009. This legislation represented changes in **fiscal policy**—taxing and spending policies by a country's national government that can be used to either stimulate or restrain the economy ( $T = T_P + T_B$  and  $G$  in the circular flow model in Figure 1.2). Fiscal policy decisions are made by a country's executive and legislative institutions, such as the president, his or her administration, and the Congress in the United States. As a result, fiscal policy actions may be undertaken to promote political as well as economic goals.

The ARRA had numerous spending and revenue provisions that can be grouped as follows: (1) providing funds to states and localities, including aid for education and support for transportation projects; (2) supporting people in need through measures such as extending unemployment benefits; (3) purchasing goods and services including construction and other investment activities; and (4) providing temporary tax relief for individuals and businesses.<sup>12</sup>

**Changes in the Foreign Sector** The opening case for this chapter noted that the strong yen, which made exports from Japan less price competitive, gave Japanese producers the incentive to produce cars in the United States. This was a strategic problem for Toyota, whose president had made a public commitment to build at least 3 million cars in Japan annually. The value at which a country's currency can be exchanged for another currency affects the flow of imports and exports to and from the country and the level of economic activity in the country. Policies to keep that exchange rate at a certain level can have negative effects on other economic goals and can be offset by the actions of currency traders in financial markets. Exchange rate policies need to be coordinated with monetary and fiscal policies to maintain the proper rate of economic growth.

<sup>12</sup>Congressional Budget Office. *Estimated Impact of the American Recovery and Reinvestment Act on Employment and Economic Output from April 2012 Through June 2012*. August 2012. Available at [www.cbo.gov](http://www.cbo.gov).

## Managerial Rule of Thumb

### Macroeconomic Influences on Managers

Changes in the macro environment affect individual firms and industries through the microeconomic factors of demand, production, cost, and profitability. Managers don't have control over these changes in the larger macroeconomic environment. However, managers must be aware of the developments that will have a direct impact on their businesses. Managers sometimes hire outside consultants for reports on the macroeconomic environment, or they ask in-house staff to prepare forecasts. In any case, they need to be able to interpret these forecasts and then project the impact of these macroeconomic changes on the competitive strategies of their firms. Although overall macroeconomic changes may be the same, their impact on various firms and industries is likely to be quite varied. ■

## Summary

In this chapter, we discussed the reasons why both microeconomic and macroeconomic analyses are important for managerial decision making. *Microeconomics* focuses on the decisions that individual consumers and firms make as they produce, buy, and sell goods and services in a market economy, while *macroeconomics* analyzes the overall level of economic activity, changes in the price level and unemployment, and the rate of economic growth for the economy. All of these factors affect the decisions managers make in developing competitive strategies for their firms.

We illustrated these issues by discussing the challenges and problems facing the global automobile industry in 2011 and 2012. Some of these challenges arose from changes in consumer preferences and demand over time, while others resulted from differences in preferences in various markets. However, all automobile producers were affected by the slow global economic recovery at this time and by fluctuating values of currency exchange rates.

We then briefly introduced the concept of market structure and presented the four basic market models: *perfect competition*, *monopolistic competition*, *oligopoly*, and *monopoly*. We also showed how the economic activity between consumers and producers fits into the aggregate *circular flow model* of macroeconomics, and we defined the basic spending components of that model: *consumption*, *investment*, *government spending*, and *spending on exports and imports*. We illustrated the effects of changes in *monetary policy* by a country's central bank and changes in *fiscal policy* by the national administrative and legislative institutions on the overall level of economic activity.

We will next analyze these issues in more detail. We first focus on the microeconomic concepts of demand and supply, pricing, production and cost, and market structures (Chapters 2 through 10). We'll then turn our attention to macroeconomic models and data (Chapters 11 through 15). We return to integrate these issues further where we'll look at more examples of the combined impact of both microeconomic and macroeconomic variables on managerial decision making (Chapter 16).

## Key Terms

absolute price level, p. 40	imperfect competition, p. 38	net export spending ( $F$ ), p. 41
barriers to entry, p. 38	import spending ( $M$ ), p. 41	oligopoly, p. 38
circular flow model, p. 39	inputs, p. 35	outputs, p. 35
export spending ( $X$ ), p. 41	macroeconomics, p. 35	perfect competition, p. 37
fiscal policy, p. 42	managerial economics, p. 35	personal consumption expenditures ( $C$ ), p. 40
government consumption expenditures and gross investment ( $G$ ), p. 41	market power, p. 38	prices, p. 35
gross domestic product (GDP), p. 41	markets, p. 36	price-taker, p. 37
gross private domestic investment spending ( $I$ ), p. 40	microeconomics, p. 35	profit, p. 38
	monetary policies, p. 42	profit maximization, p. 39
	monopolistic competition, p. 38	relative prices, p. 36
	monopoly, p. 38	

## Exercises

### Technical Questions

1. What are the differences between the microeconomic and macroeconomic perspectives on the economy?
2. Why are both input and output prices important to managers?
3. What are the four major types of markets in microeconomic analysis? What are the key characteristics that distinguish these markets?
4. Since a monopolist has some degree of market power, and can also take measures to keep competitors away from the market, a monopolist can set the price of their product as high as they want. The higher the price charged, the higher the revenue. Do you agree? Explain your answer.
5. In macroeconomics, what are the five major categories of spending that make up GDP? Are all five categories added together to determine GDP?
6. Discuss the differences between fiscal and monetary policies.

## Application Questions

1. Give illustrations from the opening case in this chapter of how both microeconomic and macroeconomic factors influence the global automobile industry.
2. In each of the following examples, discuss which market model appears to best explain the behavior described:
  - a. Corn prices reached record highs in the United States in August 2012, given the worst drought in decades. However, by October these prices started to drop again as countries including China, Japan, and South Korea began to purchase from producers in other countries such as Argentina and Brazil.<sup>13</sup>
  - b. In 2012, Staples Inc., OfficeMax Inc., and Office Depot Inc. were all closing many stores, decreasing the size of their stores, and focusing more on online operations. All three chains struggled to deal with changing consumer shopping habits as consumers tested equipment in the stores and then made purchases online.<sup>14</sup>

<sup>13</sup>Andrew Johnon Jr., "Weak Exports Hurt Corn," *Wall Street Journal (Online)*, November 2, 2012.

<sup>14</sup>Ann Zimmerman and Shelly Banjo, "New Web Victim: Office-Supply Store," *Wall Street Journal (Online)*, September 25, 2012.

- c. In fall 2012, T-Mobile announced it was close to a merger with its smaller rival MetroPCS. This merger would strengthen T-Mobile's position as the fourth-largest wireless operator in the United States. The merger would allow the combined company to cut costs and operate on a larger scale.<sup>15</sup>
- d. Chinese cooking is the most popular food in America that isn't dominated by big national chains. Chinese food is typically cooked in a wok that requires high heat and a special stove. Specialized chefs are also required. Small mom-and-pop restaurants comprise nearly all of the nation's 36,000 Chinese restaurants, which have more locations than McDonald's, Burger King, and Wendy's combined.<sup>16</sup>
3. HSBC's revenue after insurance claims fell from \$68.3 billion in 2012 to \$64.6 billion in 2013.<sup>17</sup> Does it necessarily mean that HSBC made less profit in 2013 than in 2012? Explain your answer.
  4. The slow recovery from the recession of 2007–2009 forced many firms to develop new competitive strategies to survive. Find examples of these strategies in various business publications.

<sup>15</sup>Anton Troianovski, "T-Mobile Finds a New Lifeline," *Wall Street Journal (Online)*, October 2, 2012.

<sup>16</sup>Shirley Leung, "Big Chains Talk the Talk, But Can't Walk the Wok," *Wall Street Journal*, January 23, 2003.

<sup>17</sup>Howard Mustoe and Gavin Finch, "HSBC's 2013 Profit Misses Estimates on Cost Reductions," *Bloomberg (Online)*, February 25, 2014.

# 2

## Demand, Supply, and Equilibrium Prices

In this chapter, we analyze demand and supply—probably the two most famous words in all of economics. *Demand*—the functional relationship between the price of a good or service and the quantity demanded by consumers in a given period of time, all else held constant—and *supply*—the functional relationship between the price of a good or service and the quantity supplied by producers in a given period of time, all else held constant—provide a framework for analyzing the behavior of consumers and producers in a market economy. Managers need to understand these terms to develop their own competitive strategies and to respond to the actions of their competitors. They also need to understand that the role of demand and supply depends on the environment or market structure in which a firm operates.

We begin our discussion of demand and supply by focusing on an analysis of the copper industry from 1997/98 to 2011. In our case analysis, we'll discuss how factors related to consumer behavior (demand) and producer behavior (supply) determine the price of copper and cause changes in that price. In the remainder of the chapter, we'll look at how the factors from the copper industry fit into the general demand and supply framework of economic theory. We'll develop a conceptual analysis of demand functions and demand curves; discuss the range of factors that influence consumer demand; analyze how demand can be described verbally, graphically, and symbolically using equations; and look at a specific mathematical example of demand. We'll then describe the supply side of the market and the factors influencing supply in the same manner. Finally, we'll discuss how demand- and supply-side factors determine prices and cause them to change.

## Case for Analysis

### Demand and Supply in the Copper Industry

The copper industry illustrates all the factors on the demand and supply side of a competitive market that we discuss in this chapter. Shifts in these factors can cause current and expected future prices of copper to change rapidly. In addition, the copper industry serves as a signal for the status of the global economy. Because copper is used in so many industries around the world, the metal has been given the name “Dr. Copper,” since a strong demand and high prices for it can indicate that the overall economy is healthy.<sup>1</sup>

In February 2011, copper prices reached an all-time high of \$4.62 per pound, having almost quadrupled after a two-year series of increases. At that time there was a fear that this rally in prices had stopped, given speculation about events in China. Previously, traders and industry observers had thought that China had an insatiable demand for the metal. However, rising interest rates in China could have forced speculators to sell copper to reduce their financing costs, while consumers kept their inventories low to save capital. At this time previously unreported stockpiles of copper were also discovered in China, many of which were in bonded warehouses where traders stored goods before moving them in or out of the country. Analysts observed that these supplies could easily have been moved into the market.<sup>2</sup>

In April 2011, copper analysts worried about further decreases in prices. The worldwide economic downturn had caused demand to decrease in key markets, such as housing and construction. Copper consumers had reacted to previous high prices by seeking cheaper alternative substitute materials, such as aluminum and plastic.<sup>3</sup> In June 2011, analysts reported that copper prices surged to the highest level in two weeks due to the reporting of better-than-expected Chinese industrial production data. Unfavorable U.S. economic data and concern over Chinese inflation had caused prices to decrease, but the industrial output report indicated that demand could increase again.<sup>4</sup> However, later that month concerns over economic conditions in Europe, an important consumer of copper for plumbing and electrical wiring, put further downward pressure on prices.<sup>5</sup>

During the summer of 2011, copper prices increased in response to a U.S. Department of Labor report that new claims

for unemployment benefits fell for the first time in three weeks. The widespread use of the metal in construction and manufacturing meant that any changes in unemployment could impact copper prices. There was also concern on the supply side, given that recent severe winter weather in Chile and a potential strike at a large copper plant could disrupt production.<sup>6</sup>

The extreme volatility of the copper market was illustrated in September 2011. On September 27 the *Wall Street Journal* reported that copper prices rose sharply, given a report that the European Union might expand its support of the Euro zone’s troubled banks and a Federal Reserve Bank of Chicago report showing increased manufacturing output in the Midwest region of the United States.<sup>7</sup> However, one day later it was reported that price declines had erased the previous market increase of more than 5 percent as investors continued to worry about the European financial crisis and whether previously anticipated strong imports into China might not occur.<sup>8</sup>

Unforeseen events have also influenced the copper market. Copper prices reached a seven-week high after a massive earthquake hit Chile in March 2010. There were concerns that supply from the world’s largest copper producer would be impacted by the quake. Analysts attempted to determine as quickly as possible how much the country’s infrastructure had been damaged.<sup>9</sup>

Similar factors affected the copper market in 2006 and 2007.<sup>10</sup> Analysts predicted a decrease in the supply of copper in 2007 after many strikes limited production in 2006. This decreased production along with strong worldwide demand caused the price of copper to remain at historic highs during that year. Much of this demand was stimulated by the economic growth in China. A lack of new mining projects also limited supply, given that many large, known copper deposits were in areas with unstable governments or were difficult to reach.<sup>11</sup> Another impact of the high prices was the increased theft of copper coils in air-conditioning units, copper wires, and copper pipes used for plumbing in homes and businesses

<sup>1</sup>Carolyn Cui and Tatyana Shumsky, “Dr. Copper Offers a Mixed Prognosis,” *Wall Street Journal (Online)*, April 11, 2011.

<sup>2</sup>Cui and Shumsky, “Dr. Copper Offers a Mixed Prognosis.”

<sup>3</sup>Andrea Hotter, “Lofty Copper Prices Remain at Risk,” *Wall Street Journal (Online)*, April 28, 2011.

<sup>4</sup>Matt Day, “Copper Rises on China Industrial-Production Data,” *Wall Street Journal (Online)*, June 14, 2011.

<sup>5</sup>Amy D’Onofrio, “Copper Falls on Uncertainty Over Global Economy,” *Wall Street Journal (Online)*, June 20, 2011.

<sup>6</sup>Matt Day, “Copper Surges on Improved U.S. Labor Market View,” *Wall Street Journal (Online)*, July 7, 2011.

<sup>7</sup>Matt Day, “Copper Continues Gains as Global Markets Rally,” *Wall Street Journal (Online)*, September 27, 2011.

<sup>8</sup>Matt Day, “Copper Slides to a 13-Month Low on Worries About Demand,” *Wall Street Journal (Online)*, September 28, 2011.

<sup>9</sup>Allen Sykora, “Copper Prices Rise Following Quake,” *Wall Street Journal (Online)*, March 1, 2010.

<sup>10</sup>Allen Sykora, “Copper Surplus is Foreseen in '07,” *Wall Street Journal*, February 28, 2007.

<sup>11</sup>Patrick Barta, “A Red-Hot Desire for Copper,” *Wall Street Journal*, March 16, 2006.

in many parts of the United States.<sup>12</sup> Thefts, even of cemetery bronze vases containing large amounts of copper, continued with the relatively high prices of copper in subsequent years.<sup>13</sup>

Analysts predicted that increased quantities of copper would be available in 2007 due to several factors. (1) The strikes that occurred in 2006 were not expected to continue the next year. (2) The higher copper prices encouraged companies to mine lower-grade copper that would not have been economically feasible with lower prices. However, the high copper prices also gave many copper users the incentive to find substitutes for the metal. Aluminum producers benefited from the high copper prices, and these prices stimulated the increased use of plastic piping in home construction.

Forecasts of future prices and production can be very uncertain, given the variety of factors operating on both the demand and supply side of the market. One report estimated a surplus of 108,000 metric tons for the first 11 months of 2006, while another estimated a surplus of 40,000 metric tons for the entire year. The extent of substitution with other products was also difficult to estimate, as was the substitution with scrap metal.<sup>14</sup> Moreover, in February 2007, the first impacts of the slowing housing market on the U.S. economy were just beginning to appear. This is another example of changes in the macroeconomy impacting this industry, leading to the name “Dr. Copper.”

Copper prices continued to be influenced by the demand from China. This demand slowed in 2008 as the Chinese drew down their inventories when global prices were high and shut down some industrial activity preceding the Olympics in August 2008. The slowing Chinese economy in fall 2008 also impacted the world copper market where prices continued to fall.<sup>15</sup>

<sup>12</sup>Sara Schaefer Munoz and Paul Glader, “Copper and Robbers: Homeowners’ Latest Worry,” *Wall Street Journal*, September 6, 2006.

<sup>13</sup>Joe Barrett, “Sky-High Metal Prices Lead to a Grave Situation,” *Wall Street Journal (Online)*, November 22, 2011.

<sup>14</sup>Sykora, “Copper Surplus is Foreseen in ’07.”

<sup>15</sup>Allen Sykora, “China Copper Need Set to Rise,” *Wall Street Journal*, August 25, 2008; James Campbell and Matthew Walls, “China Drags Down Metals: Slump in Real Estate: Export Industries May Keep Lid on Oil Prices,” *Wall Street Journal*, October 29, 2008; Allen Sykora, “Copper Is Vulnerable to Falling Further,” *Wall Street Journal*, November 24, 2008.

An analysis of a substantial decline in copper prices 10 years earlier from November 1997 to February 1998 illustrated many of these same factors.<sup>16</sup> The 1997 financial crisis and recession in Southeast Asia had a significant impact on the copper industry, as did uncertain demand from China and the increased use of copper in communications technology in North America. Expectations also played a role as many copper users were hesitant to buy because they thought prices might continue their downward trend.

On the supply side, the low price of copper forced mining companies to decide whether certain high-cost mines should be kept in operation. However, a new mining process called “solvent extraction” also allowed some companies to mine copper at a lower cost, which permitted more copper mines to stay in business.

We can see from this discussion that a variety of factors influence the price of copper and that these factors can be categorized as operating either on the demand (consumer) side or the supply (producer) side of the market. Sometimes the influence of one factor in lowering prices is partially or completely offset by the impacts of other factors that tend to increase prices. Thus, the resulting copper prices will be determined by the magnitude of the changes in all of these variables.

Note also that the case discusses *general* influences on the copper industry. There is no discussion of the strategic behavior of individual firms. This focus on the entire industry is a characteristic of a perfectly or highly competitive market, where there are many buyers and sellers and the product is relatively homogeneous or undifferentiated. Prices are determined through the overall forces of demand and supply in these markets. All firms, no matter where they are located on the market structure continuum, face a demand from consumers for their products. The factors influencing demand, which are discussed in this chapter, thus pertain to firms operating in every type of market. However, the demand/supply framework and the resulting determination of equilibrium prices apply only to perfectly or highly competitive markets. We’ll now examine the concepts of demand and supply in more detail to see how managers can use this framework to analyze changes in prices and quantities of different products in various markets.

<sup>16</sup>Aaron Lucchetti, “Copper Limbo: Just How Low Can It Go?” *Wall Street Journal*, February 23, 1998.

## Demand

Although demand and supply are used in everyday language, these concepts have very precise meanings in economics.<sup>17</sup> It is important that you understand the difference between the economic terms and ordinary usage. We’ll look at demand first and turn our attention to supply later in the chapter.

<sup>17</sup>Even basic terms such as **demand** may be defined differently in various business disciplines. For example, in *Marketing Management, The Millennium Edition* (Prentice Hall, 2000), Philip Kotler defines **market demand** as “the total volume that would be bought by a defined customer group in a defined geographical area in a defined time period in a defined marketing environment under a defined marketing program” (p. 120). Since advertising and marketing expenditures are the focus of this discipline, demand is defined to emphasize these issues rather than price.

**Demand** is defined in economics as a functional relationship between the price of a good or service and the quantity demanded by consumers in a given period of time, *all else held constant*. (The Latin phrase *ceteris paribus* is often used in place of “all else held constant.”) A **functional relationship** means that demand focuses not just on the current price of the good and the quantity demanded at that price, but also on the relationship between different prices and the quantities that would be demanded at those prices. Demand incorporates a consumer’s willingness *and* ability to purchase a product.

## Nonprice Factors Influencing Demand

The demand relationship is defined with “all else held constant” because many other variables in addition to price influence the quantity of a product that consumers demand. The following sections summarize these variables, many of which were discussed in the opening case on the copper industry.

**Tastes and Preferences** Consumers must first desire or have tastes and preferences for a good. For example, in the aftermath of the September 11, 2001, terrorist attacks on New York and Washington, D.C., the tastes and preferences of U.S. consumers for airline travel changed dramatically. People were simply afraid to fly and did not purchase airline tickets regardless of the price charged. In October 2001, most of the major airlines began advertising campaigns to increase consumer confidence in the safety of air travel. United Airlines’ advertisements featured firsthand employee accounts, while American Airlines encouraged people to spend time with family and friends over the upcoming holidays and beyond.<sup>18</sup>

Changing attitudes toward cigarette smoking have had a major impact on Zippo Manufacturing Co., which produced “windproof” cigarette lighters for 78 years. Annual lighter sales decreased from 18 million in 1998 to 12 million in 2010. The company tried to influence consumer behavior with new lighter designs, including those with images of Elvis Presley and the Playboy logo. However, the company also developed new products including a men’s fragrance, casual clothing, watches, and camping supplies as a response to these changes in preferences.<sup>19</sup>

The U.S. pecan industry has been impacted by changing Chinese preferences for these nuts. China bought one-quarter of the U.S. crop in 2009, whereas the country had little demand five years earlier. A belief that eating pecans would help ward off Alzheimer’s disease and influence the brain development of babies helped generate this demand.<sup>20</sup>

The Japanese earthquake in March 2011 influenced the demand for luxury goods in that country. Although Japanese consumers traditionally were willing to pay some of the world’s highest prices for fashion and other luxury goods, surveys following the quake showed that many consumers believed that showing off luxury goods was in bad taste. Sales of expensive fashion items and accessories in Japan were second only to that in the United States before the quake.<sup>21</sup>

Socioeconomic variables such as age, gender, race, marital status, and level of education are often good proxies for an individual’s tastes and preferences for a particular good, because tastes and preferences may vary by these groupings and products are often targeted at one or more of these groups. Beer brewers have targeted Hispanics who will account for 23 percent of the nation’s legal-drinking-age

### Demand

The functional relationship between the price of a good or service and the quantity demanded by consumers in a given time period, *all else held constant*.

### Functional relationship

A relationship between variables, usually expressed in an equation using symbols for the variables, where the value of one variable, the independent variable, determines the value of the other, the dependent variable.

<sup>18</sup>Melanie Trottman, “Airlines Launch New Ad Campaigns Using Emotion to Restore Confidence,” *Wall Street Journal*, October 24, 2001.

<sup>19</sup>James R. Hagerty, “Zippo Preps for a Post-Smoker World,” *Wall Street Journal (Online)*, March 8, 2011.

<sup>20</sup>David Wessel, “Shell Shock: Chinese Demand Reshapes U.S. Pecan Business,” *Wall Street Journal (Online)*, April 18, 2011.

<sup>21</sup>Mariko Sanchanta, “Japan Grows Leery of Luxury,” *Wall Street Journal (Online)*, May 27, 2011.

population in 2030, particularly given the decline in overall sales due to high unemployment among men ages 21–34. Corona developed Spanish- and English-language advertisements focusing on luxurious beach settings to convey the brand's premium status. It also developed a 32-ounce bottled version of the beer designed for family gatherings that was targeted on states with large Hispanic populations, such as Arizona and California. MillerCoors began a campaign to promote its products to Mexican soccer fans.<sup>22</sup>

Similarly, Procter & Gamble Co. retargeted its marketing, changed its mix of celebrity spokeswomen, and increased the amount of Spanish on its products. This was part of its competitive strategy particularly in the U.S. toothpaste market where Colgate-Palmolive Co. built a dominant position based on its strength in Latin American markets. Procter & Gamble found that Hispanic customers were more likely to use fragrances in their homes than other sociodemographic groups. Hispanic households spent more on cleaning and beauty products and were more loyal to their brands than the average U.S. customer. Procter & Gamble also used actress Eva Mendes and singer-actress Jennifer Lopez as spokeswomen to promote its products in the Hispanic community.<sup>23</sup>

Economic theory may also suggest that one or more of these socioeconomic variables influences the demand for a particular good or service. For example, persons with more education are believed to be more knowledgeable about using preventive services to improve their health. Marital status may influence the demand for acute care and hospital services because married individuals have spouses who may be able to help take care of them in the home.<sup>24</sup> Thus, tastes and preferences encompass all the individualistic variables that influence a person's willingness to purchase a good.

**Income** The level of a person's income also affects demand, because demand incorporates both willingness and ability to pay for the good. If the demand for a good varies directly with income, that good is called a **normal good**. This definition means that, all else held constant, an increase in an individual's income will increase the demand for a normal good, and a decrease in that income will decrease the demand for that good. If the demand varies inversely with income, the good is termed an **inferior good**. Thus, an increase in income will cause a consumer to purchase less of an inferior good, while a decrease in that income will actually cause the consumer to demand more of the inferior good. Note that the term *inferior* has nothing to do with the quality of the good—it refers only to how purchases of the good or service vary with changes in income.

**Normal Goods** In many cases, the effect of income on particular goods and services is related to the general level of economic activity in the economy. Although jewelers used the transition from the year 1999 to 2000 to influence consumer tastes and preferences for jewelry, the strong economy and the booming stock market in 1999 also played a role in influencing demand.<sup>25</sup> On the other hand, the loss of both jobs and stock market wealth in fall 2008 caused retail spending to decline below already-weak forecasts.<sup>26</sup> This frugality continued throughout the recession and the slow recovery in the subsequent years. Wal-Mart noted an increase in pay-check-cycle shopping where consumers stocked up on products soon after getting

### Normal good

A good for which consumers will have a greater demand as their incomes increase, all else held constant, and a smaller demand if their incomes decrease, other factors held constant.

### Inferior good

A good for which consumers will have a smaller demand as their incomes increase, all else held constant, and a greater demand if their incomes decrease, other factors held constant.

<sup>22</sup>David Kesmodel, "Brewers Go Courting Hispanics," *Wall Street Journal (Online)*, July 12, 2011.

<sup>23</sup>Ellen Bryon, "Hola: P&G Seeks Latino Shoppers," *Wall Street Journal (Online)*, September 15, 2011.

<sup>24</sup>The demand for health and medical services is discussed in Donald S. Kenkel, "The Demand for Preventive Medical Care," *Applied Economics* 26 (April 1994): 313–25; and in Rexford E. Santerre and Stephen P. Neun, *Health Economics: Theories, Insights, and Industry Studies*, 4th ed. (Mason, OH: Thomson South-Western, 2007).

<sup>25</sup>Rebecca Quick, "Jewelry Retailers Have Gem of a Holiday Season," *Wall Street Journal*, January 7, 2000.

<sup>26</sup>Ann Zimmerman, "Retailers Wallow and See Only More Gloom," *Wall Street Journal*, November 7, 2008.

paid and moved toward smaller product sizes toward the end of the month when their cash ran low. Wal-Mart customers also demanded a return of a Depression-era strategy, layaway, which the company had cancelled in 2005. Target, which attracts more affluent customers than Wal-Mart, found that its sales rebounded more quickly to prerecession patterns than did Wal-Mart.<sup>27</sup>

Both increases in income and changes in tastes and preferences have resulted in an increased demand for gourmet pet food, especially for dogs. The head of Del Monte's food and pet division said in 2006 that "the humanization of pets is the single biggest trend driving our business."<sup>28</sup> Changes in tastes in human food spill over into the pet food market. However, the demand for gourmet pet food was also driven by the change in pet ownership from parents of small children, who had neither the time nor money to spend lavishly on their pets, to childless people ranging from gay couples to parents whose children have left home. These couples have larger incomes and treat their pets as they would their children.

**Inferior Goods** Firms producing inferior goods do not benefit from a booming economy. One such example is the pawnshop industry, which suffered during the economic prosperity of the late 1990s and 2000, as fewer people swapped jewelry and other items for cash to cover car payments and other debts.<sup>29</sup> Although pawnshops have always suffered from a somewhat disreputable image, the strong economy provided an income effect that further hurt the business and caused many chains to incur large losses.

Dollar stores' sales increased during the 2007 recession and moderated only somewhat during the slow recovery. These stores experienced increases in the number of customers who traded down out of economic necessity and who could have gone elsewhere but were still exercising frugality.<sup>30</sup> Payday lenders also increased their business during the recession. Although these companies often charged interest rates of more than 500 percent on their loans, they developed strategies to lure customers away from traditional banks by appealing to people with substandard credit records. The 22 payday loan offices in West Palm Beach, Florida made \$328.9 million in loans in fiscal year 2010, an increase of 119 percent from fiscal year 2008.<sup>31</sup>

In the health care area, it is argued that tooth extractions are an example of an inferior good. As individuals' incomes rise, they are able to afford more complex and expensive dental restorative procedures, such as caps and crowns, and they are able to purchase more regular preventive dental services. Thus, the need for extractions decreases as income increases.<sup>32</sup>

**Prices of Related Goods** There are two major categories of goods or products whose prices influence the demand for a particular good: substitute goods and complementary goods.

**Substitute Goods** Products or services are **substitute goods** for each other if one can be used in place of another. Consumers derive satisfaction from either good or service. If two goods,  $X$  and  $Y$ , are substitutes for each other, an increase in the price of good  $Y$  will cause consumers to decrease their consumption of

### Substitute goods

Two goods,  $X$  and  $Y$ , are substitutes if an increase in the price of good  $Y$  causes consumers to *increase* their demand for good  $X$  or if a decrease in the price of good  $Y$  causes consumers to *decrease* their demand for good  $X$ .

<sup>27</sup>Ann Zimmerman, "Frontier of Frugality," *Wall Street Journal (Online)*, October 4, 2011.

<sup>28</sup>Deborah Ball, "Nothing Says, 'I Love You, Fido' Like Food with Gourmet Flair," *Wall Street Journal*, March 18, 2006.

<sup>29</sup>Kortney Stringer, "Best of Times Is Worst of Times for Pawnshops in New Economy," *Wall Street Journal*, August 22, 2000.

<sup>30</sup>Zimmerman, "Frontier of Frugality."

<sup>31</sup>Jessica Silver-Greenberg, "Payday Lenders go Hunting: Operations Encroach on Banks during Loan Crunch; 'Here, I Feel Respected,'" *Wall Street Journal (Online)*, December 23, 2010.

<sup>32</sup>Rexford E. Santerre and Stephen P. Neun, *Health Economics: Theories, Insights, and Industry Studies*, rev. ed. (Orlando, FL: Dryden, 2000), 90.

good  $Y$  and increase their demand for good  $X$ . If the price of good  $Y$  decreases, the demand for substitute good  $X$  will decrease. Thus, changes in the price of good  $Y$  and the demand for good  $X$  move in the same direction for substitute goods. The amount of substitution depends on the consumer's tastes and preferences for the two goods and the size of the price change.

By 2006 the abundance and relatively low prices of cell phones, iPods, and laptop computers resulted in many teens and young adults no longer purchasing wristwatches. In 2005, sales of watches priced between \$30 and \$150, the type most often purchased by these age groups, declined more than 10 percent from 2004.<sup>33</sup> In response to this threat from substitute products, watchmakers developed new models that do much more than tell time, including watches with earbuds that play digital music files, watches with programmable channels, and models with compasses and thermometers.

In 2007, large increases in the price of platinum resulted in an increased demand for palladium, a lesser-known platinum-group metal. The price of an ounce of platinum was approximately \$1,190 compared with \$337 for an ounce of palladium. Because the two metals have a similar look and feel, many jewelers offered palladium to customers as a less expensive alternative, particularly for wedding and engagement rings. World demand for palladium in jewelry was 1.12 million ounces in 2006 compared with 1.74 million ounces for platinum.<sup>34</sup>

There are many substitutes for a given brand of bottled water, including both other types of drinks and other brands of water. Customers bought less of Nestle's bottled water during the 2007 recession, due to both the loss of income and the switch to the large number of cheaper private-label brands launched by supermarkets. Nestle responded by pushing Pure Life, a lower-priced water derived from purified municipal sources.<sup>35</sup>

### Complementary goods

Two goods,  $X$  and  $Y$ , are complementary if an increase in the price of good  $Y$  causes consumers to decrease their demand for good  $X$  or if a decrease in the price of good  $Y$  causes consumers to increase their demand for good  $X$ .

**Complementary Goods** Complementary goods are products or services that consumers use together. If products  $X$  and  $Y$  are complements, an increase in the price of good  $Y$  will cause consumers to decrease their consumption of good  $Y$  and their demand for good  $X$ , since  $X$  and  $Y$  are used together. Likewise, if the price of good  $Y$  decreases, the demand for good  $X$  will increase. Changes in the price of good  $Y$  and the demand for good  $X$  move in the opposite direction if  $X$  and  $Y$  are complementary goods.

As prices of personal computers have dropped over time, there has been an increased demand for printers and printer cartridges. This complementary relationship has allowed Hewlett-Packard Company to actually sell its printers at a loss that it recouped through its new ink and toner sales. Analysts estimated that in 2005 the company earned at least a 60 percent profit margin on both ink and toner cartridges and two-thirds of the company's profits were derived from these sales. In 2006, Walgreen Company, the drugstore chain, announced plans for an ink-refill service in 1,500 of its stores with a price at less than half the cost of buying new cartridges.<sup>36</sup> OfficeMax and Office Depot also offered these services. This example shows how a complementary relationship between two goods can create a profit opportunity for a firm, which then may still be competed away by the development of substitute goods.

**Future Expectations** Expectations about future prices also play a role in influencing current demand for a product. If consumers expect prices to be lower in the future, they may have less current demand than if they did not have those

<sup>33</sup>Jessica E. Vascellaro, "The Times They Are a-Changin'," *Wall Street Journal*, January 18, 2006.

<sup>34</sup>Elizabeth Holmes, "Palladium, Platinum's Cheaper Sister, Makes a Bid for Love," *Wall Street Journal*, February 13, 2007.

<sup>35</sup>Deborah Ball, "Bottled Water Pits Nestle vs. Greens," *Wall Street Journal (Online)*, May 25, 2010.

<sup>36</sup>Pui-Wing Tam, "A Cheaper Way to Refill Your Printer," *Wall Street Journal*, January 26, 2006.

expectations. In 2011, steel prices fell due to decreased demand arising from unrest in the Middle East, the impact of Japan's earthquake and tsunami, and relatively high supply. Yet some buyers, including Moscow-based Central Steel Co., held off on further purchases, given an expectation that prices would drop another 2–5 percent in the following weeks. A U.K.-based steel consulting firm noted that many Western European customers with adequate stockpiles were also waiting on the sidelines for future price decreases.<sup>37</sup>

Likewise, if prices are expected to increase, consumers may demand more of the good at present than they would without these expectations. In fall 2007, world grain prices were surging from major demand increases stimulated by U.S. government incentives encouraging businesses to turn corn and soybeans into motor fuel, increased incomes from the growing economies of Asia and Latin America, and a growing middle class in these areas that was eating more meat and milk, increasing the demand for grain to feed the livestock. Even though U.S. corn farmers expected a record harvest, which should have had a moderating effect on grain prices, traders in the futures markets for corn were already betting that the price of corn would increase from \$3.25 per bushel to more than \$4.00 in March 2008 and would stay above that level until 2010.<sup>38</sup>

**Number of Consumers** Finally, the number of consumers in the marketplace influences the demand for a product. A firm's marketing strategy is typically based on finding new groups of consumers who will purchase the product. In many cases, a country's exports may be the source of this increased demand. Although the U.S. timber industry continued to be depressed in 2011 from the weakness in the U.S. housing market, exports to China surged, particularly from mills in the Pacific Northwest. Russia increased tariffs on its exports to China in 2007, so Chinese buyers turned to the United States and Canada to satisfy the demand arising from that country's construction boom. The number of U.S. logs shipped to China increased more than 10 times between 2007 and 2010.<sup>39</sup>

The effect of growing populations on demand and grain prices was discussed above in the "Future Expectations" section of the chapter. Both increases in the size of the population in Asian and Latin American economies and growth in the middle-class segments of these economies had a stimulating effect on the demand for many types of grain.

## Demand Function

We can now summarize all the variables that influence the demand for a particular product in a generalized demand function represented as follows:

$$2.1 \quad Q_{XD} = f(P_X, T, I, P_Y, P_Z, EXC, NC, \dots)$$

where

$Q_{XD}$  = quantity demanded of good  $X$

$P_X$  = price of good  $X$

$T$  = variables representing an individual's tastes and preferences

$I$  = income

$P_Y, P_Z$  = prices of goods  $Y$  and  $Z$ , which are related to the consumption of good  $X$

$EXC$  = consumer expectations about future prices

$NC$  = number of consumers

<sup>37</sup>Robert Guy Matthews, "Steel Price Softens as Supply Solidifies," *Wall Street Journal (Online)*, April 10, 2011.

<sup>38</sup>Scott Kilman, "Historic Surge in Grain Prices Roils Market," *Wall Street Journal*, September 28, 2007.

<sup>39</sup>Jim Carlton, "Chinese Demand Lifts U.S. Wood Sales," *Wall Street Journal (Online)*, February 8, 2011.

### Individual demand function

The function that shows, in symbolic or mathematical terms, the variables that influence the quantity demanded of a particular product by an individual consumer.

### Market demand function

The function that shows, in symbolic or mathematical terms, the variables that influence the quantity demanded of a particular product by all consumers in the market and that is thus affected by the number of consumers in the market.

### Demand curve

The graphical relationship between the price of a good and the quantity consumers demand, with all other factors influencing demand held constant.

### Demand shifters

The variables in a demand function that are held constant when defining a given demand curve, but that would shift the demand curve if their values changed.

### Negative (inverse) relationship

A relationship between two variables, graphed as a downward sloping line, where an increase in the value of one variable causes a decrease in the value of the other variable.

Equation 2.1 is read as follows: The quantity demanded of good  $X$  is a function ( $f$ ) of the variables inside the parentheses. An ellipsis is placed after the last variable to signify that many other variables may also influence the demand for a specific product. These may include variables under the control of a manager, such as the size of the advertising budget, and variables not under anyone's control, such as the weather.

Each consumer has his or her own **individual demand function** for different products. However, managers are usually more interested in the **market demand function**, which shows the quantity demanded of the good or service by *all* consumers in the market at any given price. The market demand function is influenced by the prices of related goods, as well as by the tastes and preferences, income, and future expectations of all consumers in the market. It can also change because more consumers enter the market.

## Demand Curves

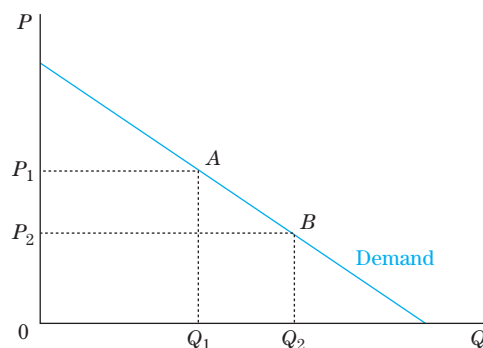
Equation 2.1 shows the typical variables included in a demand function. To systematically analyze all of these variables, economists define demand as we did earlier in this chapter: the functional relationship between alternative prices and the quantities consumers demand at those prices, all else held constant. This relationship is portrayed graphically in Figure 2.1, which shows a **demand curve** for a given product. Price ( $P$ ), measured in dollar terms, is the variable that is explicitly analyzed and shown on the vertical axis of the graph. Quantity demanded ( $Q$ ) is shown on the horizontal axis. The other variables in the demand function are held constant with a given demand curve, but act as **demand shifters** if their values change.

As we just mentioned, demand curves are drawn with the price placed on the vertical axis and the quantity demanded on the horizontal axis. This may seem inconsistent because we usually think of the quantity demanded of a good (dependent variable) as a function of the price of the good (independent variable). The dependent variable in a mathematical relationship is usually placed on the vertical axis and the independent variable on the horizontal axis. The reverse is done for demand because we also want to show how revenues and costs vary with the level of output. These variables are placed on the vertical axis in subsequent analysis. In mathematical terms, an equation showing quantity as a function of price is equivalent to the inverse equation showing price as a function of quantity.

Demand curves are generally downward sloping, showing a **negative or inverse relationship** between the price of a good and the quantity demanded at that price, all else held constant. Thus, in Figure 2.1, when the price falls from  $P_1$  to  $P_2$ , the quantity demanded is expected to increase from  $Q_1$  to  $Q_2$ , if nothing else changes. This is represented by the movement from point  $A$  to point  $B$  in Figure 2.1. Likewise, an increase in the price of the good results in a decrease in quantity demanded, all else held constant. Most demand curves that show real-world behavior exhibit this

**FIGURE 2.1**  
**The Demand Curve for a Product**

A demand curve shows the relationship between the price of a good and the quantity demanded, all else held constant.



inverse relationship between price and quantity demanded. (We'll later discuss the economic model of consumer behavior that lies behind this demand relationship.) (Chapter 3 appendix.)

## Change in Quantity Demanded and Change in Demand

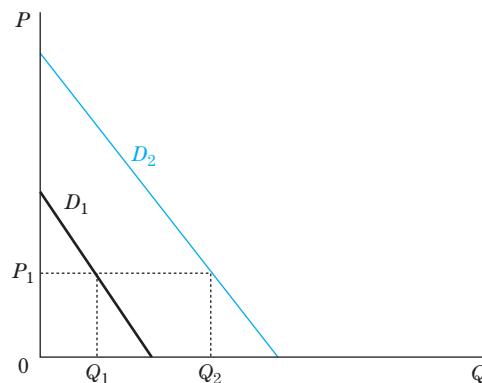
The movement between points *A* and *B* along the demand curve in Figure 2.1 is called a **change in quantity demanded**. It results when consumers react to a change in the price of the good, all other factors held constant. This change in quantity demanded is pictured as a movement along a given demand curve.

It is also possible for the entire demand curve to shift. This shift results when the values of one or more of the other variables in Equation 2.1 change. For example, if consumers' incomes increase, the demand curve for the particular good generally shifts outward or to the right, assuming that the good is a normal good. This shift of the entire demand curve is called a **change in demand**. It occurs when one or more of the variables held constant in defining a given demand curve changes.

This distinction between a change in demand and a change in quantity demanded is very important in economic analysis. The two phrases mean something different and should not be used interchangeably. The distinction arises from the basic economic framework, in which we examine the relationship between two variables while holding all other factors constant.

An increase in demand, or a rightward or outward shift of the demand curve, is shown in Figure 2.2. We've drawn this shift as a parallel shift of the demand curve, although this doesn't have to be the case. Suppose this change in demand results from an increase in consumers' incomes. The important point in Figure 2.2 is that an increase in demand means that consumers will demand a larger quantity of the good *at the same price*—in this case, due to higher incomes. This outcome is contrasted with a movement along a demand curve or a change in quantity demanded, where a larger quantity of the good is demanded *only at a lower price*. This distinction can help you differentiate between the two cases.

Changes in any of the variables in a demand function, *other than the price of the product*, will cause a shift of the demand curve in one direction or the other. Thus, the relationship between quantity demanded and the first variable on the right side of Equation 2.1 (price) determines the slope of the curve (downward sloping), while the other right-hand variables cause the curve to shift. In Figure 2.2, we assumed that the good was a normal good so that an increase in income would result in an increase in demand, or a rightward shift of the demand curve. If the good was an inferior good, this increase in income would result in a decrease in demand, or a leftward shift of the curve. An increase in the price of a substitute good would cause the demand curve for the good in question to shift rightward, while an increase in the price of a complementary good would cause a leftward



**FIGURE 2.2**

### Change (Increase) in Demand

A change in demand occurs when one or more of the factors held constant in defining a given demand curve changes.

### Change in quantity demanded

The change in quantity consumers purchase when the price of the good changes, all other factors held constant, pictured as a movement along a given demand curve.

### Change in demand

The change in quantity purchased when one or more of the demand shifters change, pictured as a shift of the entire demand curve.