

# Principles of MICROECONOMICS

FIFTH EDITION  
International Version

DOMINICK SALVATORE  
*Fordham University*

**OXFORD**  
UNIVERSITY PRESS

OXFORD  
UNIVERSITY PRESS

YMCA Library Building, Jai Singh Road, New Delhi 110001

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Fifth edition 2009  
This international version 2009  
Second impression 2009

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ISBN-13: 978-0-19-806230-1  
ISBN-10: 0-19-806230-3

Printed in India by Tara Art Printers (P) Ltd, Noida  
and published by Oxford University Press  
YMCA Library Building, Jai Singh Road, New Delhi 110001



# CONTENTS

*List of Examples and At the Frontier* xxv

*Preface* xxix

*About the Author* xxxv

## PART ONE

### Introduction to Microeconomics

1

#### ■ CHAPTER 1 Introduction 3

##### 1.1 Wants and Scarcity 4

Can Human Wants Ever Be Fully Satisfied? 4

Scarcity: The Pervasive Economic Problem 4

##### 1.2 Functions of an Economic System 5

##### 1.3 Microeconomic Theory and the Price System 6

The Circular Flow of Economic Activity 6

Determination and Function of Prices 8

**Example 1–1** Bad Weather and High Demand Send Wheat Prices Soaring 9

What Role for the Government? 10

**Example 1–2** Economic Inefficiencies Cause Collapse of  
Communist Regimes 10

##### 1.4 The Margin: The Key Unifying Concept in Microeconomics 11

The Crucial Importance of the Concept of the Margin 11

**Example 1–3** Marginal Analysis in TV Advertising 12

Some Clarifications on the Use of the Margin 14

##### 1.5 Specialization, Exchange, and the International Framework of Microeconomics 15

Specialization and Exchange 15

The International Framework of Microeconomics 15

**Example 1–4** Dell and Other PCs Sold in the United States Are Everything  
but American! 16

<b>1.6 Models, Methodology, and Value Judgments</b>	<b>17</b>
Models and Methodology	17
Positive and Normative Analysis	18
<b>At the Frontier</b> Do Economists Ever Agree on Anything?	19
Summary	21
Key Terms	21
Review Questions	22
Problems	22
 <b>■ CHAPTER 2 Basic Demand and Supply Analysis</b>	 <b>23</b>
<b>2.1 Market Analysis</b>	<b>24</b>
<b>2.2 Market Demand</b>	<b>24</b>
Demand Schedule and Demand Curve	24
Changes in Demand	25
<b>2.3 Market Supply</b>	<b>27</b>
Supply Schedule and Supply Curve	27
Changes in Supply	28
<b>2.4 When Is a Market in Equilibrium?</b>	<b>29</b>
<i>Example 2-1</i> Equilibrium Price by Auction	31
<b>2.5 Adjustment to Changes in Demand and Supply: Comparative Static Analysis</b>	<b>32</b>
Adjustment to Changes in Demand	32
Adjustment to Changes in Supply	33
<i>Example 2-2</i> Changes in Demand and Supply and Coffee Prices	34
<b>2.6 Domestic Demand and Supply, Imports, and Prices</b>	<b>35</b>
<b>2.7 Interfering With Versus Working Through the Market</b>	<b>37</b>
<i>Example 2-3</i> The Economics of U.S. Farm Support Programs	37
<i>Example 2-4</i> Working Through the Market with an Excise Tax	39
<b>At the Frontier</b> Nonclearing Markets Theory	41
Summary	42
Key Terms	43
Review Questions	43
Problems	44
<b>Appendix</b> The Algebra of Demand, Supply, and Equilibrium	45
Market Equilibrium Algebraically	45
Shifts in Demand and Supply and in Equilibrium	46
The Effect of an Excise Tax	47

## PART TWO Theory of Consumer Behavior and Demand

49

### ■ CHAPTER 3 Consumer Preferences and Choice 51

#### 3.1 Utility Analysis 52

Total and Marginal Utility 52

Cardinal or Ordinal Utility? 54

*Example 3-1* Does Money Buy Happiness? 55

#### 3.2 Consumer's Tastes: Indifference Curves 56

Indifference Curves—What Do They Show? 56

Characteristics of Indifference Curves 58

The Marginal Rate of Substitution 59

Some Special Types of Indifference Curves 60

#### 3.3 International Convergence of Tastes 62

*Example 3-2* Gillette Introduces the Sensor and Mach3 Razors—Two Truly Global Products 62

#### 3.4 The Consumer's Income and Price Constraints: The Budget Line 63

Definition of the Budget Line 64

Changes in Income and Prices and the Budget Line 65

*Example 3-3* Time as a Constraint 67

#### 3.5 Consumer's Choice 67

Utility Maximization 67

*Example 3-4* Utility Maximization and Government Warnings on Junk Food 69

Corner Solutions 70

*Example 3-5* Water Rationing in the West 71

Marginal Utility Approach to Utility Maximization 73

**At the Frontier** The Theory of Revealed Preference 74

*Summary* 76

*Key Terms* 77

*Review Questions* 77

*Problems* 77

### ■ CHAPTER 4 Consumer Behavior and Individual Demand 80

#### 4.1 Changes in Income and the Engel Curve 81

Income–Consumption Curve and Engel Curve 81

*Example 4-1* Engel's Law After a Century 83

Normal and Inferior Goods 84

<b>4.2</b>	<b>Changes in Price and the Individual Demand Curve</b>	<b>86</b>
	<i>Example 4-2</i> Higher Alcohol Prices Would Sharply Reduce Youth Alcohol Use and Traffic Deaths	88
<b>4.3</b>	<b>Substitution Effect and Income Effect</b>	<b>89</b>
	How Are the Substitution Effect and the Income Effect Separated?	90
	<i>Example 4-3</i> Substitution and Income Effect of a Gasoline Tax	92
	Substitution Effect and Income Effect for Inferior Goods	93
	<i>Example 4-4</i> Giffen Behavior Found!	96
<b>4.4</b>	<b>Substitution Between Domestic and Foreign Goods</b>	<b>96</b>
<b>4.5</b>	<b>Some Applications of Indifference Curve Analysis</b>	<b>97</b>
	Is a Cash Subsidy Better Than Food Stamps?	97
	Consumer Surplus Measures Unpaid Benefits	99
	Benefits from Exchange	101
	<b>At the Frontier</b> The Characteristics Approach to Consumer Theory	103
	<i>Summary</i>	106
	<i>Key Terms</i>	106
	<i>Review Questions</i>	107
	<i>Problems</i>	107
	<b>Appendix</b> Index Numbers and Changes in Consumer Welfare	108
	<i>Expenditure, Laspeyres, and Paasche Indices</i>	108
	<i>How Are Changes in Consumer Welfare Measured?</i>	109
	<i>Example 4-5</i> Comparing the Standard of Living of Various Countries	111
<b>■</b>	<b>CHAPTER 5 Market Demand and Elasticities</b>	<b>114</b>
<b>5.1</b>	<b>The Market Demand for a Commodity</b>	<b>115</b>
	<i>Example 5-1</i> Demand for Big Macs	117
<b>5.2</b>	<b>Price Elasticity of Market Demand</b>	<b>118</b>
	Measuring the Price Elasticity of Demand	118
	Price Elasticity Graphically	120
	Price Elasticity and Total Expenditures	121
	What Determines Price Elasticity?	122
	<i>Example 5-2</i> Price Elasticity for Clothing Increases with Time	124
<b>5.3</b>	<b>Income Elasticity of Demand</b>	<b>125</b>
	<i>Example 5-3</i> European Cars Are Luxuries, Flour Is an Inferior Good	127
<b>5.4</b>	<b>Cross Elasticity of Demand</b>	<b>128</b>
	<i>Example 5-4</i> Margarine and Butter Are Substitutes, Entertainment and Food Are Complements	129

<b>5.5</b>	<b>Price Elasticity and Income Elasticity of Imports and Exports</b>	<b>130</b>
	<i>Example 5–5</i> Price Elasticity and Income Elasticity for Imports and Exports in the Real World	131
<b>5.6</b>	<b>Marginal Revenue and Elasticity</b>	<b>132</b>
	Demand, Total Revenue, and Marginal Revenue	132
	Geometry of Marginal Revenue Determination	133
	Marginal Revenue, Price, and Elasticity	135
	<b>At the Frontier</b> The Marketing Revolution with Micromarketing	137
	<i>Summary</i>	139
	<i>Key Terms</i>	140
	<i>Review Questions</i>	141
	<i>Problems</i>	141
	<b>Appendix</b> Empirical Estimation of Demand by Regression Analysis	142
<b>■</b>	<b>CHAPTER 6 Choice Under Uncertainty</b>	<b>145</b>
<b>6.1</b>	<b>Risk and Uncertainty in Demand Choices</b>	<b>146</b>
	<i>Example 6–1</i> The Risk Faced by Coca-Cola in Changing Its Secret Formula	147
<b>6.2</b>	<b>Measuring Risk</b>	<b>147</b>
	Probability Distributions	148
	The Standard Deviation	149
	<i>Example 6–2</i> Risk and Crime Deterrence	151
<b>6.3</b>	<b>Utility Theory and Risk Aversion</b>	<b>152</b>
	Different Preferences Toward Risk	152
	Maximizing Expected Utility	153
<b>6.4</b>	<b>Insurance and Gambling</b>	<b>155</b>
	Why Do Some Individuals Buy Insurance?	155
	Why Do Some Individuals Gamble?	157
	<i>Example 6–3</i> Gambling and Insuring by the Same Individual—A Seeming Contradiction	158
<b>6.5</b>	<b>Risk Aversion and Indifference Curves</b>	<b>159</b>
	<i>Example 6–4</i> Spreading Risks in the Choice of a Portfolio	161
<b>6.6</b>	<b>Reducing Risk and Uncertainty</b>	<b>162</b>
	Gathering More Information	162
	Diversification	162
	Insurance	163
	<i>Example 6–5</i> Some Disasters as Nondiversifiable Risks	164
<b>6.7</b>	<b>Behavioral Economics</b>	<b>164</b>
	<i>Example 6–6</i> Behavioral Economics in Finance	166

<b>At the Frontier</b>	Foreign-Exchange Risks and Hedging	167
<i>Summary</i>		168
<i>Key Terms</i>		169
<i>Review Questions</i>		169
<i>Problems</i>		170

## **PART THREE**    **Production, Costs, and Competitive Markets**    **173**

<b>■ CHAPTER 7</b>	<b>Production Theory</b>	<b>173</b>
<b>7.1</b>	<b>Relating Outputs to Inputs</b>	<b>176</b>
	Organization of Production	176
	Classification of Inputs	177
<b>7.2</b>	<b>Production with One Variable Input</b>	<b>178</b>
	Total, Average, and Marginal Product	178
	The Geometry of Average and Marginal Product Curves	181
	The Law of Diminishing Returns	181
	<i>Example 7-1</i> Economics—The Dismal Science Because of Diminishing Returns	183
<b>7.3</b>	<b>Production with Two Variable Inputs</b>	<b>184</b>
	What Do Isoquants Show?	184
	Derivation of Total Product Curves from the Isoquant Map	185
<b>7.4</b>	<b>The Shape of Isoquants</b>	<b>187</b>
	Characteristics of Isoquants	187
	Economic Region of Production	189
	Fixed-Proportions Production Functions	190
	<i>Example 7-2</i> Trading Traveling Time for Gasoline Consumption on the Nation's Highways	191
<b>7.5</b>	<b>Constant, Increasing, and Decreasing Returns to Scale</b>	<b>192</b>
<b>7.6</b>	<b>Technological Progress and International Competitiveness</b>	<b>195</b>
	Meaning and Importance of Innovations	195
	<i>Example 7-3</i> How Do Firms Get New Technology?	196
<b>7.7</b>	<b>Open Innovation Model</b>	<b>197</b>
	<i>Example 7-4</i> Open Innovations at Procter & Gamble	198
	Innovations and the International Competitiveness of U.S. Firms	198
	<i>Example 7-5</i> How Xerox Lost and Regained Market Share but Is Now Struggling to Remain Internationally Competitive	199

**At the Frontier** The New Computer-Aided Production Revolution  
and the International Competitiveness of U.S. Firms 200

*Summary* 201

*Key Terms* 202

*Review Questions* 203

*Problems* 203

**Appendix** The Cobb–Douglas Production Function 204

*The Formula* 204

*Illustration* 204

*Empirical Estimation* 207

**Example 7–6** Output Elasticity of Labor and Capital and Returns to Scale  
in U.S. and Canadian Manufacturing 208

■ **CHAPTER 8** Costs of Production 210

**8.1** The Nature of Production Costs 211

**8.2** Cost in the Short Run 212

Total Costs 212

Per-Unit Costs 213

Geometry of Per-Unit Cost Curves 215

**Example 8–1** Per-Unit Cost Curves in Corn Production and in Traveling 217

**8.3** Cost in the Long Run 218

Isocost Lines 218

Least-Cost Input Combination 220

Cost Minimization in the Long Run and in the Short Run 221

**Example 8–2** Least-Cost Combination of Gasoline and Driving Time 222

**8.4** Expansion Path and Long-Run Cost Curves 223

Expansion Path and the Long-Run Total Cost Curve 223

Derivation of the Long-Run Average and Marginal Cost Curves 224

The Relationship Between Short- and Long-Run Average  
Cost Curves 224

**Example 8–3** Long-Run Average Cost Curve in Electricity Generation 227

**8.5** Shape of the Long-Run Average Cost Curve 228

**Example 8–4** Minimum Efficient Scale in Various U.S.  
Food Industries 229

**8.6** Multiproduct Firms and Dynamic Changes in Costs 230

Economies of Scope 230

The Learning Curve 231

**Example 8–5** Learning Curve for the Lockheed L-1011 Aircraft  
and for Semiconductors 233

**At the Frontier** Minimizing Costs Internationally—The New Economies of Scale 234

*Summary* 236

*Key Terms* 237

*Review Questions* 237

*Problems* 238

**Appendix** Extensions and Uses of Production and Cost Analysis 239

*Derivation of the Total Variable Cost Curve from the Total Product Curve* 239

*Input Substitution in Production to Minimize Costs* 239

**Example 8–6** Elasticity of Substitution in Japanese Manufacturing Industries 241

*Input Prices and the Firm's Cost Curves* 243

■ **CHAPTER 9 Price and Output Under Perfect Competition** 244

**9.1 Market Structure: Perfect Competition** 245

**Example 9–1** Competition in the New York Stock Market 246

**9.2 Price Determination in the Market Period** 247

**9.3 Short-Run Equilibrium of the Firm** 248

Total Approach: Maximizing the Positive Difference Between Total Revenue and Total Costs 249

Marginal Approach: Equating Marginal Revenue and Marginal Cost 249  
Profit Maximization or Loss Minimization? 253

**9.4 Short-Run Supply Curve and Equilibrium** 254

Short-Run Supply Curve of the Firm and the Industry 254

**Example 9–2** Supply Curve of Petroleum from Tar Sands 256

**Example 9–3** Short-Run World Supply Curve of Copper 257

Short-Run Equilibrium of the Industry and the Firm 259

**9.5 Long-Run Equilibrium of the Firm and the Industry** 260

Long-Run Equilibrium of the Firm 260

Long-Run Equilibrium of the Industry and the Firm 261

Efficiency Implications of Perfect Competition 262

**9.6 Constant-, Increasing-, And Decreasing-Cost Industries** 263

Constant-Cost Industries 263

Increasing-Cost Industries 264

Decreasing-Cost Industries 265

**9.7 International Competition in the Domestic Economy** 267

<b>9.8 Analysis of Competitive Markets</b>	<b>268</b>
Producer Surplus	268
Consumers' and Producers' Surplus, and the Efficiency of Perfect Competition	269
Welfare Effects of an Excise Tax	271
Effects of an Import Tariff	272
<b>At the Frontier (1)</b> New Markets and New Competition on the Internet	274
<b>At the Frontier (2)</b> Auctioning Airwaves	275
Summary	276
Key Terms	277
Review Questions	277
Problems	278
<b>Appendix</b> The Foreign-Exchange Market and the Dollar Exchange Rate	279
<b>Example 9-4</b> Foreign-Exchange Quotations	281

## **PART FOUR**      **Imperfectly Competitive Markets**      **283**

■ <b>CHAPTER 10 Price and Output Under Pure Monopoly</b>	<b>285</b>
<b>10.1 Pure Monopoly—The Opposite Extreme from Perfect Competition</b>	<b>286</b>
Definition and Sources of Monopoly	286
<b>Example 10-1</b> Barriers to Entry and Monopoly by Alcoa	287
The Monopolist Faces the Market Demand Curve for the Commodity	288
<b>Example 10-2</b> De Beers Abandons Its Diamond Monopoly	291
<b>10.2 Short-Run Equilibrium Price and Output</b>	<b>292</b>
Total Approach: Maximizing the Positive Difference Between Total Revenue and Total Costs	292
Marginal Approach: Equating Marginal Revenue and Marginal Cost	294
Profit Maximization or Loss Minimization?	296
Short-Run Marginal Cost and Supply	298
<b>10.3 Long-Run Equilibrium Price and Output</b>	<b>299</b>
Profit Maximization in the Long Run	299
<b>Example 10-3</b> Monopoly Profits in the New York City Taxi Industry	300
Comparison with Perfect Competition: The Social Cost of Monopoly	301
<b>Example 10-4</b> Estimates of the Social Cost of Monopoly in the United States	303
<b>10.4 Profit Maximization by the Multiplant Monopolist</b>	<b>303</b>

Short-Run Equilibrium	303
Long-Run Equilibrium	305
<b>10.5 Price Discrimination—A Monopolist's Method of Increasing Profits</b>	<b>306</b>
Charging Different Prices for Different Quantities	306
Charging Different Prices in Different Markets	307
<b>10.6 International Price Discrimination and Dumping</b>	<b>309</b>
<i>Example 10–5</i> Kodak Antidumping Victory over Fuji—But Kodak Still Faces Competitive Problems	310
<b>10.7 Two-Part Tariffs, Tying, and Bundling</b>	<b>311</b>
Two-Part Tariffs	311
Tying and Bundling	313
<i>Example 10–6</i> Bundling in the Leasing of Movies	313
<b>10.8 Analysis of Monopoly Markets</b>	<b>314</b>
Per-Unit Tax: Perfect Competition and Monopoly Compared	314
Price Discrimination and the Existence of the Industry	316
Do Monopolists Suppress Inventions?	316
<b>At the Frontier</b> Near-Monopoly Lands Microsoft in the Courts	318
<i>Summary</i>	319
<i>Key Terms</i>	320
<i>Review Questions</i>	320
<i>Problems</i>	321
 <b>■ CHAPTER 11 Price and Output Under Monopolistic Competition and Oligopoly</b>	 <b>323</b>
<b>11.1 Monopolistic Competition: Many Sellers of a Differentiated Product</b>	<b>324</b>
<b>11.2 Monopolistic Competition: Short-Run and Long-Run Analysis</b>	<b>325</b>
Price and Output Decisions Under Monopolistic Competition	325
Product Variation and Selling Expenses	327
<i>Example 11–1</i> Advertisers Are Taking on Competitors by Name . . . and Are Being Sued	329
How Useful Is the Theory of Monopolistic Competition?	330
<b>11.3 Oligopoly: Interdependence Among the Few Producers in the Industry</b>	<b>330</b>
<i>Example 11–2</i> Industrial Concentration in the United States	332
<b>11.4 The Cournot and the Kinked-Demand Curve Models</b>	<b>333</b>
The Cournot Model: Interdependence Not Recognized	333
The Kinked-Demand Curve Model: Interdependence Recognized	336

<b>11.5</b>	<b>Collusion: Cartels and Price Leadership Models</b>	<b>337</b>
	A Centralized Cartel Operates as a Monopolist	337
	<i>Example 11-3</i> The Organization of Petroleum Exporting Countries (OPEC) Cartel	339
	Market-Sharing Cartel	340
	Price Leadership	341
<b>11.6</b>	<b>Long-Run Adjustments and Efficiency Implications of Oligopoly</b>	<b>343</b>
	Long-Run Adjustments in Oligopoly	343
	Nonprice Competition Among Oligopolists	344
	Welfare Effects of Oligopoly	345
	<i>Example 11-4</i> Firm Size and Profitability	346
<b>11.7</b>	<b>Other Oligopolistic Pricing Practices</b>	<b>347</b>
	Limit Pricing as a Barrier to Entry	347
	Cost-Plus Pricing: A Common Shortcut Pricing Practice	348
	<b>At the Frontier</b> The Art of Devising Airfares	349
<b>11.8</b>	<b>The March of Global Oligopolists</b>	<b>353</b>
	<i>Example 11-5</i> Globalization of the Automobile Industry	354
	<i>Example 11-6</i> Rising Competition in Global Banking	355
	<i>Example 11-7</i> Globalization of the Pharmaceutical Industry	357
	Summary	358
	Key Terms	359
	Review Questions	359
	Problems	360
	<b>Appendix</b> The Cournot and Stackelberg Models	361
	The Cournot Model—An Extended Treatment	361
	The Stackelberg Model	363
<b>■</b>	<b>CHAPTER 12 Game Theory and Oligopolistic Behavior</b>	<b>365</b>
<b>12.1</b>	<b>Game Theory: Definition, Objectives, and Usefulness</b>	<b>366</b>
	<i>Example 12-1</i> Military Strategy and Strategic Business Decisions	367
<b>12.2</b>	<b>Dominant Strategy and Nash Equilibrium</b>	<b>368</b>
	Dominant Strategy	368
	Nash Equilibrium	369
	<i>Example 12-2</i> Dell Computers and Nash Equilibrium	370

<b>12.3 The Prisoners' Dilemma, Price and Nonprice Competition, and Cartel Cheating</b>	<b>371</b>
The Prisoners' Dilemma: Definition and Importance	371
Price and Nonprice Competition, Cartel Cheating, and the Prisoners' Dilemma	372
<i>Example 12-3</i> The Airlines' Fare War and the Prisoners' Dilemma	374
<b>12.4 Repeated Games and Tit-for-Tat Strategy</b>	<b>375</b>
<b>12.5 Strategic Moves</b>	<b>376</b>
Threats, Commitments, and Credibility	376
Entry Deterrence	377
<i>Example 12-4</i> Wal-Mart's Preemptive Expansion Marketing Strategy	378
<b>12.6 Strategic Moves and International Competitiveness</b>	<b>379</b>
<i>Example 12-5</i> Strategic Moves and Countermoves by Airbus and Boeing	381
<i>Example 12-6</i> Companies' Strategic Mistakes and Failures	382
<b>At the Frontier</b> The Virtual Corporation	383
Summary	384
Key Terms	385
Review Questions	385
Problems	386
 <b>■ CHAPTER 13 Market Structure, Efficiency, and Regulation</b>	 <b>388</b>
<b>13.1 Market Structure and Efficiency</b>	<b>389</b>
<b>13.2 Measuring Monopoly Power</b>	<b>390</b>
The Lerner Index as a Measure of Monopoly Power	390
Concentration and Monopoly Power: The Herfindahl Index	391
Contestable Markets: Effective Competition Even with Few Firms	393
<b>At the Frontier</b> Functioning of Markets and Experimental Economics	394
<b>13.3 Social Costs and Dynamic Benefits of Monopoly Power</b>	<b>396</b>
<b>13.4 Controlling Monopoly Power: Antitrust Policy</b>	<b>398</b>
<i>Example 13-1</i> Regulation and the Price of International Telephone Calls in Europe	399
<b>13.5 Public-Utility Regulation</b>	<b>400</b>
Public Utilities as Natural Monopolies	400
Difficulties in Public-Utility Regulation	402
<i>Example 13-2</i> Regulated Electricity Rates for Con Edison	403

<b>13.6 The Deregulation Movement</b>	<b>404</b>
<i>Example 13–3</i> Deregulation of the Airline Industry: An Assessment	405
<i>Example 13–4</i> Antitrust and the New Merger Boom	406
<b>13.7 Regulating International Competition: Voluntary Export Restraints</b>	<b>407</b>
<i>Example 13–5</i> Voluntary Restraints on Export of Japanese Automobiles to the United States	408
<b>13.8 Some Applications of Market Structure, Efficiency, and Regulation</b>	<b>409</b>
Regulating Monopoly Price	409
Regulation and Peak-Load Pricing	410
Regulation and Transfer Pricing	412
<i>Summary</i>	414
<i>Key Terms</i>	415
<i>Review Questions</i>	415
<i>Problems</i>	416

## PART FIVE

## Pricing and Employment of Inputs

417

<b>■ CHAPTER 14 Input Price and Employment Under Perfect Competition</b>	<b>419</b>
<b>14.1 Profit Maximization and Optimal Input Employment</b>	<b>420</b>
<b>14.2 The Demand Curve of a Firm for an Input</b>	<b>422</b>
The Demand Curve of a Firm for One Variable Input	422
The Demand Curve of a Firm for One of Several Variable Inputs	424
<b>14.3 The Market Demand Curve for an Input and Its Elasticity</b>	<b>426</b>
The Market Demand Curve for an Input	426
<i>Example 14–1</i> The Increase in the Demand for Temporary Workers	427
Determinants of the Price Elasticity of Demand for an Input	428
<i>Example 14–2</i> Price Elasticity of Demand for Inputs in Manufacturing Industries	429
<b>14.4 The Supply Curve of an Input</b>	<b>430</b>
The Supply of Labor by an Individual	430
Substitution and Income Effects of a Wage Increase	432
<i>Example 14–3</i> Labor Force Participation Rates	433
The Market Supply Curve for an Input	434
<i>Example 14–4</i> Backward-Bending Supply Curve of Physicians' Services and Other Labor	435

<b>14.5 Pricing and Employment of an Input</b>	<b>436</b>
<i>Example 14–5</i> Labor Productivity and Total Compensation in the United States and Abroad	437
<b>14.6 Input Price Equalization Among Industries, Regions, and Countries</b>	<b>438</b>
Input Price Equalization Among Industries and Regions of a Country	438
Input Price Equalization Among Countries	440
<i>Example 14–6</i> Convergence in Hourly Compensation in the Leading Industrial Countries	441
<b>14.7 Economic Rent: An Unnecessary Payment to Bring Forth the Supply of an Input</b>	<b>442</b>
<b>14.8 Analysis of Labor Markets Under Perfect Competition</b>	<b>444</b>
Substitution and Income Effects of a Wage Rate Change	444
Overtime Pay and the Supply of Labor Services	446
<i>Example 14–7</i> Higher Tax Rates Reduce Hours of Work	447
Wage Differentials	447
Effect of Minimum Wages	448
<b>At the Frontier</b> Do Minimum Wages Really Reduce Employment?	450
Summary	451
Key Terms	452
Review Questions	452
Problems	453
 <b>■ CHAPTER 15 Input Price and Employment Under Imperfect Competition</b>	 <b>455</b>
<b>15.1 Profit Maximization and Optimal Input Employment</b>	<b>456</b>
<b>15.2 The Demand Curve of a Firm for an Input</b>	<b>457</b>
The Demand Curve of a Firm for One Variable Input	457
The Demand Curve of a Firm for One of Several Variable Inputs	459
<b>15.3 The Market Demand Curve and Input Price and Employment</b>	<b>460</b>
<i>Example 15–1</i> The Dynamics of the Engineers Shortage	460
<b>15.4 Monopsony: A Single Firm Hiring an Input</b>	<b>461</b>
<i>Example 15–2</i> Occupational Licensing, Mobility, and Imperfect Labor Markets	464
<b>15.5 Monopsony Pricing and Employment of One Variable Input</b>	<b>464</b>
<b>15.6 Monopsony Pricing and Employment of Several Variable Inputs</b>	<b>466</b>

<i>Example 15–3</i>	Imperfect Competition in Labor Markets and the Pay of Top Executives	466
<b>15.7</b>	<b>International Migration and the Brain Drain</b>	<b>467</b>
<i>Example 15–4</i>	British and Russian Brain Drain Is U.S. Brain Gain	496
<b>15.8</b>	<b>Analysis of Imperfect Input Markets</b>	<b>470</b>
	Regulation of Monopsony	470
	Bilateral Monopoly: A Monopsonistic Buyer Facing a Monopolistic Seller	471
	Effect of Labor Unions on Wages	472
	Economics of Discrimination in Employment	474
	<b>At the Frontier</b> Discrimination, and Gender and Race Wage Differentials	476
	Summary	477
	Key Terms	478
	Review Questions	478
	Problems	478
<hr/>		
<b>PART SIX</b>	<b>General Equilibrium, Efficiency, and Public Goods</b>	<b>481</b>
<b>■ CHAPTER 16</b>	<b>General Equilibrium and Welfare Economics</b>	<b>483</b>
<b>16.1</b>	<b>Partial Versus General Equilibrium Analysis</b>	<b>484</b>
<i>Example 16–1</i>	Effect of a Reduction in Demand for Domestically Produced Automobiles in the United States	485
<b>16.2</b>	<b>General Equilibrium of Exchange and Production</b>	<b>487</b>
	General Equilibrium of Exchange	487
	General Equilibrium of Production	489
	Derivation of the Production-Possibilities Frontier	491
<b>16.3</b>	<b>General Equilibrium of Production and Exchange and Pareto Optimality</b>	<b>493</b>
	Simultaneous General Equilibrium of Production and Exchange	493
	Marginal Conditions for Economic Efficiency and Pareto Optimality	495
<b>16.4</b>	<b>Perfect Competition, Economic Efficiency, and Equity</b>	<b>497</b>
	Perfect Competition and Economic Efficiency	498
	Efficiency and Equity	498
<i>Example 16–2</i>	Watering Down Efficiency in the Pricing of Water	499
<b>16.5</b>	<b>General Equilibrium of Production and Exchange with International Trade</b>	<b>500</b>
<i>Example 16–3</i>	The Basis of and the Gains from International Trade	501

<b>16.6 Welfare Economics and Utility-Possibilities Frontiers</b>	<b>502</b>
The Meaning of Welfare Economics	502
<i>Example 16-4</i> “The Painful Prescription: Rationing Hospital Care”	503
Utility-Possibilities Frontier	504
Grand Utility-Possibilities Frontier	505
<b>16.7 Social Policy Criteria</b>	<b>506</b>
Measuring Changes in Social Welfare	506
Arrow’s Impossibility Theorem	508
<b>At the Frontier</b> The Hot Issue of Income Inequality in the United States	509
<b>16.8 Trade Protection and Economic Welfare</b>	<b>511</b>
<i>Example 16-5</i> Welfare Effects of Removing U.S. Trade Restrictions	512
Summary	513
Key Terms	514
Review Questions	515
Problems	515
 <b>■ CHAPTER 17 Externalities, Public Goods, and the Role of Government</b>	 <b>517</b>
<b>17.1 Externalities</b>	<b>518</b>
Externalities Defined	518
Externalities and Market Failure	519
<i>Example 17-1</i> The Case for Government Support for Basic Research	520
<b>17.2 Externalities and Property Rights</b>	<b>521</b>
<i>Example 17-2</i> Commercial Fishing: Fewer Boats but Exclusive Rights?	522
<b>17.3 Public Goods</b>	<b>523</b>
Nature of Public Goods	523
<i>Example 17-3</i> The Economics of a Lighthouse and Other Public Goods	525
Provision of Public Goods	526
<b>At the Frontier</b> Efficiency Versus Equity in the U.S. Tax System	526
<b>17.4 Benefit–Cost Analysis</b>	<b>528</b>
<i>Example 17-4</i> Benefit–Cost Analysis and the SST	530
<b>17.5 The Theory of Public Choice</b>	<b>531</b>
Meaning and Importance of Public-Choice Theory	531

The Public-Choice Process	531
Policy Implications of Public-Choice Theory	533
<b>17.6 Strategic Trade Policy</b>	<b>535</b>
<i>Example 17-5</i> Strategic Trade and Industrial Policies in the United States	536
<b>17.7 Government Control and Regulation of Environmental Pollution</b>	<b>536</b>
Environmental Pollution	537
Optimal Pollution Control	537
Direct Regulation and Effluent Fees for Optimal Pollution Control	539
<i>Example 17-6</i> The Market for Dumping Rights	539
<i>Example 17-7</i> Congestion Pricing	541
Summary	542
Key Terms	543
Review Questions	543
Problems	543
 <b>■ CHAPTER 18 The Economics of Information</b>	 <b>545</b>
<b>18.1 The Economics of Search</b>	<b>546</b>
Search Costs	546
Searching for the Lowest Price	547
Search and Advertising	548
<i>Example 18-1</i> No-Haggling Value Pricing in Car Buying	549
<b>At the Frontier</b> The Internet and the Information Revolution	550
<b>18.2 Asymmetric Information: The Market for Lemons and Adverse Selection</b>	<b>552</b>
Asymmetric Information and the Market for Lemons	552
The Insurance Market and Adverse Selection	553
<b>18.3 Market Signaling</b>	<b>553</b>
<b>18.4 The Problem of Moral Hazard</b>	<b>555</b>
<i>Example 18-2</i> Increased Disability Payments Reduce Labor Force Participation	556
<i>Example 18-3</i> Medicare and Medicaid and Moral Hazard	556
<b>18.5 The Principal-Agent Problem</b>	<b>558</b>
<i>Example 18-4</i> Do Golden Parachutes Reward Failure?	558
<b>18.6 The Efficiency Wage Theory</b>	<b>560</b>

**Example 18–5** The Efficiency Wage at Ford 562

*Summary* 562

*Key Terms* 563

*Review Questions* 563

*Problems* 564

*Appendix A Mathematical Appendix* 567

*Appendix B Answers to Selected Problems* 577

*Appendix C Glossary* 604

*Name Index* 321

*Subject Index* 000



# CHAPTER 1

## Introduction

### Chapter Outline

- 1.1 Wants and Scarcity
- 1.2 Functions of an Economic System
- 1.3 Microeconomic Theory and the Price System
- 1.4 The Margin: The Key Unifying Concept in Microeconomics
- 1.5 Specialization, Exchange, and the International Framework of Microeconomics
- 1.6 Models, Methodology, and Value Judgments

### List of Examples

- 1–1 Bad Weather and High Demand Send Wheat Prices Soaring
- 1–2 Economic Inefficiencies Cause Collapse of Communist Regimes
- 1–3 Marginal Analysis in TV Advertising
- 1–4 Dell and Other PCs Sold in the United States Are Everything but American!  
At The Frontier: Do Economists Ever Agree on Anything?

### *After Studying This Chapter, You Should Be Able to:*

- Explain why scarcity is the fundamental economic fact of every society
- Identify the functions of any economic system
- Describe the circular flow of economic activity, the determination and function of prices, and the role of the government in the economic system
- Explain why the concept of the margin is the unifying theme in microeconomics
- Understand the importance of globalization in the study of microeconomics

**M**icroeconomic theory is perhaps the most important course in all economics and business programs. Microeconomic theory can help us answer such questions as why there is a trade-off between spending on health care and spending on other goods and services; why the price of housing has risen sharply in recent years; why the price of beef is higher than the price of chicken; why the price of gasoline rose sharply during the 1970s and declined in the 1980s; why textiles are produced with much machinery and few workers in the United States but with many workers and a small amount of machinery in India; why there are only a handful of automakers but many wheat farmers in the United States; why the courts ordered the breakup of AT&T in 1982; why physicians earn more than cab drivers and college professors; why raising the minimum wage leads to increased youth unemployment; why environmental pollution arises and how it can be regulated; and why the government provides some goods and services such as

national defense. Microeconomic theory provides the tools for understanding how the U.S. economy and most other economies operate.

Microeconomic theory is also the basis for most “applied” fields of economics such as industrial economics, labor economics, natural resources and environmental economics, agricultural economics, regional economics, public finance, development economics, and international economics.

In this introductory chapter, we define the subject matter and the methodology of microeconomics. We begin by examining the meaning of scarcity as the fundamental economic fact facing every society. We then discuss the basic functions that all economic systems must somehow perform and the way they are performed in a free-enterprise economic system, such as that of the United States. We also examine why the concept of the margin is the central unifying theme in microeconomics and the importance of introducing an international dimension into microeconomic analysis. Subsequently, we examine the role of theory or models in microeconomics, discuss the basic methodology of economics, and distinguish between positive and normative analysis. The “At the Frontier” section discusses agreement and disagreement among economists on the most important economic issues of the day.

## 1.1

## WANTS AND SCARCITY

**Economics** deals with the allocation of scarce resources among alternative uses to satisfy human wants. The essence of this definition rests on the meaning of human wants and resources, and on the scarcity of economic resources in relation to insatiable human wants.

### Can Human Wants Ever Be Fully Satisfied?

**Human wants** refer to all the goods, services, and conditions of life that individuals desire. These wants vary among different people, over different periods of time, and in different locations. However, human wants always seem to be greater than the goods and services available to satisfy them. Although we may be able to get all the hamburgers, beer, pencils, and magazines we desire, there are always more and better things that we are unable to obtain. In short, the sum total of all human wants can never be fully satisfied.

**Economic resources** are the inputs, the factors, or the means of producing the goods and services we want. They can be classified broadly into *land* (or natural resources), *labor* (or human resources), and *capital*. These are the resources that firms must pay to hire. Land refers to the fertility of the soil, the climate, the forests, and the mineral deposits present in the soil. Labor refers to all human effort, both physical and mental, that can be directed toward producing desired goods and services. It includes entrepreneurial talent that combines other labor, capital, and natural resources to produce new, better, or cheaper products. Finally, capital refers to the machinery, factories, equipment, tools, inventories, irrigation, and transportation and communications networks. All of these “produced” resources facilitate the production of other goods and services. In the economist’s sense, money is not capital because it does not produce anything. Money simply facilitates the exchange of goods and services.

### Scarcity: The Pervasive Economic Problem

Resources have alternative uses. For example, a particular piece of land could be used for a factory, housing, roads, or a park. A laborer could provide cleaning services, be a porter,

construct bridges, or provide other manual services. A student could be trained to become an accountant, a lawyer, or an economist. A tractor could be used to construct a road or a dam. Steel could be used to build a car or a bridge. Because economic resources are limited, they command a price. While air may be unlimited and free for the purpose of operating an internal-combustion engine, *clean* air to breathe is not free if it requires the installation and operation of antipollution equipment.

Because resources are generally limited, the amount of goods and services that any society can produce is also limited. Thus, the society must choose which commodities to produce and which to sacrifice. In short, society can only satisfy some of its wants. If human wants were limited or resources unlimited, there would be no scarcity and there would be no need to study economics.

Over time, the size and skills of the labor force rise, new resources are discovered and new uses are found for available land and natural resources, the nation's stock of capital is increased, and technology improves. Through these advances, the nation's ability to produce goods and services increases. But human wants always seem to move well ahead of society's ability to satisfy them. Thus, scarcity remains. Scarcity is the fundamental economic fact of every society.

## 1.2

## FUNCTIONS OF AN ECONOMIC SYSTEM

Faced with the pervasiveness of scarcity, all societies, from the most primitive to the most advanced, must somehow determine (1) what to produce, (2) how to produce, (3) for whom to produce, (4) how to provide for the growth of the system, and (5) how to ration a given quantity of a commodity over time. Let us see how the **price system** performs each of these functions under a free-enterprise system (such as our own). In a **free-enterprise system** individuals own property and individuals and firms make private economic decisions.

**What to produce** refers to which goods and services a society chooses to produce and in what quantities to produce them. No society can produce all the goods and services it wants, so it must choose which to produce and which to forgo. Over time, only those goods and services for which consumers are willing and able to pay a price sufficiently high to cover at least the costs of production will generally be produced. Automobile manufacturers will not produce cars costing \$1 million if no one is there to purchase them. Consumers can generally induce firms to produce more of a commodity by paying a higher price for it. On the other hand, a reduction in the price that consumers are willing to pay for a commodity will usually result in a decline in the output of the commodity. For example, an increase in the price of milk and a reduction in the price of eggs are signals to farmers to raise more cows and fewer chickens.

**How to produce** refers to the way in which resources or inputs are organized to produce the goods and services that consumers want. Should textiles be produced with a great deal of labor and little capital or with little labor and a great deal of capital? Since the prices of resources reflect their relative scarcity, firms will combine them in such a way as to minimize costs of production. By doing so, they will use resources in the most efficient and productive way to produce those commodities that society wants and values the most. When the price of a resource rises, firms will attempt to economize on the use of that resource and substitute cheaper resources so as to minimize their production costs. For example, a rise in the minimum wage leads firms to substitute machinery for some unskilled labor.

**For whom to produce** deals with the way that the output is distributed among the members of society. Those individuals who possess the most valued skills or own a greater amount of other resources will receive higher incomes and will be able to pay and coax firms to produce more of the commodities they want. Their greater monetary “votes” enable them to satisfy more of their wants. For example, society produces more goods and services for the average physician than for the average clerk because the former has a much greater income than the latter.

In all but the most primitive societies there is still another function that the economic system must perform: It must provide for the growth of the nation. Although governments can affect the rate of **economic growth** with tax incentives and with incentives for research, education, and training, the price system is also important. For example, interest payments provide the savers an incentive to postpone present consumption, thereby releasing resources to increase society’s stock of capital goods. Capital accumulation and technological improvements are stimulated by the expectations of profits. Similarly, the incentive of higher wages (the price of labor services) induces people to acquire more training and education, which increases their productivity. Through capital accumulation, technological improvements, and increases in the quantity and quality (productivity) of labor, a nation grows over time.

Finally, an economic system must allocate a given quantity of a commodity over time. **Rationing over time** is also accomplished by the price system. For example, the price of wheat is not so low immediately after harvest that all the wheat is consumed very quickly, thus leaving no wheat for the rest of the year. Instead, some people (speculators) will buy some wheat soon after harvest (when the price is low) and sell it later (before the next harvest) when the price is higher; the available wheat is thus rationed throughout the year.

### 1.3

## MICROECONOMIC THEORY AND THE PRICE SYSTEM

In this section, we define the subject matter of microeconomic theory, briefly examine the determination and function of prices in a system of free enterprise, and show how governments affect the operation of the economic system. We will see that prices play such an important role that microeconomic theory is often referred to as “price theory.”

### The Circular Flow of Economic Activity

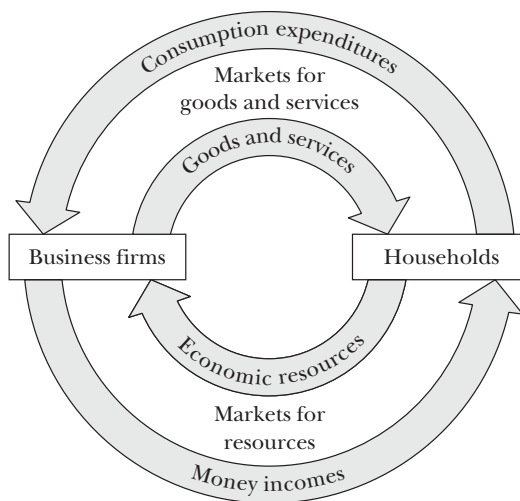
**Microeconomic theory** studies the economic behavior of *individual* decision-making units such as individual consumers, resource owners, and business firms, and the operation of individual markets in a free-enterprise economy. This is to be contrasted with **macroeconomic theory**, which studies (a) the total or *aggregate* level of output and national income and (b) the level of national employment, consumption, investment, and prices for the economy *viewed as a whole*. Both microeconomics and macroeconomics provide very useful tools of analysis and both are important. While macroeconomics often makes the headlines, microeconomics attempts to explain some of the most important economic and social problems of the day. These range from the high cost of energy, to welfare programs, environmental pollution, rent control, minimum wages, safety regulations, rising medical costs, monopoly, discrimination, labor unions, wages and leisure, crime and punishment, taxation and subsidies, and so on.

Microeconomics focuses attention on two broad categories of economic units: households and business firms, and it examines the operation of two types of markets: the market for goods and services, and the market for economic resources. The interaction of households and business firms in the markets for goods and services and in the markets for economic resources represents the core of the free-enterprise economic system. Specifically, households own the labor, the capital, the land, and the natural resources that business firms require to produce the goods and services households want. Business firms pay to households wages, salaries, interest, rents, and so on, for the services and resources that households provide. Households then use the income that they receive from business firms to purchase the goods and services produced by business firms. The income of households are the production costs of business firms. The expenditures of households are the receipts of business firms. The so-called **circular flow of economic activity** is complete.

The circular flow of economic activity can be visualized in Figure 1.1. The inner loop shows the flow of economic resources from households to business firms and the flow of goods and services from business firms to households. The outer loop shows the flow of money incomes from business firms to households and the flow of consumption expenditures from households to business firms. Thus, the inner loop represents production flows while the outer loop represents financial flows.

Looking at it from a different perspective, we see that the top part of Figure 1.1 shows the flow of goods and services from business firms to households and the opposite flow of consumption expenditures from households to business firms. Here are the markets where goods and services are bought and sold. The bottom part of Figure 1.1 shows the flow of resources from households to business firms and the opposite flow of money incomes to households. Here are the markets where resources or their services are bought and sold.

Specifically, the top loop shows consumers' purchases of foods, clothing, housing, health care, education, transportation, recreation, vacations, and so on, and the expenditures that consumers incur to pay for them. The bottom loop shows the labor time, the capital, the land, and the entrepreneurship that individuals provide to firms in return for



**FIGURE 1.1 The Circular Flow of Economic Activity**

The inner loop shows the flow of resources from households to business firms and shows the flow of goods and services from business firms to households. The outer loop shows the flow of money incomes from business firms to households and shows the flow of consumption expenditures from households to business firms. The prices of goods and services are determined in the top half of the figure, and the prices of resources are determined in the bottom half of the figure.

wages, interest, rent, and profits, which represent the incomes with which consumers purchase the goods and services they want.

## Determination and Function of Prices

The prices of goods and services are determined in the markets for goods and services (the top half of Figure 1.1), while the prices of resources and their services are determined in the markets for resources (the bottom half of Figure 1.1). If households want to purchase more of a commodity than is placed on the market by business firms, the price of the commodity will be bid up until the *shortage* of the commodity is eliminated. This occurs because at a higher price, households will want to *purchase less* of the commodity while business firms will want to *produce more* of the commodity. For example, if automobile prices rise, consumers will want to purchase fewer automobiles while automakers will want to produce more automobiles. Automakers can produce more automobiles at higher prices because they are able to bid resources (labor, capital, and land) away from other uses.

On the other hand, if households want to purchase less of a commodity than business firms place on the market, the price of the commodity will fall until the *surplus* of the commodity disappears. This occurs because at a lower price, households will want to *purchase more* of the commodity while business firms will want to *produce less* of the commodity. For example, if consumers want to purchase less beef than farmers send to market, the price of beef falls until the quantity demanded of beef matches the quantity supplied. In the process, farmers will hire fewer resources so that some resources will be freed to produce more of other commodities that consumers value more highly. Thus, it is the system of commodity prices that determines which commodities are produced and in what quantities (the “what to produce” question of the previous section) and how resources are used.

Turning to factor markets, if households provide less of a resource or service than business firms want to hire at a given price, the price of the resource will be bid up until the shortage of the resource is eliminated. This occurs because at higher resource prices, households will usually provide more of the resource or service while business firms will economize on the use of the resource (so as to minimize production costs). For example, if hospitals want to hire more nurses than are available, nurses’ salaries rise. This results in more people entering nursing schools and in hospitals economizing on the use of nurses (for example, by employing more orderlies at lower salaries to perform some of the tasks previously performed by nurses). The process continues until the adjustment (i.e., the shortage of nurses) is eliminated.<sup>1</sup>

On the other hand, if too much of a resource is made available at a given price, the price falls until the surplus is eliminated. This occurs because at lower resource prices, households will usually provide less of the resource or service while business firms will substitute in production the cheaper resource for the more expensive one (so as to minimize production costs). Thus, in a free-enterprise economy it is the system of resource prices that determines how production is organized and how the income of resource owners is established (the “how to produce” and the “for whom to produce” questions of the previous section).

<sup>1</sup> The shortage of nurses may last many years if the demand for hospital care and for nurses outstrips the increasing number of nurses being trained or if market imperfections and government involvement prevents wages from rising to the equilibrium level. This is what seems to have happened in fact in many areas of the United States.

It is because of the crucial function of prices in determining what goods are produced and in what quantities, how production is organized, and how output or income is distributed that microeconomic theory is often referred to as **price theory**.<sup>2</sup> Example 1–1 shows how changes in supply and demand affect the price of agricultural commodities in the United States and abroad.

## EXAMPLE 1–1

### Bad Weather and High Demand Send Wheat Prices Soaring

During 1988 and 1989, Kansas suffered the worst drought since the “dust bowl” days of the early 1930s. Kansas normally produces more than one-third of the nation’s crop of hard red winter wheat (the wheat used for making bread), and with about 40% of this crop destroyed by the drought, wheat prices shot up from about \$2.50 per bushel in 1987 to over \$4.25 in spring 1989. American wheat stocks were heavily depleted, and American wheat exports fell sharply. The drought in the United States also encouraged Canada, Argentina, and Australia to plant more wheat and replace U.S. wheat exports to other nations such as Russia. The wheat market is actually one big global market.

Consumer prices in the United States did not increase very much, however, because a \$1 loaf of bread contains only 4 cents’ worth of wheat (the rest reflects manufacturing and marketing costs) and because food prices represent only one-sixth of the consumer price index. Most wheat farmers’ income also increased because wheat prices rose proportionately more than the reduction in crops and because the U.S. government provided a subsidy ranging from \$3.17 to \$3.80 for each bushel of wheat lost to drought. The rains came back in 1990, however, and wheat output increased and wheat prices declined. The cycle of drought, reduced output, and rising prices followed by good weather, large outputs, and lower prices (and higher government subsidies) was repeated a number of times since the 1990s.

The weather affected the output of wheat not only in the United States but also in other large producing countries, such as Canada, Australia and Argentina—thus, influencing the world price, trade, and the consumption of wheat around the world. In February 2008, the price of wheat in the United States exceeded \$10 per bushel (two-and-half times its price in 2006 and four times that in 2000) because of the combination of disappointing production levels due to bad weather and increased demand.

This example vividly portrays the workings of the price system, the effect of government intervention, and the large interdependence that exists in the world economy today.

*Sources:* T. Tregarthen, “Drought Sends Farm Prices Soaring,” *The Margin*, January/February 1989, pp. 22–23; “Farmers Are Back in the Green,” *Business Week*, June 11, 1990, pp. 18–19; “Strong Harvests Set to Restrain Wheat Price Rise,” *Financial Times*, January 27, 2000, p. 34, and “In Price and Supply, wheat is the Unstable Staple,” *New York Times*, February 13, 2008, p. 1.

<sup>2</sup> In imperfectly competitive markets (monopoly, monopolistic competition, and oligopoly) the price system does not function as smoothly as indicated above and the determination of commodity and resource prices and quantities is more complex.

## What Role for the Government?

So far our discussion has deliberately excluded government. Bringing government into the picture will modify somewhat the operation of the system, but it will not, in a free-enterprise system such as that of the United States, replace the operation of markets. Governments affect the circular flow of economic activity by purchasing goods and services for public consumption (education, defense, police, and so on) that compete with privately consumed goods and services. Governments may themselves produce some goods and services, thereby leaving fewer resources for business firms to use. Most importantly, governments, through taxes and subsidies, usually redistribute income from the rich to the poor. By doing so, they can greatly affect the circular flow of economic activity. Governments also use taxes to discourage the consumption of certain commodities such as alcohol and tobacco and provide incentives for the consumption of others such as housing and education. Thus, the United States operates under a **mixed economy** comprising private enterprise and government actions and policies.

Although government policies certainly affect the circular flow of economic activity in a free-enterprise system, they do not replace the price system.<sup>3</sup> This can be contrasted with a centrally planned economy such as that of the former Soviet Union, where most economic decisions were made almost exclusively by government officials or planning committees. In that type of economy, the government rather than the market sets prices. The result is usually persistent shortages of certain commodities and excess production of others. Thus, central planning is usually less efficient than a free-enterprise system (see Example 1–2).

In the United States and other free-enterprise or mixed economies, the price system operates so smoothly that people are not even aware of it. Only on rare occasions (usually as a result of government interference) do we become aware that something is wrong. The long lines at most gas stations during the petroleum crisis in 1979 were the result of the U.S. government's attempt to keep gasoline prices below the market or equilibrium level. When price controls were eliminated and the price of gasoline was allowed to rise to the market level, gasoline lines disappeared. When bad weather sharply reduced the output of Florida oranges in 1977 and 1981 and that of fresh fruits and vegetables in 1984, no waiting lines were seen outside food stores in the United States. The prices of oranges and vegetables simply rose, and this rationed available supplies to match the amounts that consumers wanted to purchase at the higher prices.

### EXAMPLE 1–2

#### Economic Inefficiencies Cause Collapse of Communist Regimes

In 1957, Communist Party Chair Nikita Khrushchev proudly asserted that the Soviet Union would “bury” the United States—not with atomic warheads but with superior productive power. Instead, in 1989 the Soviet Union and former Eastern European

<sup>3</sup> Government sometimes does replace the price system in some markets by imposing price controls such as rent ceilings and minimum wages. In general, however, in a free-enterprise economy such as that of the United States, government works through the market (with taxes, subsidies, and state-owned enterprises) rather than supplanting it. See “How We Got Here,” *Wall Street Journal*, September 27, 1999, pp. R6 and R8; and Mehdi Haririan, *State Owned Enterprises in a Mixed Economy* (Boulder: Westview Press, 1989).

communist regimes collapsed as a result of massive economic failures. Consumer goods were shabby, assortment was very limited, and shortages of even basic food-stuffs were common. Automobiles, refrigerators, TV sets, and other durable goods were primitive by world standards. In computers and machine tools, the former Soviet Union was a decade behind the United States and its standard of living was less than one-third that of the United States. These massive economic failures were the direct result of the command economy that operated throughout the communist world. Economic decisions were centralized, capital goods or the means of production were owned by the state, and incentives were lacking or grossly distorted.

The collapse of communism brought severe economic dislocations in the form of sharply reduced outputs, rising unemployment, rapid inflation, huge budget deficits, unsustainable international debts, and disrupted trade relations. Poland, Hungary, the Czech Republic, and the other countries in central and eastern Europe, as well as Russia and the other republics of the former Soviet Union have been struggling for the past two decades to set up working market economies. This is a monumental task after decades of central planning and gross inefficiencies.

The establishment of a market economy requires (1) freeing prices and wages from government control (so that goods and resources can be efficiently allocated by markets); (2) transferring productive resources from the state to private ownership (i.e., privatizing the economy); (3) opening the economy to competition and liberalizing international trade (i.e., replacing state trading with trade based on market principles); and (4) establishing the legal and institutional framework necessary for the functioning of a market economy (such as property rights, a Western-style banking system, a capital market, cost accounting, business law, etc.). The problems of transition to a market economy are enormous, and market economies are not yet fully operational in the former communist nations after nearly two decades of reforms. Despite communism's spectacular failure, some of Marx's ideas persist in the world to this day—and not only in Castro's Cuba and Chavez's Venezuela.

*Sources:* W. Easterly and Stanley Fischer, "What We Can Learn from the Soviet Collapse," *Finance and Development*, December 1994, pp. 2–5; "Assessing the Reform Record in the Transition Economies," *International Monetary Fund Survey*, January 9, 1995, pp. 1–6; D. Salvatore, "The Problems of Transition, EU Enlargement, and Globalization," *Empirica*, July 2001, pp. 1–21; and "Behold Marx's Twitch," *New York Times*, December 28, 2006, p. 9.

## 1.4

## THE MARGIN: THE KEY UNIFYING CONCEPT IN MICROECONOMICS

In this section, we provide an overview of the crucial importance of the margin as the central unifying theme in all of microeconomics and examine some clarifications on its use.

### The Crucial Importance of the Concept of the Margin

Because of scarcity, all economic activities give rise to some benefits but also involve some costs. The aim of economic decisions is to maximize net benefits. Net benefits increase as long as the marginal or extra benefit from an action exceeds the marginal or

extra cost resulting from the action. Net benefits are maximized when the **marginal benefit** is equal to the **marginal cost** (see Example 1–3). This concept applies to all economic decisions and market transactions. It applies to consumers in spending their income, to firms in organizing production, to workers in choosing how many hours to work, to students in deciding how much to study each subject and how many hours to work after classes, and to individuals in determining how much to save out of their income. It also applies in deciding how much pollution society should allow, in choosing the optimal amount of information to gather, in choosing the optimal amount of government regulation of the economy, and so on. Indeed, the **concept of the margin** and **marginal analysis** represent the key unifying concepts in all of microeconomics.

Specifically, the aim of consumers is to maximize the satisfaction or net benefit that they receive from spending their limited income. The net benefit or satisfaction of a consumer increases as long as the marginal or extra benefit that he or she receives from consuming one additional unit of a commodity exceeds the marginal or opportunity cost of forgoing or giving up the consumption of another commodity. A consumer maximizes satisfaction when the marginal benefit that he or she receives per dollar spent on every commodity is equal. More concretely, if the satisfaction or benefit that an individual gets from consuming one extra hamburger with a price of \$2 is more than twice as large as the satisfaction of consuming a hot dog with a price of \$1, then the individual would increase net benefits or satisfaction by consuming more hamburgers and fewer hot dogs. As the individual does this, the marginal benefit of consuming each additional hamburger declines, while the marginal loss in giving up each additional hot dog increases. The individual maximizes net benefits when the marginal benefit per dollar spent on each becomes equal. This central unifying theme of the margin in consumer behavior and demand is examined in Part Two (Chapters 3–6) of the text.

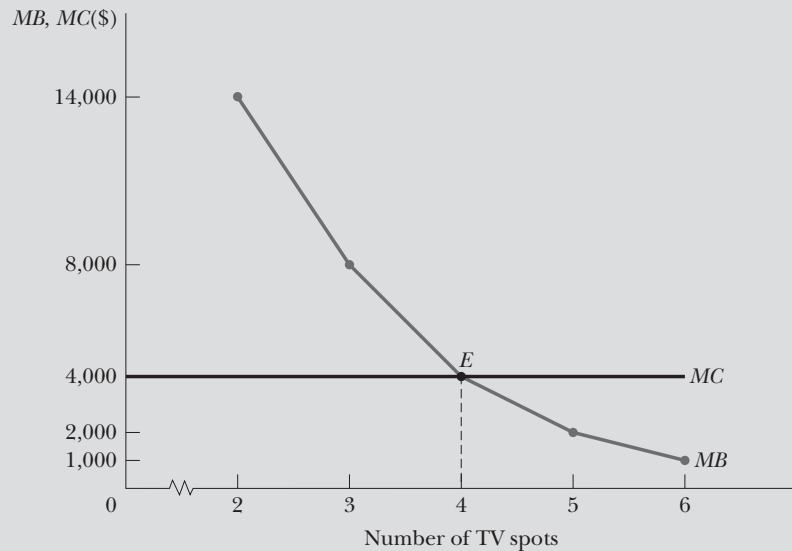
### EXAMPLE 1–3

#### Marginal Analysis in TV Advertising

Table 1.1 shows a firm's total and marginal benefits and costs of increasing the number of TV spots per week. With each additional TV spot, the firm's total benefits (sales or revenues) increase, but the extra or marginal benefit declines. The reason is that each additional TV spot reaches fewer and fewer additional people and becomes less effective in inducing more consumers to buy the product. At the same time, the extra

**TABLE 1.1** Benefits and Costs of TV Spots

Number of TV Spots	Total Benefits	Marginal Benefits	Total Costs	Marginal Cost	Net Benefit
1	\$20,000	—	\$4,000	—	\$16,000
2	34,000	\$14,000	8,000	\$4,000	26,000
3	42,000	8,000	12,000	4,000	30,000
<b>4</b>	<b>46,000</b>	<b>4,000</b>	<b>16,000</b>	<b>4,000</b>	<b>30,000</b>
5	48,000	2,000	20,000	4,000	28,000
6	49,000	1,000	24,000	4,000	25,000



**FIGURE 1.2 Marginal Benefit and Marginal Cost of TV Advertising** The marginal benefit ( $MB$ ) of each additional TV spot declines while the marginal cost ( $MC$ ) is constant at \$4,000. The net benefit is maximized at point  $E$  at which  $MB = MC$ .

or marginal cost of each TV spot remains at \$4,000. The last column of the table shows that the net benefit (total benefits or revenues minus total costs) is maximized at \$30,000 when the firm airs four TV spots per week, at which the marginal benefit equals the marginal cost. Note that in cases like this where we deal with whole units (i.e., where we cannot buy a fraction of a TV spot), the net benefit of \$30,000 also results when the firm airs three TV spots per week, but only with four TV spots is the marginal benefit equal to the marginal cost, and this is the general rule that we follow to maximize net benefits (see point  $E$  in Figure 1.2).

To be noted is that the very high cost TV advertising today is a far cry from the first TV ad (a 20-second spot for a Bulova clock that was broadcast on July 1, 1941) that cost \$9. Today the same TV ad would cost about \$900. As the cost of reaching mass audiences rises and direct marketing to individuals becomes more effective (see “At the Frontier” for Chapter 5), advertisers are shifting some of their advertising expenditures to these other channels (the ability to measure the effectiveness of advertising on sales remains, however, elusive).

*Sources:* “Ad Industry Benefits of a Recovery,” *Wall Street Journal*, February 8, 1993, p. B1; “Target Micromarkets Is Way to Success,” *Wall Street Journal*, May 31, 1995, p. A1; “Commercial Breakdown,” *Financial Times*, August 1999, p. 11; and “Internet Advertising—The Ultimate Marketing Machine,” *The Economist*, July 6, 2006, Special Report.

Similarly, it pays for a firm to expand output as long as the marginal or extra revenue that it receives from selling each additional unit of the commodity exceeds the marginal or extra cost of producing it. But as the firm produces and sells more units of the commodity, the marginal revenue may decline while its marginal cost rises. The firm maximizes total profits when the marginal revenue is equal to the marginal cost. The application of the marginal concept in firms' production decisions is examined in detail in Part Three (Chapters 7–9) of the text. The same general concept applies to an individual's decision on how many hours to work. The individual will maximize welfare when the marginal benefit he or she receives from the wages of an extra hour of work just matches the marginal cost in terms of the leisure or earnings and consumption foregone by not working the extra hour. The optimal amount of savings by an individual is the amount at which the marginal benefit from the interest earned from saving an extra dollar just matches the marginal cost of postponing spending the dollar on present consumption. These applications of marginal analysis are examined in Part Five (Chapters 14–15).

Similarly, the optimal amount of government regulation of the economic system is the amount at which the marginal benefit of such intervention just matches its marginal cost. The same concept applies to the gathering of information. Gathering information provides some benefits but involves some costs. Thus, the optimal amount of information gathering is the amount at which the marginal benefit equals the marginal cost. These uses of the marginal concept are examined in Part Six (Chapters 16–18) of the text.

### Some Clarifications on the Use of the Margin

Several clarifications are in order on the application of the concept of the margin and marginal analysis in microeconomics. First, the maximization of net benefits by marginal analysis does not imply that individuals are entirely selfish and does not preclude a certain degree of altruistic behavior. A more selfish person will maximize satisfaction in terms of material goods and services that the individual himself or herself consumes. A less selfish person will maximize satisfaction by using part of his or her income or resources in helping others. Similarly, a firm may contribute part of its profits to some “worthy causes” or choose to maximize sales rather than profits. Second, individuals, firms, and governments seldom have all the information required to maximize net benefits at the margin precisely. The concept of optimization at the margin is nevertheless an invaluable tool of analysis because it provides the motivation or driving force for most economic actions. Even when individuals and firms are not explicitly trying to maximize net benefits, they often behave as if they are. In fact, the assumption has very good predictive power. Third, marginal analysis leads to the maximization of individual benefits but not to the maximization of the welfare of society as a whole when private benefits and costs differ from social benefits and costs. One situation that leads to this arises in the presence of imperfect competition and justifies government intervention in the economic system to overcome the problem, or at least to minimize its harmful impact. Indeed, whenever some individuals in society can be made better off without making someone else worse off, there is a case for government intervention at the margin to improve society's welfare. When production and consumption can no longer be reorganized so as to improve the welfare of some without at the same time reducing the welfare of others, society is said to be at **Pareto optimum**. These applications of marginal analysis are examined in Part Four (Chapters 10–13) and Part Six (Chapters 16–18) of the text.

Despite these clarifications and qualifications, we can clearly see that the concept of the margin and marginal analysis provide the central unifying theme in all of microeconomics.

## 1.5

## SPECIALIZATION, EXCHANGE, AND THE INTERNATIONAL FRAMEWORK OF MICROECONOMICS

In this section we discuss specialization and exchange and the need to provide an international framework for the study of microeconomics.

### Specialization and Exchange

Two important characteristics that greatly increase the efficiency of market economies are specialization in production and exchange. **Specialization** refers to the use of labor and other resources in performing those tasks in which each resource is most efficient. Efficiency and output are then maximized. For example, by concentrating in the production of food, farmers produce a much greater output than if they tried to be self-sufficient and make their own clothing and manufacture all the utensils and equipment they need. By avoiding being “the jack of all trades” and specializing instead in the production of food, where they are most efficient, the farmers’ output becomes much greater. Farmers can then exchange some of their excess food for the clothes, utensils, and equipment that they need and, as a result, be able to consume more of every good.

But there is an even more important aspect of specialization that increases the efficiency of labor still more. This is division of labor. **Division of labor** refers to the breaking up of a task into a number of smaller, more *specialized* tasks and assigning each of these tasks to different workers. Such a division of labor is likely to greatly increase workers’ efficiency by allowing each of them to become more proficient at performing one task, developing shortcuts in the performance of the task, and avoiding the time lost from shifting from one task to another.

Specialization and division of labor, however, create the need for **exchange**. When individuals perform only one task in the production of a single commodity, there is a need for them to exchange part of their output for all the other things that they want. This exchange is greatly facilitated by the use of money. That is, in a monetized economy, individuals are paid in money for their work and can use this income to purchase in the market desired goods and services.

Specialization in production occurs not only at the individual level but also at the regional and national levels. A region or nation can specialize in the production of those goods and services in which it has a **comparative advantage** or is relatively more efficient, and then exchange part of its output for the output of other regions or nations. By doing so, each region or nation will end up consuming more than it could if it tried to be self-sufficient. Trade or exchange makes possible specialization in production and provides benefits to all parties to the exchange. This is discussed in detail in Part Three (Chapters 7–9) of the text.

### The International Framework of Microeconomics

As consumers, we purchase Japanese Toyotas and German Mercedes, Italian handbags and French perfumes, Hong Kong clothes and Taiwanese calculators, Scotch whiskey and Swiss chocolates, Canadian fish and Mexican tomatoes, Costa Rican bananas and Brazilian coffee. Often, we are not even aware that the products we consume, or parts of them, are made abroad. For example, imported cloth is used in American-made suits, many American brand-name shoes are entirely manufactured abroad, and a great deal of the orange juice that we drink is imported. American multinational corporations produce and

import many parts and components from abroad and export an increasing share of their output. Most of the parts and components of the Dell PC are in fact manufactured abroad (see Example 1–4), and more than one-third of Dell revenues and profits are generated abroad. General Motors and Ford face stiff competition from Toyota, Nissan, and Honda, and many U.S. steel companies are today near bankruptcy as a result of foreign competition and rising steel imports.

In view of the **internationalization of economic activity** and the international repercussions of domestic competitiveness policies, we cannot study microeconomics in

### EXAMPLE 1-4

#### Dell and Other PCs Sold in the United States Are Everything but American!

Dell, headquartered in Round Rock, Texas, coordinates a global production network in 34 countries in the Americas, Europe, and Asia. For most of the PCs sold in the United States, Dell performs only the final assembly domestically, relying on outside suppliers and contract manufacturers for components, peripherals, printed circuit board (PCB) assemblies, and subassemblies (box builds). The reason is that most parts and components are cheaper to produce in other parts of the world and are thus imported (see Table 1.2). Neither high-value components nor very low-value components (such as power supplies and keyboards) have to be made close to Dell’s assembly plants. Only some mid-level components (such as motherboards and other PCB assemblies) that are too expensive to ship by air to meet volatility in demand, as well as to risk holding in inventory, are produced locally, but even that is not always the case. In 2004, more than 90% of all the parts and components going into Dell’s and HP’s PCs were made outside the United States, and IBM sold its PC business to Lenovo of China.

**TABLE 1.2** Locations and Companies That Supply Specific Parts and Components for Dell’s PCs

Part/Component	Location	Company
Monitors	Europe and Asia	Phillips, Nokia, Samsung, Sony, Acer
PCBs	Asia, Scotland, and eastern Europe	SCI, Celestica
Drives	Asia, mainly Singapore	Seagate, Maxtor, W. Digital
Printers	Europe (Barcelona)	Acer
Box builds	Asia and eastern Europe	HonHai/Foxteq
Chassis	Asia and Ireland	HonHai/Foxteq

*Source:* J. Dedrick and K. L. Kraemer, “Dell Computer: Organization of a Global Production Network” and “Globalization of the Personal Computer Industry: Trends and Implications,” *Working Paper*, Irvine, CA; Center for Research on Information Technology and Organizations CRITO), University of California, Irvine, 2002; “Lenovo Buys IBM’s PC Unit for \$1.75 Billion,” *Financial Times*, December 9, 2004, p. 16; and “The Laptop Trail,” *Wall Street Journal*, June 9, 2005, p. 31.

an international vacuum. The large and growing degree of interdependence of the United States in the world economy today makes a closed-economy approach to the study of microeconomics unrealistic. This text will explicitly introduce and integrate the international dimension into the body of traditional microeconomics to reflect the globalization of most economic activities in the world today.<sup>4</sup>

## 1.6

## MODELS, METHODOLOGY, AND VALUE JUDGMENTS

We will now discuss the meaning and function of theory or models, examine the methodology of economics and distinguish between positive and normative analysis.

## Models and Methodology

In microeconomic theory, we seek to predict and explain the economic behavior of individual consumers, resource owners, and business firms and the operation of individual markets. For this purpose we use models. A **model** abstracts from the many details surrounding an event and identifies a few of the most important determinants of the event. For example, the amount of a commodity that an individual demands over a given period of time depends on the price of the commodity, the individual's income, and the price of related commodities (i.e., substitute and complementary commodities). It also depends on the individual's age, gender, education, background, whether the individual is single or married, whether he or she owns a house or rents, the amount of money he or she has in the bank, the stocks the individual owns, the individual's expectations of future income and prices, geographic location, climate, and many other considerations.

However, given the consumer's tastes and preferences, demand theory identifies the price of the commodity, the individual's income, and the price of related commodities as the most important determinants of the amount of a commodity demanded by an individual. Although it may be *unrealistic* to focus only on these three considerations, demand theory postulates that these are generally capable of predicting accurately and explaining consumer behavior and demand. One could, of course, include additional considerations or variables to gain a fuller or more complete explanation of consumer demand, but that would defeat the main purpose of the theory or model, which is to simplify and generalize.

A theory or model usually results from casual observation of the real world. For example, we may observe that consumers generally purchase less of a commodity when its price rises. Before such a theory of demand can be accepted, however, we must go back to the real world to test it. We must make sure that individuals in different places and over different periods of time do indeed, as a group, purchase less of a commodity when its price rises. Only after many such successful tests and the absence of contradictory results can we accept the theory and make use of it in subsequent analysis to predict and explain consumer behavior. If, on the other hand, test results contradict the model, then the model must be discarded and a new one formulated.

To summarize, a theory or model is usually developed by casual observation of the real world, but we must then go back to the real world to determine whether the implications or predictions of the theory are indeed correct. Only then can we accept the theory

<sup>4</sup> See D. Salvatore, "Globalization and International Competitiveness," in S. Shojai, ed., *Globalization: Virtue or Vice?* (New York: Praeger, 2001), pp. 7–21.

or model. According to the Nobel Laureate economist Milton Friedman, a model is not tested by the realism or lack of realism of its assumptions, but rather by its ability to predict accurately and explain. The assumptions of the model are usually unrealistic in that they must necessarily represent a simplification and generalization of reality. However, if the model predicts accurately and explains the event, it is tentatively accepted. For example, demand theory, as originally developed, was based on the assumption that utility (i.e., the satisfaction that a consumer receives from the consumption of a commodity) is cardinally measurable (i.e., we can attach specific numerical values to it). This assumption is clearly unrealistic. Nevertheless, we accept the theory of demand because it leads to the correct prediction that a consumer will purchase less of a commodity when its price rises (other things, such as the consumer's income and the price of related commodities, remaining equal).

While most assumptions represent simplifications of reality, and to that extent are unrealistic, most economists take a broader position. According to these economists, the appropriate **methodology of economics** (and science in general) is to test a theory not only by its ability to predict accurately, but also by whether the predictions follow logically from the assumptions and by the internal consistency of those assumptions. For example, the theory of perfect competition postulates that the economy operates most efficiently when consumers and producers are too small individually to affect prices and output. But this theory cannot be tested for the economy as a whole. It can only be tested by tracing the loss of welfare of individual consumers when the atomistic assumptions of the theory do not hold. Thus, an adequate test of the theory requires not only confirming that the predictions are accurate but also showing how the outcome follows logically or results directly from the assumptions.

Throughout this text we will look at many economic theories or models that seek to predict and explain the economic behavior of consumers, resource owners, and business firms as they interact in the markets for goods, services, and resources. The models presented are generally those that have already been successfully tested. In a microeconomic theory course, we are not concerned with the actual testing of these theories or models, but rather with their presentation, usefulness, and applications.

## Positive and Normative Analysis

In discussing the methodology of economic analysis, an important distinction is also made between positive and normative analysis. **Positive analysis** studies what *is*. It is concerned with how the economic system performs the basic functions of what to produce, how to produce, for whom to produce, how it provides for growth, and how it rations the available supply of a good over time. In other words, how is the price of a commodity, service, or resource actually determined in the market? How do producers combine resources to minimize costs of production? How does the number of firms in a market and the type of product they produce affect the determination of the price and quantity sold of the commodity? How do the number and type of owners and users of a resource affect the price and quantity of the resource placed on the market? How do specific taxes and subsidies affect the production and consumption of various commodities and the use of various resources? What are the effects of minimum wages on employment and incomes? The level of real wages on work and leisure? Rent control on the availability of housing? Deregulation of gas on gas prices and consumption? How does the economic system provide for the growth of the nation? How does it ration the available supply of a commodity over time? All of these and many more topics fall within the realm of positive analysis. For the most part, positive

analysis is factual or hypothetically testable and objective in nature, and it is devoid of ethical or value judgments.

**Normative analysis**, on the other hand, studies what *ought* to be. It is concerned with how the basic economic functions *should* be performed. Normative analysis is thus based on value judgments and, as such, is subjective and controversial. Whereas positive analysis is independent of normative analysis, normative analysis is based on positive analysis and the value judgments of society. Controversies in positive analysis can be (and are) usually resolved by the collection of more or better market data. On the other hand, controversies in normative analysis usually are not, and cannot, be resolved. Take, for example, the case of providing national health insurance for everybody. Many people favor it, but others are opposed, and no amount of economic analysis can resolve the controversy. Economists can provide an analysis of the *economic* costs and benefits of national health insurance. Such an analysis can be useful in clarifying the economic issues involved, but it is not likely to lead to general agreement on the proposition that national health insurance should or should not be provided for everybody. The economists' tools of analysis and logic can be applied to determine the economic benefits and costs of normative questions, but it is society as a whole (through elected representatives) that must make normative decisions.

It is extremely important in economics to specify exactly when we are leaving the real world of positive analysis and entering that of normative analysis—that is, when disagreements can be resolved by the collection of more or better data (facts) and when ethical or value judgments are involved. This book is primarily concerned with positive analysis. A statement such as “universal national health insurance should be established” is a proposition of normative analysis because it is based on value judgments. Normative analysis are discussed in detail in Chapters 16 and 17.

## AT THE FRONTIER

### Do Economists Ever Agree on Anything?

**Y**ou have probably heard some of the many jokes about economists disagreeing on almost everything. “How many opinions on the same subject do you expect to find in a room with three economists?” Answer: “four.” In response to an economist’s answer framed as “on the one hand . . . and on the other . . .,” President Truman is supposed to have snapped: “Give me a one-handed economist.” Such jokes do not seem justified according to the results of a recent study.

Table 1.3 reports the responses to 10 of 40 propositions from 464 respondents to a questionnaire sent to a random sample of 1,350 economists in 1992. Table 1.3 shows that the vast majority of economists agreed on the first three propositions (that a ceiling on rents reduces the quantity and quality of housing, that tariffs and import quotas usually reduce general economic welfare, and that fiscal policy has a significant stimulative effect on a less than fully employed economy), but strongly disagreed on the last two propositions. In general, there was much more agreement on questions of microeconomics (which are overrepresented in the propositions reported in Table 1.3)

**TABLE 1.3** Responses of Economists of Various Propositions

Proposition	Percentage of Respondents Who	
	Agreed	Disagreed*
1. A ceiling on rents reduces the quantity and quality of housing available.	92.9	6.5
2. Tariffs and import quotas usually reduce general economic welfare.	92.6	6.5
3. Fiscal policy (e.g., tax cuts and/or expenditure increase) has a significant stimulative impact on a less than fully employed economy.	89.9	9.1
4. Cash payments increase the welfare of recipients to a greater degree than do transfers-in-kind of equal cash value.	83.9	15.1
5. A large federal budget deficit has an adverse effect on the economy.	82.7	15.7
6. The redistribution of income distribution within the U.S. is a legitimate role for government.	81.9	16.8
7. A minimum wage increases unemployment among young and unskilled workers.	78.9	20.5
8. Antitrust laws should be enforced vigorously to reduce monopoly power from its current level.	71.8	27.6
9. Reducing the regulatory power of the Environmental Protection Agency (EPA) would improve the efficiency of the U.S. economy.	36.0	62.3
10. The U.S. government should retaliate against (foreign) dumping and subsidies in international trade.	50.2	47.6

\*The sum of the percentages of those who agree and disagree does not add to 100 because of nonrespondents to the particular question.

than on questions of macroeconomics. More recently, however, behavioral and heterodox economists—still a small minority of economists to be sure—have been questioning even the most generally accepted propositions of economics.

But even on the questions that elicit widespread agreement among economists, the gap between the public's (especially non-college graduates) and economists' views are very wide. There is, however, a great deal of agreement on what are the major issues that society faces today (i.e., the state of the economy, education, health care, taxes, crime, globalization, and income inequalities).

*Sources:* R. M. Alston, J. R. Kearl, and M. B. Vaughan, "Is There a Consensus Among Economists in the 1990s?," *American Economic Review*, May 1992, pp. 203–209; R. J. Blendon et al., "Bridging the Gap Between the Public's and Economists' Views of the Economy," *Journal of Economic Perspectives*, summer 1997, pp. 105–118; "What Does the Public Know About Economic Policy?" *IMF Survey*, January 9, 2006, p. 16; "In Economics Departments, A Growing Will to Debate Fundamental Assumptions," *New York Times*, July 11, 2007, p. B6; and D. Rodrik, "Why Do Economists Disagree?," August 5, 2007, [http://rodrik.typepad.com/dani\\_rodrik\\_weblog/2007/08/why-do-economis.html](http://rodrik.typepad.com/dani_rodrik_weblog/2007/08/why-do-economis.html).

## SUMMARY

1. Economics deals with the allocation of scarce resources among alternative uses to satisfy human wants. Scarcity of resources and commodities is the fundamental economic fact of every society.
2. All societies must decide what to produce, how to produce, for whom to produce, how to provide for the growth of the system, and how to ration a given amount of a commodity over time. Under a free-enterprise or mixed economic system such as that in the United States, it is the price system that performs these functions, for the most part.
3. Microeconomic theory studies the economic behavior of individual decision-making units such as individual consumers, resource owners, and business firms and the operation of individual markets in a free-enterprise economy. This is contrasted with macroeconomic theory, which studies the economy viewed as a whole. Microeconomic theory focuses attention on households and business firms as they interact in the markets for goods and services and resources.
4. Because of scarcity, all economic activities give rise to some benefits but also involve some costs. The aim of economic decisions is to maximize net benefits. Net benefits increase as long as the marginal or extra benefit from an action exceeds the marginal or extra cost resulting from the action. Net benefits are maximized when the marginal benefit is equal to the marginal cost. This concept applies to all economic decisions and market transactions. It applies as much to the consumption decisions of individuals as to the production decisions of firms, the supply choices of input owners, and government decisions. Indeed, the concepts of the margin and marginal analysis represent the key unifying concepts in all of microeconomics.
5. Specialization and exchange are two important characteristics that greatly increase the efficiency of individuals and firms in market economies. Many of the commodities we consume today are imported, and American firms purchase many inputs abroad, sell an increasing share of their products to other nations, and face increasing competition from foreign firms in the U.S. market and around the world. The international flow of capital, technology, and skilled labor has also reached unprecedented dimensions. In view of such internationalization of economic activity in the world today, it is essential to introduce an international dimension into the body of traditional microeconomics.
6. Theories make use of models. A model abstracts from the details surrounding an event and seeks to identify a few of the most important determinants of an event. A model is tested by its predictive ability, the consistency of its assumptions, and the logic with which the predictions follow from the assumptions. There is more agreement among economists than is commonly believed.

## KEY TERMS

Economics  
Human wants  
Economic resources  
Price system  
Free-enterprise system  
What to produce  
How to produce  
For whom to produce  
Economic growth  
Rationing over time

Microeconomic theory  
Macroeconomic theory  
Circular flow of economic activity  
Price theory  
Mixed economy  
Marginal benefit  
Marginal cost  
Concept of the margin  
Marginal analysis  
Pareto optimum

Specialization  
Division of labor  
Exchange  
Comparative advantage  
Internationalization of economic activity  
Model  
Methodology of economics  
Positive analysis  
Normative analysis

## REVIEW QUESTIONS

1. Will the problem of scarcity disappear over time as standards of living increase?
2. Distinguish between the real and the financial flows that link product and factor markets.
3. Explain in terms of the circular flow of economic activity why some individuals are richer while others are poorer.
4. Explain why some football players earn more than others. Why would a team sign a superstar for millions of dollars when it could sign a good player for much less?
5. Does a firm maximize its total revenue when it maximizes its total profits?
6. It has been proven that a speed limit of 55 MPH, rather than 65 MPH, on the nation's highways saves lives and fuel. Is there any cost in keeping the speed limit at 55 MPH?
7. Why is it that imports and exports as a percentage of gross national product (GNP) are much smaller in the United States than in Switzerland?
8. What is the relationship between import prices and domestic prices?
9. What happens to the dollar price of Japanese exports to the United States and to the yen price of U.S. exports to Japan if the Japanese yen increases in value with respect to the U.S. dollar?
10. Two models predict equally well, but one is based on a larger number of assumptions and the logic with which the predictions follow from the assumptions is more intricate than for another model. Why is the second model better?
11. A model using three variables explains 85% of an event (say, a price increase), while another model, using ten variables, explains 95% of the event. Which of the two models is better? Why?
12. The government should pass more stringent pollution control laws. Do you agree? What can economists contribute to the discussion?

## PROBLEMS

- \*1. Why do we study microeconomics?
2. Explain why an increasing proportion of income spent on health care does not necessarily involve a reduction in the quantity of all other goods and services that can be purchased overtime. In what way is exploding health care costs related to the problem of scarcity?
3. Briefly explain how the sharp increase in petroleum prices since the fall of 1973 affected driving habits and the production of cars in the United States since then.
4. Explain why India produces textiles with much more labor relative to capital than does the United States.
5. Explain how the introduction of government affects the circular flow of economic activity.
- \*6. Explain the effect of government setting the price of a commodity
  - a. below equilibrium with a price ceiling;
  - b. above equilibrium with a price floor.
7. How does the concept of the margin provide a key unifying concept in microeconomics?
8. Using some data obtained from a publication such as *The Survey of Current Business*, *The U.S. Statistical Abstract*, or *International Financial Statistics* available in your library, show that the interdependence of the U.S. economy with the rest of the world has increased sharply during the past three decades.
9. a. If two models predict equally well but one is more complicated than the other, indicate which one you would use and why.  
b. Indicate how you would determine which of the two models is more complex.
10. a. Explain how you would go about constructing a model to predict total sales of American-made cars in the United States next year.  
b. Indicate how you would test your model.
11. Economists often disagree on economic matters, so economics is not a science. True or false? Explain.
- \*12. Briefly indicate which aspects of the redistribution of income from higher- to lower-income people involve
  - a. positive analysis;
  - b. normative analysis.

\* = Answer provided at end of book.