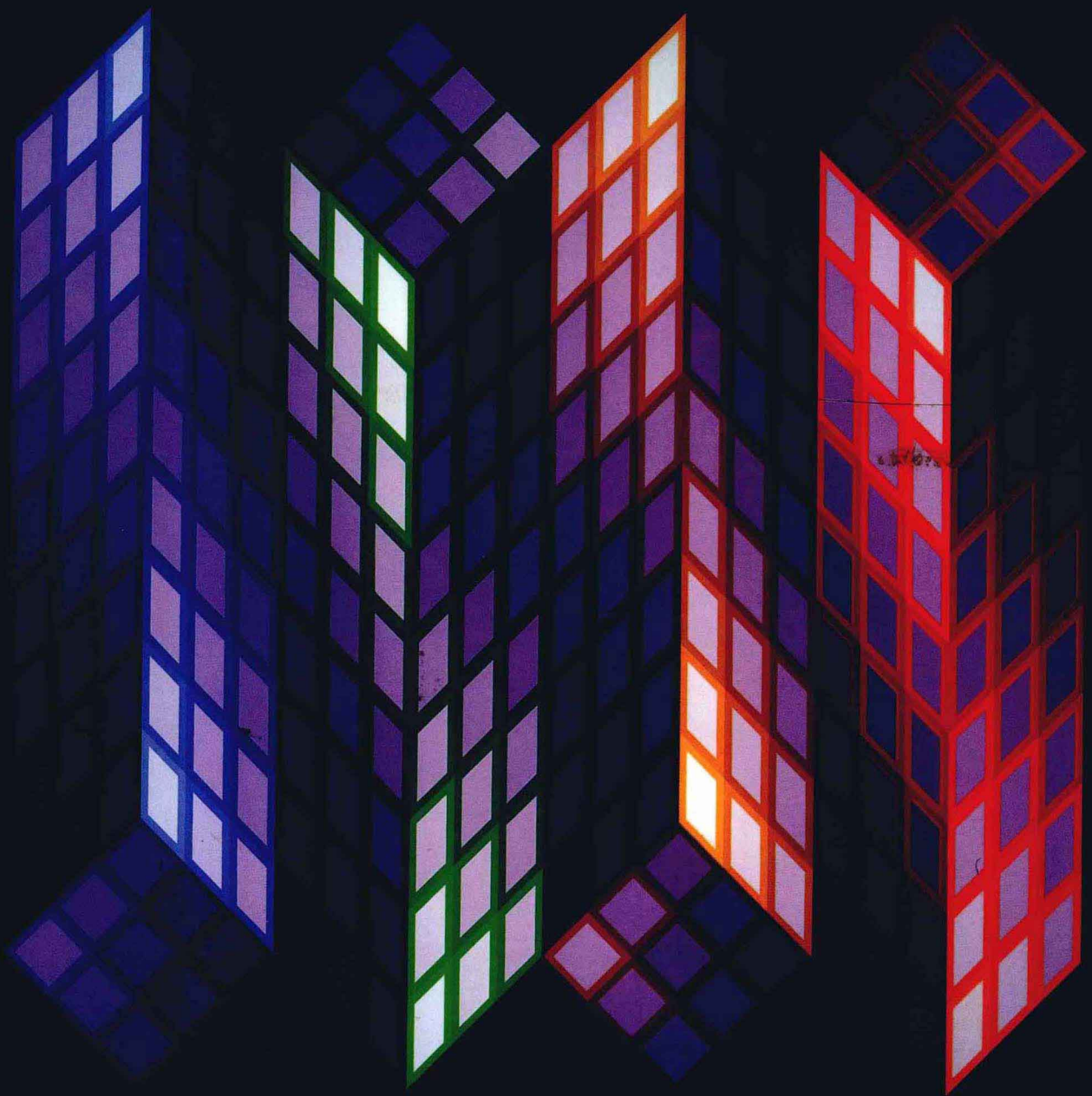
MICROECONOMICS

An Integrated Approach



DAVID BESANKO ◆ RONALD R. BRAEUTIGAM

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An Integrated Approach

DAVID A. BESANKO
Northwestern University

RONALD R. BRAEUTIGAM
Northwestern University

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MICROECONOMICS

To our wives . . . Maureen and Jan . . .
and to our children
Suvarna and Eric, Justin, and Julie

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About the Authors

David Besanko is the Alvin J. Huss Distinguished Professor of Management and Strategy at the Kellogg Graduate School of Management at Northwestern University. He is currently serving as Associate Dean for Curriculum and Teaching at the Kellogg School. He received his AB in Political Science from Ohio University in 1977, his MS in Managerial Economics and Decision Sciences from Northwestern University in 1980, and his PhD in Managerial Economics and Decision Sciences from Northwestern University in 1982. Before joining the Kellogg faculty in 1991, Professor Besanko was a member of the faculty of the School of Business at Indiana University from 1982 to 1991. In addition, in 1985, he held a post-doctorate position on the Economics Staff at Bell Communications Research.

Professor Besanko teaches courses in the fields of Management and Strategy, Competitive Strategy, and Managerial Economics. In 1995, the graduating class at Kellogg awarded Professor Besanko the L.G. Lavengood Professor of the Year, the highest teaching honor a faculty member at Kellogg can receive. At the Kellogg School, he has also received the Sidney J. Levy Teaching Award (1998, 2000) and the Chair's Core Teaching Award (1999, 2001).

Professor Besanko does research on topics relating to competitive strategy, industrial organization, the theory of the firm, and economics of regulation. He has published two books and over 35 articles in leading professional journals in economics and business. Among other places, his work has appeared in the *American Economic Review*, the *Quarterly Journal of Economics*, the *RAND Journal of Economics*, the *Review of Economic Studies*, and *Management Science*. Professor Besanko is a co-author of *Economics of Strategy* with David Dranove and Mark Shanley.

Ronald R. Braeutigam is the Harvey Kapnick Professor of Business Institutions in the Department of Economics and the Transportation Center at Northwestern University. He is Director of the Business Institutions Program. He received a Bachelor of Science in Petroleum Engineering from the University of Tulsa in 1970 and then attended Stanford University, where he received an MSc in engineering and a PhD in Economics in 1976. He has taught at Stanford University and the California Institute of Technology, and he has also held an appointment as a Senior Research Fellow at the Wissenschaftszentrum Berlin (Science Center Berlin). Since 1990, Professor Braeutigam has taught microeconomics in training programs for consultants at McKinsey & Company. He has also worked in both government and industry, beginning his career as a petroleum engineer with Standard Oil of Indiana (now BP), serving as research economist in The White House Office of Telecommunications Policy, and as an economic consultant to Congress and many government agencies. He has also served as a consultant to the World Bank and to many private firms and industry groups on matters of pricing, costing, managerial strategy, antitrust, and regulation.

Professor Braeutigam has received numerous teaching awards, including recognition as a Charles Deering McCormick Professor of Teaching Excellence at Northwestern (1997–2000), the highest teaching award that can be received

by a faculty member at Northwestern University. He also received the Northwestern University Alumni Association Excellence in Teaching Award (1991).

Professor Braeutigam's research interests are in the field of microeconomics and industrial organization. Much of his work has focused on the economics of regulation and regulatory reform, particularly in the telephone, transportation, and energy sectors. He has published two books and numerous articles in leading professional journals in economics. Among other places, his work has appeared in the *American Economic Review*, the *RAND Journal of Economics*, the *Review of Economics and Statistics*, and the *International Economic Review*. Professor Braeutigam is a co-author of *The Regulation Game* with Bruce Owen.

He has also served as President of the European Association for Research in Industrial Economics.

Preface

After many years of experience teaching at the undergraduate and MBA levels, we have concluded that the most effective way to teach microeconomics is to present the content in several different forms, each one reinforcing and amplifying the other. This book introduces the subject of microeconomics the way we teach it.

Microeconomics: An Integrated Approach uses four complementary pedagogies to teach microeconomics: verbal intuition, graphs, applications, and Learning-by-Doing exercises. Our narrative *integrates* the use of algebra, graphs, and tables in the study of microeconomic problems. We *integrate* theory with applications drawn from the real world. And we *integrate* worked-out Learning by Doing exercises with verbal and graphical explanations to help students make the tools of economic analysis their own. This approach enables students to see clearly the interplay of key concepts and to understand how the fundamental tools of microeconomics work in a variety of contexts.

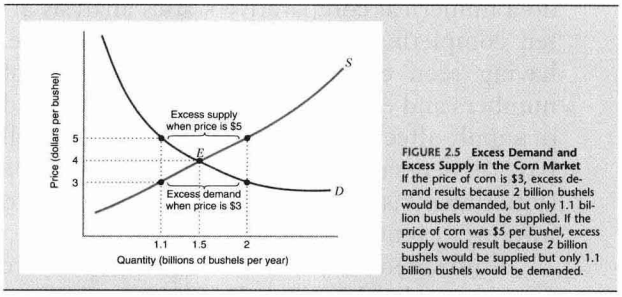

FIGURE 2.5 Excess Demand and Excess Supply in the Corn Market
If the price of corn is $3, excess demand results because 2 billion bushels would be demanded, but only 1.1 billion bushels would be supplied. If the price of corn was $5 per bushel, excess supply would result because 2 billion bushels would be supplied but only 1.1 billion bushels would be demanded.

GRAPHS TELL THE STORY ...

We use graphs and tables more abundantly than most texts, because they are central to economic analysis, enabling us to depict complex interactions simply. In economics, a picture truly *is* worth a thousand words.

... BUT WORDS DO TOO

Still, for many students, graphical explanations of economic ideas and concepts can seem convoluted and unintuitive. Tables and graphs are powerful economic tools, but many students have difficulty interpreting them at first. We have worked hard to make our exposition of the economic intuition underlying the graphs clear and easy to follow. Patient step-by-step explanations with examples enable even nonvisual learners to understand how graphs are constructed and what they mean.

Economies of Scale for "Backoffice" Activities in a Hospital **EXAMPLE 8.4**

The business of health care was in the news a lot during the 1990s. One of the most interesting trends was the consolidation of hospitals through mergers. In the Chicago area, for example, Northwestern Memorial Hospital merged with several suburban hospitals, such as Evanston Hospital, to form a large multi-hospital system covering the North Side of Chicago and the North Shore.

Proponents of hospital mergers argue that mergers enable hospitals to achieve cost savings through economies of scale in "backoffice" operations—activities, such as laundry, housekeeping, cafeterias, printing and duplicating services, and data processing, that do not generate revenue for a hospital directly, but that the hospital cannot function without. Opponents argue that such cost savings are illusory and that hospital mergers mainly reduce competition in local hospital markets. The U.S. antitrust authorities have blocked several hospital mergers on this basis.

David Dranove recently studied the extent to which backoffice activities within a hospital are subject to economies of scale.[1] Figure 8.12 summarizes some of his findings. The figure sho[illegible] three [illegible] cafeterias,

IT WORKS IN THEORY, BUT DOES IT WORK IN THE REAL WORLD?

Numerous real-world examples illustrate how microeconomics applies to business decision making and public policy issues. We begin each chapter with an extended example that introduces the key themes of the chapter and use real markets and companies to reinforce particular concepts and tools. Many of these examples focus on the *new economy*. Beyond the introductory chapter, each chapter contains about six examples woven into the narrative or highlighted in sidebars.

LEARN BY DOING

Our emphasis on practice exercises sets this book apart from others. Although graphs, verbal intuition, and real-world applications are essential ingredients for learning microeconomic analysis, for many students they are not sufficient. Based on our experience, in order to *really* internalize microeconomic theory students need drill. They need to work through lots of problems that are tangible, problems that have specific equations and numbers in them. Anyone who has mastered a skill or a sport, whether it be piano, ballet, or golf, understands that a fundamentally important part of the learning process involves repetitive drills that seemingly bear no relation to how one would actually execute the skill under "real" conditions. We believe that drill problems in microeconomics serve the same purpose. Whether or not a student ever has to do a numerical comparative statics analysis after completing the microeconomics course, having seen concretely, through the use of numbers and equations, how a shift in demand or supply affects the equilibrium, a student will have a deeper appreciation for comparative statics analysis and will be better prepared to interpret events in real markets.

LEARNING-BY-DOING EXERCISE 7.4

The Input Demand Curves for a Cobb-Douglas Production Function

Problem To see how the input demand curves are derived, suppose that the production function is $Q = 50L^{\frac{1}{2}}K^{\frac{1}{2}}$. What are the demand curves for labor and capital?

Solution We begin with our tangency condition $MP_L/MP_K = w/r$. As shown in Learning-By-Doing Exercise 7.2,

$$\frac{MP_L}{MP_K} = \frac{K}{L}.$$

Thus, our tangency condition is

$$\frac{K}{L} = \frac{w}{r}, \text{ or } L = \frac{r}{w}K.$$

This is the equation of the expansion path.

Let's now substitute this into the production function and solve for K in terms of Q, w, and r:

$$Q = 50\left(\frac{r}{w}K\right)^{\frac{1}{2}}K^{\frac{1}{2}},$$

which yields the demand curve for capital:

$$K = \frac{Q}{50}\left(\frac{w}{r}\right)^{\frac{1}{2}}.$$

Since $L = (r/w)K$, it follows that the demand curve for labor is

$$L = \frac{Q}{50}\left(\frac{r}{w}\right)^{\frac{1}{2}}.$$

Note from the above equation that the demand for labor is a decreasing function of w and an increasing function of r. This is consistent with the graphical analysis in Figures 7.5 and 7.11. Note also that both K and L increase when Q increases. Therefore, both capital and labor are normal inputs.

Similar Problem: 7.10

Embedded in the text of each chapter are four to eight Learning-By-Doing exercises. Designed to illustrate the core ideas of the chapter, these exercises guide the student through specific numerical problems. They are integrated with the graphical and verbal exposition, so that students can clearly see, through the use of numbers and tangible algebraic relationships, what the graphs and words are striving to teach. These exercises set the student up to do similar practice problems as well as more difficult analytical problems at the end of each chapter and in the study guide that accompanies this text.

ORGANIZATION AND COVERAGE

This book is traditional in its coverage and organization. To the extent that we have made a trade-off, it is to cover traditional topics more thoroughly, as opposed to adding a broad range of additional topics that might not easily fit into a one-quarter or one-semester microeconomics course. Thus, an instructor teaching a one-semester microeconomics course could use all or nearly all of the chapters in the book, and an instructor teaching a one-quarter microeconomics or managerial economics course could use more than two-thirds of the chapters. The following chart shows how the book is organized.

Introduction to Microeconomics	Consumer Theory	Production and Cost Theory	Perfect Competition	Market Power	Imperfect Competition and Strategic Behavior	Special Topics
1 *Analyzing Economic Problems* Overview and introduction to constrained optimization, equilibrium analysis, and comparative statics analyisis	**3** *Consumer Preferences and the Concept of Utility* Introduction to consumer choice	**6** *Inputs and Production Functions* Production Functions, marginal and average product, and returns to scale	**9** *Perfectly Competitive Markets* Profit-maximizing output choice by a price-taking firm and prices in short-run v. long-run equilibrium	**11** *Monopoly and Monopsony* Theories of monopoly and monopsony price setting	**13** *Market Structure and Competition* Price determination in imperfectly competitive markets	**15** *Decision Making Under Uncertainty* Risk, uncertainty and information, including a utility-theoretic approach to uncertainty and decision-free analysis
2 *Supply and Demand Analysis* Introduction to demand curves, supply curves, market equilibrium, and elasticity	**4** *Consumer Choice* Budget Lines, utility maximization, and analysis of revealed preference	**7** *Costs and Cost Minimization* Concept of cost, input choice and cost minimization	**10** *Competitive Markets: Applications* Using the competitive market model to analyze public policy interventions	**12** *Capturing Surplus* Price discrimination	**14** *Game Theory and Strategic Behavior* Simultaneous-move games and sequential move games	**16** *General Equilibrium Theory* Overview of general equilibrium theory and economic efficiency
	5 *The Theory of Demand* Comparative statics of consumer choice and consumer surplus	**8** *Cost Curves* Construction of total, average, and marginal cost curves				**17** *Externalities and Public Goods* Market externalities, the Coase Theorem, and economic efficiency

ALTERNATIVE COURSE DESIGNS

In writing this book, we have tried to serve the need of instructors teaching microeconomics in a variety of different formats and time frames.

• **One-quarter course (10 weeks):** An instructor teaching a one-quarter undergraduate microeconomics course that fully covers all of the traditional topics

(including consumer theory and production and cost theory) would probably assign Chapters 1–11). If the instructor prefers to de-emphasize consumer theory or production theory, he or she might also be able to cover Chapters 13 and 14.

• **One-semester course (15 weeks):** In a one-semester undergraduate course, an instructor should be able to cover Chapters 1–15. If the course must in-clude general equilibrium theory, public goods, and externalities, then Chapter 15 could be dropped and the instructor could assign Chapters 1–14, 16, and 17.

• **Two-quarter course (20 weeks):** For a two-quarter sequence (the structure we have at Northwestern), the first quarter could cover Chapters 1–11, and the second quarter could pick up where the first quarter left off and cover Chapters 12–17.

• **MBA-level managerial economics course (10 weeks or 15 weeks):** For a one-quarter course, the instructor would probably want to skip the chapters on consumer theory, production functions, and cost minimization (Chapter 3–6 and the second half of Chapter 7) and cover Chapters 1–2, the first half of Chapter 7—economic concepts of cost—Chapter 8, and Chapters 9–14. Extending such a course to a full semester would allow the instructor to include the material on production and cost minimization as well as Chapter 15.

SUPPLEMENTARY RESOURCES

Available resources for students and instructors include a Study Guide, Instructor's Manual, Solutions Manual, and Test Bank. Kenneth Brown of the University of Northern Iowa prepared the Solutions Manual and co-wrote the Test Bank with Lisa Jepson, also of the University of Northern Iowa. Kate Rockett of the University of Essex, England, prepared both the Study Guide and the Instructor's Manual.

A robust Web site with support for students and instructors is available for use with the text. This Web site provides *Wall Street Journal Interactive Edition* articles related to the topics in the text, Web links to companies cited in the text, and electronic versions of the instructor's print supplements (Instructor's Manual, Test Bank, Solutions Manual) within a password-protected environment. The Web site will also provide on-line self-test tutorials and Excel templates for students to use as they work through the text problems and prepare for exams.

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Instructor's Manual and the Study Guide for the book, and Suzanne Ingrao handled the production of the book. Others at Wiley who contributed to this project include Barbara Heaney, Charity Robey, Jeanine Furino, Anna Melhorn, Kevin Murphy, Hilary Newman, Valerie Vargas, and Sara Wight. Finally, we would like to acknowledge Whitney Blake, who encouraged us to undertake this project, and we appreciate her encouragement and her confidence in us.

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Jiandong Ju
University of Oklahoma

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University of Georgia

Donald Keenan
University of Georgia

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University of Kansas*

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University of Houston

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University of California at San Diego

Mukul K. Manjumdar
Cornell University*

Gilbert Mathis
Murray State University

Michael Mckee
University of New Mexico

Claudio Mezzetti
University of North Carolina*

Peter Morgan
University of Michigan

John Moroney
Texas A & M

Wilhelm Neuefeind
Washington University

Peter Norman
University of Wisconsin, Madison

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Washington State University

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University of Oklahoma

Ken Parzych
Eastern Connecticut State University

Donald Pursell
University of Nebraska–Lincoln

Michael Raith
University of Chicago

Sunder Ramaswamy
Middlebury College

Jeanne Ringel
Louisiana State University*

Robert Rosenman
Washington State University

Santanu Roy
Florida International University

Jolyne Sanjak
SUNY–Albany

David Schmidt
Indiana University

Mark Schupack
Brown University

Richard Sexton
University of California, Davis

Jason Shachat
University of California, San Diego

Maxwell Stinchcombe
University of Texas, Austin

Beck Taylor
Baylor University*

Curtis Taylor
Texas A & M University

Thomas TenHoeve
Iowa State University

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Louisiana State University

Paul Thistle
Western Michigan University*

Guogiang Tian
Texas A & M University

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North Carolina State University*

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David Besanko
Evanston, Illinois

Ronald R. Braeutigam
Evanston, Illinois

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