MICROECONOMICS

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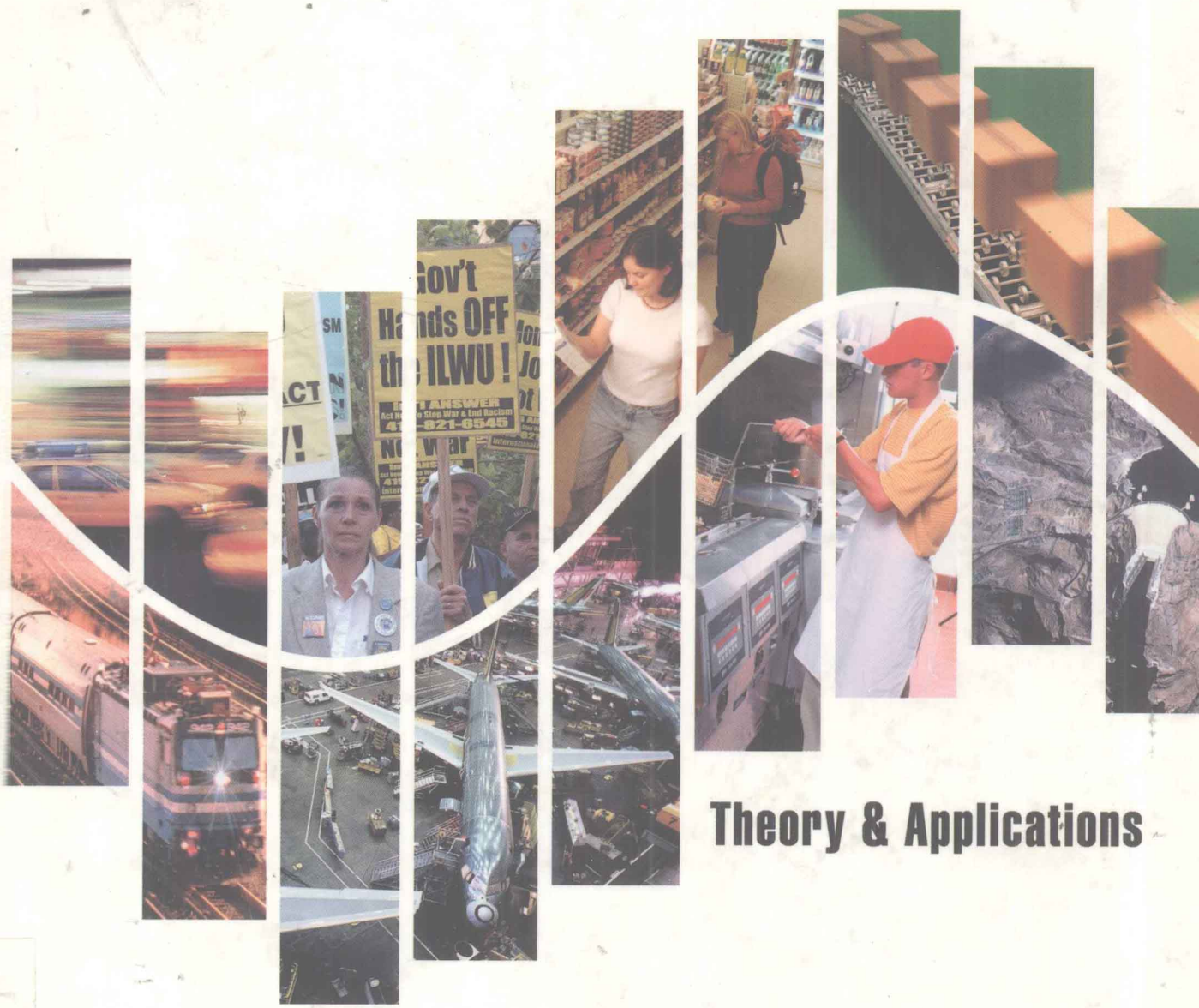

Theory & Applications

EDGAR K. BROWNING MARK A. ZUPAN

Microeconomics: Theory & Applications

Eighth Edition

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PREFACE

In early 2000, horror writer Stephen King opted to bypass the assistance of a traditional publisher and sell his latest novel, "The Plant," in serial form directly to readers through the Internet. King distributed the novel a chapter at a time through an honor-system payment plan. Namely, readers were asked to voluntarily pay $1 for each chapter downloaded. In turn, King promised to keep publishing additional chapters so long as at least 75 percent of all readers complied with the payment plan. Much to the writer's chagrin (and, need we say, horror), only 46 percent of the chapter downloads ended up being paid for. As a consequence, publication of "The Plant" was discontinued in late 2000.

A thorough knowledge of microeconomics would have served to forewarn Stephen King about the possible pitfalls associated with his Internet publishing experiment (as we show in Chapter 20). This is because the "free-rider" problem that resulted in less than 50 percent of the readers paying for the chapters they downloaded is a principle of microeconomics that has been both theoretically demonstrated and empirically documented. The "free-rider" problem can plague Internet-based initiatives such as Stephen King's much as it historically has hindered the effective provision of, among other things, roads, dams, defense, vaccinations, and technological innovations.

More broadly, we show throughout this text how microeconomics can help students understand how markets operate. Out intention with this edition of the text is to give students the fundamental tools of analysis and to show how the tools can be used to explain and predict market phenomena. To this end, we present basic microeconomic principles in a clear, thorough way, using numerous applications to illustrate the use of theory and to reinforce students' understanding of it.

We believe that microeconomics is the most important course in the undergraduate economics curriculum. We also believe that understanding microeconomics provides an essential foundation to any bachelor's or master's degree business student. As a result, our text is written so that both economics and business students will learn microeconomic theory and how to use it correctly.

ORGANIZATION AND CONTENT

The eighth edition of *Microeconomics: Theory and Applications* continues to reflect our belief that it is better for students to be exposed to thorough coverage of fundamental microeconomic concepts and techniques than to skim through a superficial treatment of a great number of topics, many of which they will never encounter again. The enthusiastic reception given the first seven editions suggests that a large number of instructors also share this view. Apart from the emphasis on the core principles of microeconomics and how to use them, the text is by and large conventional in structure and organization except for one feature: Four chapters are devoted exclusively to applications. These are Chapter 5, "Using Consumer Choice Theory"; Chapter 10, "Using the Competitive Model"; Chapter 15, "Using Noncompetitive Market Models"; and Chapter 18, "Using Input Market Analysis."

A distinguishing feature of the text is the attention we give to input market analysis. Traditionally, this has been a weak area in most microeconomics texts, with seldom more than two, and frequently only one, chapter(s) on the subject. Yet in a fundamental quantitative sense, input markets and product markets are of equal importance, because the sum of incomes generated in input markets (national income) equals total outlays on goods and services (national product). Moreover, public policy issues relating to input markets have

become increasingly important, as suggested by the recent attention given to managerial compensation, income distribution, welfare programs, discrimination, comparable worth, interest rates and investment, and minimum wage legislation. Consequently, we devote three chapters to the subject of input market analysis (Chapters 16 through 18).

Because all microeconomics courses are not taught the same way, the text is designed to give instructors great flexibility in adapting the book to their requirements. For example, in a short course emphasizing the theoretical underpinnings of partial equilibrium analysis, the instructor might cover only Chapters 1 through 4, 7 through 11, 16, and 17. A longer, more theoretically oriented course could include all chapters except that most instructors will steer a middle course and select three or four applications from each of these chapters (the way we normally use the material). In addition, instructors can either assign the applications as they appear in the text—following the development of the theory—or integrate them into their presentations of the theory chapters.

APPLICATIONS

We believe that a large dose of applications is an essential ingredient in any microeconomics course. Although economists know that microeconomics is important and often exciting, students occasionally need to be convinced that this is so. Applications serve this purpose. In addition, they enliven the subject for students and help them better appreciate the theory. Time permitting, the more applications covered, the better prepared students will be to use the theory on their own.

Each of the four applications chapters (Chapters 5, 10, 15, and 18) contains four to seven longer applications that use and reinforce the graphical and logical techniques developed in the theory chapters. In Chapter 10, for example, the competitive model is employed to analyze taxicab licensing, airline regulation, and international trade. In Chapter 18, "Using Input Market Analysis," the theory is applied to discrimination, the incidence of the Social Security payroll tax, and the effects of the National Collegiate Athletic Association on college football players.

Applications are not relegated exclusively to the four applications chapters; all other chapters contain several shorter applications. We feel, however, that it is appropriate to use more applications in some areas than in others. For example, it seems a misallocation of limited textbook space to include as many applications for general equilibrium theory as for the competitive and monopoly models. Not only are the applications in the latter two areas likely to be more interesting to students, they are also likely to provide more useful background for students' later work.

CHANGES IN THE EIGHTH EDITION

Based on comments from users and reviewers of the seventh edition, as well as our own desire to further improve the text, we have revised it in three important ways. These ways are aimed to enhance the hallmarks of the text: namely, the wealth of real-world illustrations of microeconomic theory at work; clarity of exposition; and coverage of cutting-edge concepts and applications.

Only the Best Applications (and More of Them)

When asked to identify strengths of this text, reviewers and users overwhelmingly cite the applications—the four chapters devoted to longer illustrations of microeconomic theory at work as well as the 120-plus shorter applications sprinkled throughout other chapters. To continue building on this hallmark of our text, we rely on a systematic rating system

whereby we ask reviewers to evaluate each of the applications. Based on their responses, we have added 25 new applications in this edition. The topical issues they address include the cost of growing traffic gridlock; why price ceilings are proving deadly to individuals seeking an organ transplant; how Arizona learned about the Law of Demand when its Legislature passed a law subsidizing motor vehicles using alternative fuels; reasons for the decline of public transit as a means of getting to work; tax avoidance and online commerce; the effect of 9-11-01 on U.S. production costs; why sugar import quotas have been U.S. job losers at the company making Life Savers; the method to "mothballing" aircraft and oil tankers; and the effect of the Internet on the price of life insurance.

We have retained (and enhanced, whenever possible) the top 80 percent of the applications in the previous edition. These cover topics such as electricity bills in California since deregulation; the effect of Napster and other follow-on music swapping services on economic efficiency; water allocation in California; the returns to investing in a BA and an MBA; compensating wage differentials for "glowboys"—individuals who fix steel pipes in aging nuclear power plants; monopsony in Major League Baseball; the profitability of demolishing a "profitable" Hong Kong hotel; why company health benefits are tax exempt; why cigarette company profits did not get smoked by a recent $246 billion punitive damages award; the reasons why getting an appointment with a doctor takes so long; the rise of mail-order and online shopping; and whether or not there is a parking shortage in major American cities.

A number of the previous applications weeded out by our latest round of looking for only the best and most current illustrations have been used to add to the review problems at the end of each chapter. For example, this edition includes nearly 70 new end-of-chapter problems. These added problems allow students to test the extent to which they have grasped key economic concepts through having to apply the theory within some exceedingly relevant settings.

By culling the cream of the applications from the preceding edition and adding numerous interesting demonstrations of the way microeconomic theory can be used to explain and predict real-world phenomena, we've made the book's outstanding feature—its application—stronger than ever in this revision.

Clarity of Exposition

A second key feature of the text consistently noted by adopters and reviewers is its clarity of exposition. To strengthen this feature, we have looked carefully at each chapter—applying Occam's razor to make our explanations as straightforward and clear as possible. One telling manifestation of the care that has been applied is that the text is approximately a full pound lighter than its closest market competitor notwithstanding being as thorough in the topics covered. The expositional clarity we believe translates into an important benefit for students of microeconomics—superior comprehension.

A Commitment to the Cutting Edge

The previous edition paid particular focus to the then-so-called "New Economy." We stressed how the New Economy didn't invalidate microeconomic theory and why, if anything, knowledge of microeconomics was as critical to understanding the New Economy as the Old Economy. We believe that the past few years have convincingly served to prove our argument. Namely, the economic downturn of the first few years of the new century has provided numerous examples that confirm time-tested theory.

The New Economy, however, did serve to highlight particular aspects of microeconomic theory such as network effects, economies of scale, static versus dynamic views of efficiency, and property rights. We have remained mindful of these aspects in this latest edition of our text and have added coverage of certain cutting-edge topics we think are of particular relevance to today's economics students. For example, in our chapter 8 discussion of production

cost, we have added a section on Learning by Doing. Additions to other chapters include an exploration of the diffusion of communication technologies and computer hardware and software; experiments in California to establish property rights to highway transit; examples of a successful school choice initiative (the GI bill) conducted over fifty years ago that might serve to inform today's debate on the topic; an analysis of the explosive growth of the DVD market; why recently passed steel protectionist legislation steals U.S. jobs; and an investigation of the expanding legal arena and why opposing lawyers are more likely to cooperate when their interaction on different cases is more frequent.

PEDAGOGICAL AIDS

Several other in-text pedagogical aids help students to structure and retain information.

Chapter Outlines and Learning Objectives

Each chapter begins with an outline as well as a list of key learning objectives. These offer a preview of the chapter content and help structure study and review.

Glossary

A running glossary has been added in the margins of the text as a way to cement students' understanding of key concepts and terms.

Graphs

We have paid careful attention to the graphs used in the text. Unusually thorough explanations of graphs are given. Furthermore, the explanatory captions and liberal use of color will help students follow the text discussion and understand graphical analysis.

End-of-Chapter Aids

A summary at the end of each chapter highlights the important points of the chapter to help students review their knowledge of the basic material. More than 450 review questions and problems test students on chapter material and require them to solve analytical exercises. Answers to questions and problems with asterisks are provided at the end of the book.

ANCILLARIES

A *Study Guide*, prepared by John Lunn, Hope College, is available to give students further review and practice in the use of microeconomic theory. The Study Guide features chapter-by-chapter analysis of key concepts, applications of the theory, review questions, multiple choice questions, and discussion questions, problems, and answers.

An *Instructor's Manual*, written by the text authors and Andrew Foshee, McNeese State University, also accompanies the text. Each chapter in the manual features a chapter outline, general comments on the chapter, specific section-by-section comments, and suggestions that may help in developing lectures and class discussion topics. The Appendix in the Instructor's Manual contains the answers to those questions and problems in the text that are not already answered at the end of the text.

A set of Powerpoint presentations, which consists of enlarged versions of all the figures contained in the text, is also available. This set can be used to create overhead transparencies for viewing in the classroom or they can be copied and used as handouts for students.

The *Test Bank* prepared by Mark Foley, Davidson College, contains 1,500 multiple-choice questions with answers. This Test Bank, which is also available electronically, shows instructors how to customize their exams.

A dedicated *Web site* with extensive resources for both students and professors (http://www.wiley.com/college/browning) is also available.

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Special mention should be made of the late Jacquelene M. Browning, who was the coauthor of the first four editions. Her pedagogical skills, together with her insistence that the text be one from which students could learn effectively, continue to have a profound influence in the present edition.

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This book is dedicated to our families without whose unflagging encouragement and support our vision for the book would have never become a reality.

Edgar K. Browning
Mark A. Zupan

TAKE A CLOSER LOOK AT "A BOOK THAT WORKS"

Instructors who use Browning/Zupan often describe it as "a book that works." In preparing the eighth edition, we set out to learn exactly what users of the book mean when they describe it this way. In the guided tour of the book that follows, we'll describe what we learned: that when adopters say Browning/Zupan is a book that works, they are referring to the simple clear presentation of the book, the thorough way that concepts are developed in the graphs and the way applications are used to incite student interest. Here are some examples.

PREFACE

In early 2000, horror writer Stephen King opted to bypass the assistance of a traditional publisher and sell his latest novel, "The Plant," in serial form directly to readers through the Internet. King distributed the novel a chapter at a time through an honor-system payment plan. Namely, readers were asked to voluntarily pay $1 for each chapter downloaded. In turn, King promised to keep publishing additional chapters so long as at least 75 percent of all readers complied with the payment plan. Much to the writer's chagrin (and, need we say, horror), only 46 percent of the chapter downloads ended up being paid for. As a consequence, publication of "The Plant" was discontinued in late 2000.

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Vivid and lively writing.
From the first words of the preface to the end of the book, the authors bring microeconomics to life. Even complex material is presented in a way that today's students can handle and appreciate.

5.3

PAYING FOR GARBAGE

The Borough of Perkasie, a small Pennsylvania town, had a problem: throughout the 1980s its trash collection costs rose rapidly.[5] The local government devised an innovative solution to the problem by changing the way residents paid to have their trash picked up. Historically, Perkasie residents paid a fixed annual fee of $120 per residence for garbage collection, a system of payment typical of many U.S. communities. Under the new plan introduced in 1988, there is no annual fee but garbage is picked up only when it is placed in specially marked, black plastic bags. The bags are sold by the town at a price greater than their cost; for example, each large bag costs $1.50. The net revenue from sale of the bags (revenue less the cost of the bags to the town) is used to finance the town's trash collection services.

This change in the system of paying for garbage collection produced some dramatic effects in Perkasie. The amount of trash collected dropped nearly 50 percent, the average household spent about 30 percent less on garbage collection, and the town saved 40 percent on its garbage collection costs. Why did these changes occur? The answer lies in considering the incentives faced by households under the two payment systems. With a fixed annual fee, households faced an effective price of zero for the trash collection service: if a household doubled the amount of its trash, it bore no additional cost. In effect, the fixed fee gave no incentive to cut down on the amount of trash generated. By contrast, under the bag system, when more trash is generated, more bags have to be purchased and households bear a cost directly associated with generating more trash. Basically, switching to the bag

The slope of an indifference curve, the *MRS*, now shows how much the consumer is willing to reduce outlays on other goods to obtain one more compact disc. With market basket *B*, for example, the consumer is willing to give up $15 worth of other goods in exchange for an additional disc. Note that this *MRS* is still a measure of the consumer's willingness to substitute among real goods, but now dollar outlays measure the quantity of other goods the consumer is willing to sacrifice in return for compact discs.

Figure 3.13 shows the optimal point for the consumer is *W*, where the budget line is tangent to an indifference curve. At *W*, the consumer is just willing to give up $12 worth of other goods for another compact disc, indicating an *MRS* of $12 per compact disc. This figure equals the market price that must be paid for another compact disc (that is, the slope of the budget line, $P_C/1$, equals $12 per compact disc).

The optimal market basket *W* consists of five compact discs and $60 (*A'*) devoted to the purchase of other goods. The total outlay on compact discs can also be shown as the distance *AA'*. Because the consumer has an income of *A* ($120) and, after buying compact discs, has *A'* ($60) left to spend on other goods, the difference ($A - A' = AA'$), or $60, is the total cost of the five compact discs. The difference between the consumer's total income and the amount spent on everything else except compact discs reflects the amount of the consumer's income spent on compact discs.

Thus, we see that using the composite-good convention does not change the substance of our analysis. The consumer's optimal point still involves a balancing of the relative desirability of goods with their relative costs.

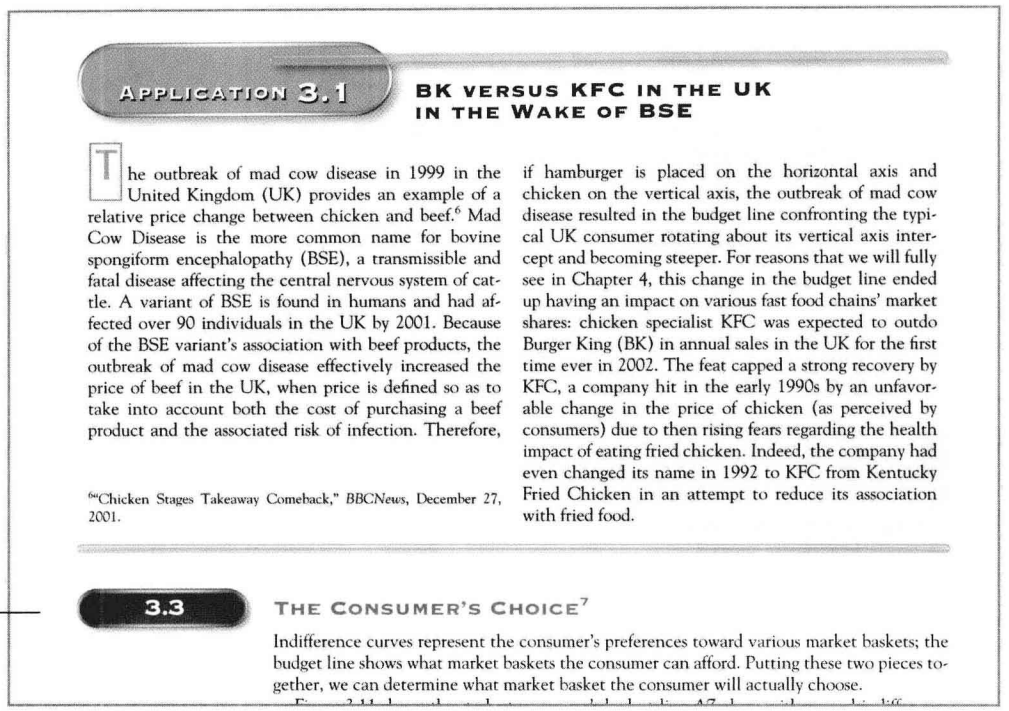
APPLICATION 3.2 CONSUMERS' VALUATION OF AIR BAGS

In 1988, only 2 percent of the new cars sold in the United States were equipped with air bags. By 1996, more than 90 percent of all new cars sold came with this safety feature. Why the dramatic increase?

Surprisingly, perhaps, the increase does not reflect a government mandate—a federal law requiring air bags in new vehicles did not take effect until 1998. Rather, an analysis of households purchasing a new car during 1990–1993 reveals that consumers were willing to trade increasingly more of their total outlays on other goods in exchange for an air bag over this time period. Moreover, the increase in the amount of the composite good consumers were willing to exchange for an air bag appears to reflect information about actual experiences with air bags, conveyed through the media and by friends. According to the analysis, the average willingness to pay for a driver-side air bag increased from $331 in 1990 to $512 in 1993. The amount a particular consumer was willing to pay for a driver-side air bag was positively related to the consumer's reported number of hours of television viewing per day and the number of friends owning cars equipped with air bags. According to the study's authors: "Friends provide opportunities for demonstration effects, while television viewing provides opportunities to obtain hard evidence of air bag effectiveness through automakers' advertisements and occasional news stories that feature people who actually survived serious automobile crashes because of air bags."[9]

Although some more recent news has questioned the extent to which air bags promote the safety of vehicular occupants and has negatively affected the extent to which drivers are willing to pay for air bags, it remains clear that consumers' valuation of air bags is a key reason why such a safety feature became commonplace in motor vehicles in the United States.

[9]Fred Mannering and Clifford Winston, "Automobile Air Bags in the 1990s: Market Failure or Market Efficiency?" *Journal of Law and Economics*, 38 No. 2 (October 1995), pp. 265–280.



APPLICATION 3.1

BK VERSUS KFC IN THE UK IN THE WAKE OF BSE

The outbreak of mad cow disease in 1999 in the United Kingdom (UK) provides an example of a relative price change between chicken and beef.[6] Mad Cow Disease is the more common name for bovine spongiform encephalopathy (BSE), a transmissible and fatal disease affecting the central nervous system of cattle. A variant of BSE is found in humans and had affected over 90 individuals in the UK by 2001. Because of the BSE variant's association with beef products, the outbreak of mad cow disease effectively increased the price of beef in the UK, when price is defined so as to take into account both the cost of purchasing a beef product and the associated risk of infection. Therefore, if hamburger is placed on the horizontal axis and chicken on the vertical axis, the outbreak of mad cow disease resulted in the budget line confronting the typical UK consumer rotating about its vertical axis intercept and becoming steeper. For reasons that we will fully see in Chapter 4, this change in the budget line ended up having an impact on various fast food chains' market shares: chicken specialist KFC was expected to outdo Burger King (BK) in annual sales in the UK for the first time ever in 2002. The feat capped a strong recovery by KFC, a company hit in the early 1990s by an unfavorable change in the price of chicken (as perceived by consumers) due to then rising fears regarding the health impact of eating fried chicken. Indeed, the company had even changed its name in 1992 to KFC from Kentucky Fried Chicken in an attempt to reduce its association with fried food.

[6]"Chicken Stages Takeaway Comeback," *BBCNews*, December 27, 2001.

3.3 THE CONSUMER'S CHOICE[7]

Indifference curves represent the consumer's preferences toward various market baskets; the budget line shows what market baskets the consumer can afford. Putting these two pieces together, we can determine what market basket the consumer will actually choose.

Relevant examples and lots of them.
The book shows students why the concepts of microeconomics are important and relevant to their lives by using over 120 current, high-interest applications to illustrate the concepts.

In addition to the many brief applications, four chapters of the book contain in-depth applications—showing students how microeconomics relates to a business career. These are Chapter 5 on using consumer choice theory, Chapter 10 on using the competitive model, Chapter 15 on using noncompetitive market models and Chapter 18 on using input market analysis.

FIGURE 3.1

An Indifference Curve
The indifference curve, U_1, shows all the combinations of movie passes and compact discs that the consumer considers equally satisfactory. The consumer prefers any market basket lying above U_1 (like point E) to all market baskets on U_1, and any market basket on U_1 is preferred to any market basket lying below U_1.

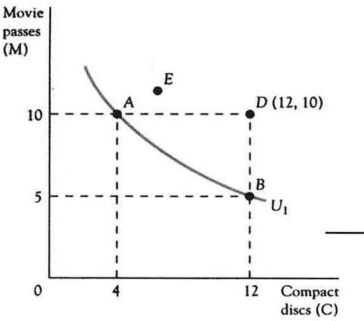
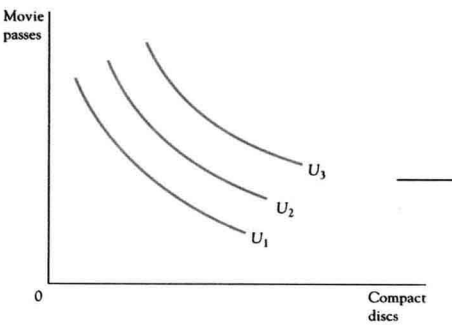


FIGURE 3.2

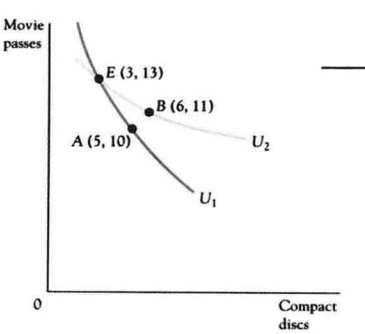
An Indifference Map
A set of indifference curves, or an indifference map, indicates how a consumer ranks all possible market baskets. Market baskets lying on indifference curves farther from the origin are preferred to those on curves closer to the origin.



Graphs that teach. Browning/Zupan have developed a set of graphs that do not merely depict data, but go much further to patiently illustrate and teach complex concepts. In many cases, this book uses a series of two or three progressive graphs to illustrate a concept, where many books would use just one.

FIGURE 3.3

Why Intersecting Indifference Curves Are Inconsistent
Intersecting indifference curves are inconsistent with rational choice; they violate the assumptions of nonsatiation and transitive preferences.



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