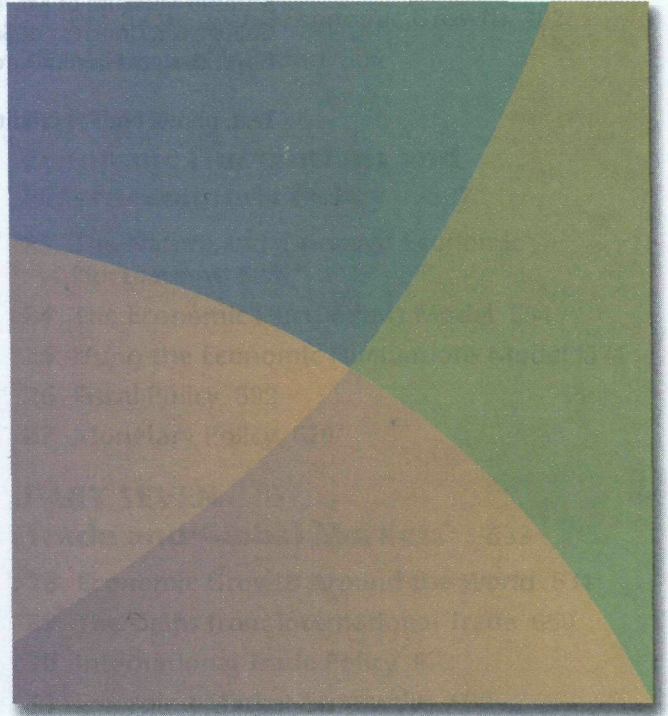


ECONOMICS

THIRD EDITION



John B. Taylor

Stanford University

Contents

Preface xxix

PART ONE Introduction to Economics 1

1 The Central Idea 2

Scarcity and Choice for Individuals 3

Consumer Decisions 3

Opportunity Cost 4 Gains from Trade: A Better Allocation 4

Producer Decisions 5

Gains from Trade: Greater Production 6 Specialization, Division of Labor, and Comparative Advantage 6

International Trade 7

Scarcity and Choice for the Economy as a Whole 7

Production Possibilities 7

Increasing Opportunity Costs 8

The Production Possibilities Curve 8

Inefficient, Efficient, or Impossible? 9 Shifts in the Production

Possibilities Curve 10 Scarcity, Choice, and Economic Progress 10

Market Economies and the Price System 12

Three Questions 12

Key Elements of a Market Economy 13

Freely Determined Prices 13 Property Rights and Incentives 13

Freedom to Trade at Home and Abroad 13 A Role for Government 14

The Role of Private Organizations 14

The Price System 14

Conclusion 17 Key Points 17 Key Terms 17 Questions for Review 17

Problems 18

■ ECONOMICS IN ACTION Gains from Trade on the Internet 7

■ ECONOMICS IN ACTION Should We Teach the Idea of Scarcity and Choice to Fourth Graders? 15

2 Observing and Explaining the Economy 20

Case Study: What's Happening in the Biggest Industry in America? 21

Spending as a Share of GDP 22

The Relative Price 23

Correlations Between Economic Variables 24

Correlation versus Causation 25 The Lack of Controlled Experiments in

Economics 25 Faulty Data 26

The Circular Flow Diagram: People Interacting in Markets 26

Economic Models	28
<i>What Are Economic Models?</i>	28
An Example: A Model with Two Variables	30
Prediction and the <i>Ceteris Paribus</i> Assumption	31
<i>Microeconomic Models versus Macroeconomic Models</i>	31
<i>The Use of Existing Models</i>	32
<i>The Development of New Models</i>	32
The Impact of Economics on Public Policy	32
<i>Positive versus Normative Economics</i>	33
<i>Economics as a Science versus a Partisan Policy Tool</i>	34
<i>Economics Is Not the Only Factor in Policy Issues</i>	34
<i>Disagreement Between Economists</i>	34
Conclusion: A Reader's Guide	35
Key Points	36
Key Terms	36
Questions for Review	36
Problems	37
ECONOMICS IN ACTION Science or Persuasion?	33

3

The Supply and Demand Model 38

Demand	39
<i>The Demand Curve</i>	39
<i>Shifts in Demand</i>	40
Consumers' Preferences	42
Consumers' Information	42
Consumers' Incomes	42
Number of Consumers in the Market	42
Consumers' Expectations of the Future	42
Prices of Closely Related Goods	43
<i>Movements Along versus Shifts of the Demand Curve</i>	43
Supply	44
<i>The Supply Curve</i>	45
<i>Shifts in Supply</i>	46
Technology	46
The Price of Goods Used in Production	46
The Number of Firms in the Market	47
Expectations of Future Prices	48
Government Taxes, Subsidies, and Regulations	48
<i>Movements Along versus Shifts of the Supply Curve</i>	49
Market Equilibrium: Combining Supply and Demand	49
<i>Determination of Market Price</i>	50
Finding the Market Price	51
Two Predictions	52
<i>Finding the Equilibrium with a Supply and Demand Diagram</i>	52
<i>A Change in the Market</i>	53
Effects of a Change in Demand	53
Effects of a Change in Supply	55
When Both Curves Shift	55
Case Study: Using the Supply and Demand Model	57
<i>Explaining and Predicting Peanut Prices</i>	57
A Big Drought in the Southeast	57
A Change in the Foreign Peanut Quota?	58
<i>Interference with Market Prices</i>	62
Price Ceilings and Price Floors	62
Shortages and Related Problems Resulting from Price Ceilings	63
Dealing with Persistent Shortages	65
Making Things Worse	65
<i>Surpluses and Related Problems Resulting from Price Floors</i>	65

Elasticity of Demand and Supply 67*Defining the Price Elasticity of Demand* 67*Defining the Price Elasticity of Supply* 68Conclusion 69 Key Points 69 Key Terms 69 Questions for Review 70
Problems 70■ **READING THE NEWS ABOUT** Supply and Demand in the Marketplace 61■ **ECONOMICS IN ACTION** What Do Price Ceilings on ATMs Do? 63**4 Elasticity and Its Uses** 72**Case Study: Why the Size of the Elasticity of Demand Is Important** 73*The Size of the Elasticity: High versus Low* 73*The Impact of a Change in Supply on the Price of Oil* 75**Working with Demand Elasticities** 75*The Advantage of a Unit-Free Measure* 76*Elasticity versus Slope* 77*Talking About Elasticities* 78Elastic versus Inelastic Demand 78 Perfectly Elastic versus Perfectly Inelastic
Demand 78*Calculating the Elasticity with a Midpoint Formula* 78*Revenue and the Price Elasticity of Demand* 79

The Two Effects of Price on Revenue 79

What Determines the Size of the Price Elasticity of Demand? 82

The Degree of Substitutability 82 Big-Ticket versus Little-Ticket Items 82

Temporary versus Permanent Price Changes 82 Long-Run versus Short-Run
Elasticity 83*Income Elasticity of Demand* 84**Working with Supply Elasticities** 85*Perfectly Elastic and Perfectly Inelastic Supply* 85*Why the Size of the Price Elasticity of Supply Is Important* 86Conclusion 89 Key Points 89 Key Terms 89 Questions for Review 89
Problems 90■ **ECONOMICS IN ACTION** Predicting the Size of a Price Increase 76■ **ECONOMICS IN ACTION** Creating and Advancing Elasticity 83**PART TWO Principles of Microeconomics** 92**5 The Demand Curve and the Behavior of Consumers** 94**Utility and Consumer Preferences** 95*A Consumer's Utility Depends on the Consumption of Goods* 96*Utility Indicates Preference* 97**The Budget Constraint and Utility Maximization** 99*The Budget Constraint* 99*Maximizing Utility Subject to the Budget Constraint* 100Effect of a Change in Price: A Movement Along a Demand Curve 101 Effect of
a Change in Income: A Shift in the Demand Curve 101 Income and
Substitution Effects of a Price Change 101

Willingness to Pay and the Demand Curve	103
<i>Measuring Willingness to Pay and Marginal Benefit</i>	103
<i>Graphical Derivation of the Individual Demand Curve</i>	104
<i>The Price Equals Marginal Benefit Rule</i>	106
The Market Demand Curve	107
<i>Different Types of Individuals</i>	107
<i>Different Prices for the Same Good</i>	108
Consumer Surplus	109
Conclusion	111
Key Points	111
Key Terms	112
Questions for Review	112
Problems	112
ECONOMICS IN ACTION <i>The Demand Curve for Children</i>	98
ECONOMICS IN ACTION <i>Building Roads and Bridges with Consumer Surplus</i>	109

6 The Supply Curve and the Behavior of Firms 114

Case Study: Your Own Firm	116
<i>Your Firm as a Price-Taker in a Competitive Market</i>	116
<i>Other Types of Markets</i>	117
The Firm's Profits	118
<i>Total Revenue</i>	118
<i>Production and Costs</i>	119
The Time Period	119
The Production Function	119
Costs	120
Graphical Representation of Total Costs and Marginal Cost	123
Profit Maximization and the Individual Firm's Supply Curve	124
<i>Deriving a Firm's Supply Curve from Its Marginal Cost</i>	124
Finding the Quantity Supplied at Different Prices	124
The Price Equals Marginal Cost Rule	127
<i>Another Way to Look at Profit Maximization</i>	128
A Profit Table	128
A Profit Graph	129
<i>A Comparison of the Two Approaches to Profit Maximization</i>	130
<i>The Market Supply Curve</i>	131
The Slope of the Supply Curve	132
Shifts in the Supply Curve	132
Producer Surplus	133
<i>A Graphical Representation of Producer Surplus</i>	133
<i>What Is the Difference Between Profits and Producer Surplus?</i>	134
Conclusion	135
Key Points	136
Key Terms	136
Questions for Review	136
Problems	137
ECONOMICS IN ACTION <i>Green Pricing and Incentives</i>	126

7 The Interaction of People in Markets 138

Individual Consumers and Firms in a Market	140
<i>The Hard Way to Process Information, Coordinate, and Motivate</i>	140
<i>The Easy Way to Process Information, Coordinate, and Motivate</i>	141
<i>The Competitive Equilibrium Model</i>	141
Individual Production and Consumption Decisions	142
Adjustment to the Equilibrium Price	143

Case Study: A Double-Auction Market	143
<i>Market Participants and Their Incentives</i>	144
Buyers Earn a Consumer Surplus	144
Sellers Earn a Producer Surplus	144
<i>Predictions of the Competitive Equilibrium Model</i>	145
Constructing the Model	145
Results	146
Are Competitive Markets Efficient?	147
<i>The Meaning of Efficient</i>	148
The Need for a More Precise Definition	148
Three Conditions for Efficient Outcomes	148
<i>Is the Market Efficient?</i>	149
<i>Efficiency and Income Inequality</i>	152
Measuring Waste from Inefficiency	153
<i>Maximizing the Sum of Producer Plus Consumer Surplus</i>	153
<i>Deadweight Loss</i>	155
The Deadweight Loss from Taxation	155
<i>A Tax Paid by a Producer Shifts the Supply Curve</i>	155
<i>A New Equilibrium Price and Quantity</i>	156
<i>Deadweight Loss and Tax Revenue</i>	156
Informational Efficiency	158
Conclusion	159
Key Points	160
Key Terms	160
Questions for Review	160
Problems	160
■ READING THE NEWS ABOUT Ticket Scalping	150
■ ECONOMICS IN ACTION Tax Prediction Passes Economists' Test	157

PART THREE The Economics of the Firm 163

8 Costs and the Changes at Firms Over Time 164

Case Study: Finding Average Cost at an Individual Firm	165
<i>Total Costs, Fixed Costs, Variable Costs, and Marginal Cost</i>	165
The Short Run and the Long Run	166
The Firm: On-the-Move	166
Marginal Cost	168
<i>Average Cost</i>	169
<i>Costs Depend on the Firm's Production Function</i>	169
Varying Labor Input but Not Capital Input in the Short Run	169
The Production Function	170
Average Cost Curves	172
<i>Marginal versus Average in the Classroom</i>	173
<i>Generic Cost Curves</i>	174
Costs and Production: The Short Run	175
<i>The Profit or Loss Rectangle</i>	175
The Total Revenue Area	175
The Total Costs Area	177
Profits or Losses	177
<i>The Breakeven Point</i>	178
<i>The Shutdown Point</i>	179
Costs and Production: The Long Run	181
<i>The Effect of Capital Expansion on Total Costs</i>	181
<i>Effects of a Capital Expansion on Average Total Cost</i>	181

The Long-Run ATC Curve 183
Capital Expansion and Production in the Long Run 185
The Mix of Capital and Labor 186

Economies of Scale 186

Determining Whether a Firm Has Economies or Diseconomies of Scale 186
Mergers and Economies of Scope 188

Conclusion 190 Key Points 190 Key Terms 190 Questions for Review 191
 Problems 191

■ ECONOMICS IN ACTION Economist Finds Economies of Scale at Pin Factory 189

9 The Rise and Fall of Industries 192

A Look at Different Industries 193

Broad Industry Groups 193
More Narrowly Defined Industries 194
Global Industries 195

The Long-Run Competitive Equilibrium Model of an Industry 196

Setting Up the Model with Graphs 196

Entry and Exit 197 Long-Run Equilibrium 197

An Increase in Demand 198

Short-Run Effects 198 Toward a New Long-Run Equilibrium 198

Economic Profits versus Accounting Profits 200 The Equilibrium Number
 of Firms 201 Entry Combined with Individual Firm Expansion 201

A Decrease in Demand 201

Shifts in Cost Curves 203

Case Study: How Does the Model Explain the Facts? 205

Minimum Costs per Unit and the Efficient Allocation of Capital 207

Average Total Cost Is Minimized 207

Efficient Allocation of Capital among Industries 208

External Economies and Diseconomies of Scale 208

External Diseconomies of Scale 208

External Economies of Scale 209

The Standard Assumption: A Flat Long-Run Industry Supply Curve 210

External and Internal Economies of Scale Together 211

Conclusion 211 Key Points 212 Key Terms 212 Questions for Review 212
 Problems 212

■ ECONOMICS IN ACTION Digital Cameras and the Future of Film 203

10 Monopoly 214

A Model of Monopoly 215

Getting an Intuitive Feel for the Market Power of a Monopoly 215

There Is No One to Undercut the Monopolist's Price 215 The Impact of
 Quantity Decisions on the Price 216 Showing Market Power with a
 Graph 216

The Effects of a Monopoly's Decision on Revenues 216

Declining Marginal Revenue 218 Marginal Revenue Is Less than the
 Price 219 Marginal Revenue Can Be Negative 220 Average Revenue 220

<i>Finding Output to Maximize Profits at the Monopoly</i>	220
Comparing Total Revenue and Total Costs	220
Equating Marginal Cost and Marginal Revenue	221
MC = MR at a Monopoly versus MC = P at a Competitive Firm	222
Marginal Revenue Equals the Price for a Price-Taker	222
A Graphical Comparison	223
The Generic Diagram of a Monopoly and Its Profits	224
Determining Monopoly Output and Price on the Diagram	225
Determining the Monopoly's Profits	226
Competition, Monopoly, and Deadweight Loss	227
Comparison with Competition	227
Deadweight Loss from Monopoly	228
Consumer Surplus and Producer Surplus Again	228
Meaningful Comparisons	229
The Monopoly Price Is Greater than Marginal Cost	229
Marginal Benefit Is More than Marginal Cost	229
The Price-Cost Margin	229
Why Monopolies Exist	230
Natural Monopolies	230
Patents and Copyrights	232
Licenses	233
Attempts to Monopolize and Erect Barriers to Entry	233
Price Discrimination	234
Consumers with Different Price Elasticities of Demand	235
Quantity Discounts	236
Monopolies versus Other Firms with Market Power	238
Conclusion	238
Key Points	238
Key Terms	239
Questions for Review	239
Problems	239
READING THE NEWS ABOUT Monopoly	231

11 Product Differentiation, Monopolistic Competition, and Oligopoly 242

Product Differentiation	243
Variety of Goods in a Market Economy	244
Puzzles Explained by Product Differentiation	245
Intraindustry Trade	245
Advertising	245
Consumer Information Services	246
How Are Products Differentiated?	246
The Optimal Amount of Product Differentiation at a Firm	246
Monopolistic Competition	249
A Typical Monopolistic Competitor	249
The Short Run: Just Like a Monopoly	250
Entry and Exit: Just Like Competition	251
The Long-Run Monopolistically Competitive Equilibrium	252
Comparing Monopoly, Competition, and Monopolistic Competition	252
Product Variety versus Deadweight Loss	252
Oligopoly	254
An Overview of Game Theory	254

Applying Game Theory 256

A Duopoly Game 256 Incentives to Defect 257 Incentives to Cooperate:
Repeated Games 257 Secret Defections 257

Measures of Market Power 259**Price-Cost Margins** 259**Concentration Ratios** 260

Conclusion 261 Key Points 261 Key Terms 261 Questions for Review 262
Problems 262

■ **ECONOMICS IN ACTION** What's the Future of Product Differentiation? 247

■ **READING THE NEWS ABOUT** Defection from a Cartel 258

12 Antitrust Policy and Regulation 264**Antitrust Policy** 265**Attacking Existing Monopoly Power** 265

A Brief History: From Standard Oil to Microsoft 265 Predatory Pricing 266

Merger Policy 266

The Legislation, the Antitrust Division, and the FTC 267 Economic
Analysis 267 The "Herf" 267 Market Definition 268 Horizontal versus
Vertical Mergers 268

Price Fixing 269**Vertical Restraints** 272**Regulating Natural Monopolies** 273**Economies of Scale and Natural Monopolies** 273**Alternative Methods of Regulation** 274**Marginal Cost Pricing** 275

Average Total Cost Pricing 275 Incentive Regulation 275

To Regulate or Not to Regulate 277**Borderline Cases** 277**Regulators as Captives of Industry** 277**The Deregulation Movement** 278

Conclusion 279 Key Points 279 Key Terms 280 Questions for Review 280
Problems 280

■ **READING THE NEWS ABOUT** Mergers 270

PART FOUR Markets, Income Distribution, and Public Goods 283**13 Labor Markets** 284**Case Study: The Recent Wage Boom** 285**Measuring Workers' Pay** 285

Pay Includes Fringe Benefits 286 Adjusting for Inflation: Real Wages versus
Nominal Wages 286 The Time Interval: Hourly versus Weekly Measures
of Pay 286

Wage Trends 286**Labor Demand** 288**A Firm's Employment Decision** 288

From Marginal Product to Marginal Revenue Product 288 The Marginal
Revenue Product of Labor Equals the Wage ($MRP = W$) 290

<i>The Firm's Derived Demand for Labor</i>	290
What If the Firm Has Market Power?	291
Market Demand for Labor	292
<i>A Comparison of $MRP = W$ with $MC = P$</i>	293
Labor Supply	294
<i>Work versus Two Alternatives: Home Work and Leisure</i>	294
Effects of Wage Changes: Income and Substitution Effects	295
The Shape of Supply Curves	295
<i>Work versus Another Alternative: Getting Human Capital</i>	298
Explaining Wage Differences	298
<i>Labor Productivity</i>	299
The Wage Boom and Labor Productivity Boom	299
Wage Dispersion and Productivity	299
<i>Compensating Wage Differentials</i>	300
<i>Discrimination</i>	301
Wage Differences for Workers with the Same Marginal Products	302
Competitive Markets and Discrimination	302
<i>Minimum Wage Laws</i>	303
Wage Payments and Incentives	305
<i>Piece-Rate Wages</i>	305
<i>Deferred Wage Payments</i>	305
Labor Unions	306
<i>Union/Nonunion Wage Differentials</i>	306
The Restricted Supply Explanation	306
The Increased Productivity Explanation	307
<i>Monopsony and Bilateral Monopoly</i>	308
Conclusion and Some Advice	309
Key Points	309
Key Terms	310
Questions for Review	310
Problems	310
■ READING THE NEWS ABOUT Incentives to Work	297
■ ECONOMICS IN ACTION: Does Productivity or Compensating Differentials Explain the Academic Wage Gap?	301

14 Taxes, Transfers, and Income Distribution 312

The Tax System	313
<i>The Personal Income Tax</i>	313
Computing the Personal Income Tax	314
The Marginal Tax Rate	315
Zero Tax on Low Incomes	317
<i>The Payroll Tax</i>	317
<i>Other Taxes</i>	318
<i>The Effects of Taxes</i>	318
The Effect of a Tax on a Good	318
Effects of the Personal Income Tax	320
The Effect of a Payroll Tax	321
The Possibility of a Perverse Effect on Tax Revenue	323
<i>Tax Policy and the Tradeoff Between Efficiency and Equality</i>	324
Transfer Payments	325
<i>Means-Tested Transfer Programs</i>	325
<i>The Earned Income Tax Credit (EITC)</i>	326
<i>Incentive Effects</i>	327
<i>Social Insurance Programs</i>	328

Mandated Benefits 330

The Distribution of Income in the United States 331

The Personal Distribution of Income 331

The Lorenz Curve and Gini Coefficient 333

Income Mobility and Longer-Term Income Inequality 335 Changing Composition of Households 336 Distribution of Income versus Distribution of Wealth 336

The Poor and the Poverty Rate 336

Effects of Taxes and Transfers on Income Distribution and Poverty 337

Conclusion 338 Key Points 339 Key Terms 339 Questions for Review 339 Problems 340

■ **ECONOMICS IN ACTION** The Impact of the Marriage Tax 317

■ **READING THE NEWS ABOUT** The Impact of the 1996 Welfare Reform Act 329

■ **ECONOMICS IN ACTION** Income Distribution Around the World 334

15 Public Goods, Externalities, and Government Behavior 342

Public Goods 343

Nonrivalry and Nonexcludability 343

Free Riders: A Difficulty for the Private Sector 343

Avoiding Free-Rider Problems 345

New Technology 345

Public Goods and Actual Government Production 345

Cost-Benefit Analysis 346

Marginal Cost and Marginal Benefit 346

Public Infrastructure Projects 347

Discounting Future Benefits 347 What Discount Rate Should Be Used? 347

Externalities: From the Environment to Education 348

Negative Externalities 348

Positive Externalities 350

Externalities Spread across Borders 350

Remedies for Externalities 351

Private Remedies: Agreements between the Affected Parties 352

The Importance of Assigning Property Rights 352 Transaction Costs 353

The Free-Rider Problem Again 353

Command and Control Remedies 353

Taxes and Subsidies 355

Emission Taxes 357 Why Is Command and Control Used More Than Taxes? 357

Tradable Permits 357

Control over Firms as a Group Rather Than Individual Firms 358

Assigning and Defining Property Rights 358

Balancing the Costs and Benefits of Reducing Externalities 358

Models of Government Behavior 359

Public Choice Models 359

Economic Policy Decisions Through Voting 360

Single Issues with Unanimity 360 The Median Voter Theorem 360

Convergence of Positions in a Two-Party System 361 Voting Paradoxes 361

- Special Interest Groups* 362
 - Concentrated Benefits and Diffuse Costs 362
 - Wasteful Lobbying 363
- Incentive Problems in Government* 363
- Better Government Through Market-Based Incentives* 364
 - Conclusion 365
 - Key Points 365
 - Key Terms 365
 - Questions for Review 366
 - Problems 366
 - ECONOMICS IN ACTION Externalities from Biodiversity 354
 - ECONOMICS IN ACTION Advising the Government to Auction Off the Spectrum 363

16 Physical Capital and Financial Markets 368

- Capital Market Terminology* 369
 - Physical Capital* 369
 - Financial Capital: Debt and Equity* 369
- Markets for Physical Capital* 370
 - Rental Markets* 370
 - The Demand Curve for Capital 371
 - Demand for Factors of Production in General 372
 - The Market Demand and Supply 372
 - The Case of Fixed Supply: Economic Rents 373
 - The Ownership of Physical Capital* 375
- Stock and Bond Markets* 375
 - Stock Prices and Rates of Return* 376
 - Bond Prices and Rates of Return* 376
 - Face Value, Maturity, Coupon, and Yield 376
 - Bond Prices and Bond Yields 379
- Risk versus Return* 380
 - Behavior under Uncertainty* 380
 - Risk and Rates of Return in Theory* 382
 - Risk and Return in Reality* 383
 - Diversification Reduces Risk* 385
 - Efficient Market Theory* 386
- The Foreign Exchange Market* 386
 - Differences in the Price of Goods and Services in Different Countries* 388
 - Differences in Rates of Return* 390
 - Conclusion and Some Lessons 391
 - Key Points 391
 - Key Terms 391
 - Questions for Review 392
 - Problems 392
 - READING THE NEWS ABOUT Stocks 377
 - READING THE NEWS ABOUT Bond Prices 378
 - READING THE NEWS ABOUT Stock Price Plunges 384
 - READING THE NEWS ABOUT Foreign Exchange Markets 387

PART FIVE Principles of Macroeconomics 395

17 Macroeconomics: The Big Picture 396

- Real GDP over Time* 397
 - Economic Growth: The Relentless Uphill Climb* 398

Economic Fluctuations: Temporary Setbacks and Recoveries 399
 A Recession's Aftermath 400 Recessions versus Depressions 401

Unemployment, Inflation, and Interest Rates 402

Unemployment During Recessions 402

Inflation 404

Interest Rates 406

Different Types of Interest Rates and Their Behavior 406 The Concept of the Real Interest Rate 407

Macroeconomic Theory and Policy 407

Economic Growth Theory and Economic Fluctuations 408

Aggregate Supply and Long-Term Economic Growth 408

The Production Function 408

Government Policy for Long-Term Economic Growth 409

Fiscal Policy 409 Monetary Policy 410

Economic Fluctuations Theory and Policy 410

Aggregate Demand and Economic Fluctuations 410

Macroeconomic Policy for Economic Fluctuations 411

Conclusion 411 Key Points 412 Key Terms 412 Questions for Review 412 Problems 412

■ **ECONOMICS IN ACTION Recessions and Presidential Politics** 405

18

Measuring the Production, Income, and Spending of Nations 414

Measuring GDP 415

A Precise Definition of GDP 415

Prices Determine the Importance of Goods and Services in GDP 415

Intermediate Goods versus Final Goods 416 Three Ways to

Measure GDP 416

The Spending Approach 417

Consumption 417 Investment 417 Government Purchases 418

Net Exports 419 Algebraic Summary 420

The Income Approach 420

Labor Income 421 Capital Income 421 Depreciation 421

Indirect Business Taxes 422 Net Income of Foreigners 422

The Production Approach 422

Net Exports Equals Saving minus Investment 424

The Definition of a Country's Saving 424

Saving Equals Investment plus Net Exports 425

People Saving 425 People Investing, Exporting, and Importing 426

Real GDP and Nominal GDP 426

Adjusting GDP for Inflation 427

Computing Real GDP Growth Between Two Years 427 A Year-to-Year

Chain 428 From the 1996 Base Year to Other Years 428 Real GDP versus

Nominal GDP over Time 428

The GDP Deflator 429

Alternative Inflation Measures 430

Shortcomings of the GDP Measure 431

Revisions in GDP 431

- Omissions from GDP* 431
 - Home Work and Production 431
 - Leisure Activity 433
 - The Underground Economy 433
 - Quality Improvements 433
- Other Measures of Well-Being* 433
 - Conclusion 434
 - Key Points 434
 - Key Terms 435
 - Questions for Review 435
 - Problems 435
- **ECONOMICS IN ACTION Distinguishing Between Stocks and Flows** 419
- **READING THE NEWS ABOUT GDP Each Month** 432

19 The Spending Allocation Model 438

- The Spending Shares* 439
 - Defining the Spending Shares* 439
 - If One Share Goes Up, Another Must Go Down* 440
- The Effect of Interest Rates on Spending Shares* 441
 - Consumption* 441
 - Consumption and the Interest Rate 441
 - Movements along versus Shifts of the Consumption Share Line 442
 - Investment* 443
 - Net Exports* 443
 - The Interest Rate and the Exchange Rate 443
 - The Exchange Rate and Net Exports 445
 - Combining the Two Relationships 446
 - Putting the Three Shares Together* 446
- Determining the Equilibrium Interest Rate* 447
 - Adding the Nongovernment Shares Graphically* 447
 - The Share of GDP Available for Nongovernment Use* 447
 - Finding the Equilibrium Interest Rate Graphically* 448
 - Analogy with Supply and Demand 448
 - The Real Interest Rate in the Long Run 449
- Case Study: Shifts in Government Purchases and Consumption* 450
 - A Shift in Government Purchases* 450
 - A Shift in Consumption* 452
- The National Saving Rate* 453
 - Conclusion 455
 - Key Points 455
 - Key Terms 455
 - Questions for Review 455
 - Problems 456

20 Unemployment and Employment 458

- Unemployment and Other Labor Market Indicators* 459
 - Cyclical, Frictional, and Structural Unemployment* 459
 - How Is Unemployment Measured?* 460
 - Who Is Employed and Who Is Unemployed? 460
 - The Labor Force and Discouraged Workers 462
 - Part-Time Work 462
 - Comparing Three Key Indicators* 462
 - Aggregate Hours of Labor Input* 463
- The Nature of Unemployment* 464
 - Reasons People Are Unemployed* 464
 - Job Losers 465
 - Job Leavers 467
 - New Entrants and Re-entrants 467

The Duration of Unemployment 468
Unemployment for Different Groups 468

Explaining Unemployment and Employment Trends 469

Labor Demand and Labor Supply 469

Explaining Employment Trends 470

Why Is the Unemployment Rate Always Greater Than Zero? 471

Job Rationing 472 Job Search 473 Policies to Reduce the Natural Unemployment Rate 474

Case Study: Unemployment Among Young People Throughout the World 475

Differences in Unemployment Compensation for Young Adults 476

Differences in Lifestyles 476

Differences in the Minimum Wage 476

Differences in Taxes 477

Policy Implication and Forecast 477

Conclusion 478 Key Points 478 Key Terms 479 Questions for Review 479 Problems 479

■ **READING THE NEWS ABOUT Unemployment Each Month** 466

21 Productivity and Economic Growth 482

Labor and Capital Without Technology 483

Labor Alone 484

Diminishing Returns to Labor 484 Malthusian Equilibrium 485

Labor and Capital Alone 487

Output Can Rise above Subsistence 488 Diminishing Returns to Capital 490

Labor and Capital with Technology 491

What Is Technology? 491

Invention, Innovation, and Diffusion 492 Organization and Specialization 492 Human Capital 493

The Production of Technology: The Invention Factory 493

Special Features of the Technology Market 495

The Growth Accounting Formula 496

The Formula and Its Coefficient 496

Using the Formula 496

Case Study: Growth Accounting in Practice 498

The 1970s Productivity Growth Slowdown 498

The 1990s Rebound and the New Economy 499

Demise of the Soviet Union 499

Technology Policy 501

Policy to Encourage Investment in Human Capital 501

Policy to Encourage Research and Innovation 501

Technology Embodied in New Capital 502

Is Government Intervention Appropriate? 502

Conclusion: Where Does Potential GDP Go from Here? 503 Key Points 503 Key Terms 504 Questions for Review 504 Problems 504

■ **ECONOMICS IN ACTION A Formula Goes to Washington** 497

■ **READING THE NEWS ABOUT The Productivity Growth Rebound** 500

22 Money and Inflation 506

What Is Money? 507

Commodity Money 507

Three Functions of Money 508

Medium of Exchange 508 Store of Value 508 Unit of Account 508

From Coins to Paper Money to Deposits 509

Alternative Measures of the Money Supply 509

The Fed, the Banks, and the Link from Reserves to Deposits 510

The Fed 511

Board of Governors 511 The District Federal Reserve Banks 511

The Federal Open Market Committee (FOMC) 512

The Banks 513

The Link from Reserves to Deposits 514

A Formula Linking Reserves to Deposits 514

Bank-by-Bank Deposit Expansion 515

How the Fed Controls the Money Supply: Currency plus Deposits 517

The Money Supply (M) and Bank Reserves (BR) 517

Currency versus Deposits 518

The Money Multiplier 518

Money Growth and Inflation 520

The Quantity Equation of Money 520

Evidence 521

Worldwide Inflation in the 1970s and 1980s 521 Hyperinflations 521

Conclusion 523 Key Points 524 Key Terms 524 Questions for Review 524

Problems 525

PART SIX Economic Fluctuations and Macroeconomic Policy 527

23 The Nature and Causes of Economic Fluctuations 528

Changes in Aggregate Demand First Lead to Changes in Production 530

Production and Demand at Individual Firms 531

The Unemployment Rate and the Deviations of Real GDP from Potential

GDP 532 Production and Employment Decisions at Actual Firms 532

Why Changes in Demand Affect Production 533

Limited Information and Implicit Contracts 533 A Graphical Illustration
of the Typical Firm 534

Could Economic Fluctuations Also Be Due to Changes in Potential GDP? 534

Forecasting Real GDP 535

A Forecast for Next Year 535

Impact of a Change in Government Purchases 537

The Response of Consumption to Income 537

The Consumption Function 538

The Marginal Propensity to Consume 538 Which Measure of Income? 539

What about Interest Rates and Other Influences on Consumption? 540

<i>Finding Real GDP When Consumption and Income Move Together</i>	542
<i>The Logic of the Two-Way Link Between Consumption and Income</i>	542
<i>The 45-Degree Line</i>	543
<i>The Expenditure Line</i>	543
The Slope of the Expenditure Line	545
Shifts in the Expenditure Line	545
<i>Determining Real GDP Through Spending Balance</i>	546
<i>A Better Forecast of Real GDP</i>	548
<i>Spending Balance and Departures of Real GDP from Potential GDP</i>	549
<i>Stepping Away from Potential GDP</i>	549
Conclusion	551
Key Points	551
Key Terms	551
Questions for Review	551
Problems	552
■ ECONOMICS IN ACTION <i>The Blue Chip Consensus Forecast</i>	536
■ ECONOMICS IN ACTION <i>Making Time's Top 100</i>	541

24 The Economic Fluctuations Model 554

<i>The Aggregate Demand Curve</i>	555
<i>Interest Rates and Real GDP</i>	556
Investment	556
Net Exports	557
Consumption	557
The Overall Effect	557
<i>Interest Rates and Inflation</i>	559
Central Bank Interest Rate Policy	559
How the Fed Changes the Interest Rate	559
A Graph of the Response of the Interest Rate to Inflation	560
A Good Simplifying Assumption	561
<i>Derivation of the Aggregate Demand Curve</i>	561
Movements along the Aggregate Demand Curve	562
Shifts of the Aggregate Demand Curve	563
<i>The Inflation Adjustment Line</i>	566
<i>The Inflation Adjustment Line Is Flat</i>	566
Expectations of Continuing Inflation	566
Staggered Price and Wage Setting	568
<i>The Inflation Adjustment Line Shifts Gradually When Real GDP Departs from Potential GDP</i>	568
<i>Changes in Expectations or Commodity Prices Shift the Inflation Adjustment Line</i>	569
<i>Does the Inflation Adjustment Line Fit the Facts?</i>	569
<i>Combining the Aggregate Demand Curve and the Inflation Adjustment Line</i>	570
Conclusion	572
Key Points	572
Key Terms	572
Questions for Review	572
Problems	573
■ READING THE NEWS ABOUT Central Banks Changing Interest Rates	564

25 Using the Economic Fluctuations Model 574

<i>Changes in Government Purchases</i>	575
<i>Real GDP and Inflation over Time</i>	575
<i>Details on the Components of Spending</i>	577
Short Run	578
Long Run	578
<i>The Return to Potential GDP after a Boom</i>	579

Changes in Monetary Policy	580
<i>The Volcker Disinflation</i>	582
<i>Reinflation</i>	582
Price Shocks	583
<i>What Is a Price Shock?</i>	584
<i>The Effect of Price Shocks</i>	584
Temporary Shifts in the Inflation Adjustment Line	584
Stagflation	585
Case Study: The 1990–1991 Recession	586
<i>The Facts: Higher Inflation then Recession, then Recovery</i>	586
<i>How Does the Economic Fluctuations Model Explain the Facts?</i>	586
Patching Together the Two Shifts	587
Why Did the AD Curve Shift Twice?	587
Alternative Causes	587
Conclusion	589
Key Points	589
Key Terms	590
Questions for Review	590
Problems	590
ECONOMICS IN ACTION <i>Explaining the Recovery from the Great Depression</i>	583

26 Fiscal Policy 592

The Government Budget	593
<i>Setting the Annual Budget</i>	593
A Balanced Budget versus a Deficit or Surplus	593
The Proposed Budget versus the Actual Budget	593
<i>A Look at the Federal Budget</i>	595
The Surplus	595
Taxes and Spending	595
<i>The Federal Debt</i>	596
The Debt to GDP Ratio	597
<i>State and Local Government Budgets</i>	598
Countercyclical Fiscal Policy	599
<i>Impacts of the Instruments of Fiscal Policy</i>	599
Changes in Government Purchases	599
Changes in Taxes	600
<i>Countercyclical Fiscal Policy</i>	602
Discretionary Changes in the Instruments of Fiscal Policy	604
Automatic Changes in the Instruments of Fiscal Policy	604
<i>The Discretion versus Rules Debate for Fiscal Policy</i>	605
The Structural versus the Cyclical Surplus	606
Conclusion	608
Key Points	608
Key Terms	608
Questions for Review	608
Problems	609
ECONOMICS IN ACTION <i>Why Did All the Deficits Go Away?</i>	596
READING THE NEWS ABOUT <i>Budget Surpluses and Debt Reduction</i>	602

27 Monetary Policy 610

Why Are Central Banks Independent?	611
<i>The "Gain then Pain" Scenario</i>	611
The Phillips Curve	612
But No Long-Run Tradeoff	612
The Political Business Cycle	613
Time Inconsistency	614
<i>Potential Disadvantages of Central Bank Independence</i>	614

Case Study: Trying to Bring the Aggregate Demand Curve into Line in 2000 615**Aggregate Demand: Just Right, Too Hot, or Too Cold?** 616

The Goldilocks Economy: Just Right 616 A Misalignment: Aggregate Demand Is Too High 617 Another Type of Misalignment: Aggregate Demand Is Too Low 617

Monetary Policy in Early 2000 617

“Rising Inflationary Pressure” 617 The Inherent Uncertainty in Monetary Policy 618

The Reaction to the Gap Between Real GDP and Potential GDP 618**Money and Other Instruments of Monetary Policy** 620**Money Demand, the Interest Rate, and Money Supply** 620

Money Demand 620 The Interest Rate and the Quantity of Money 622 What about Focusing on the Money Supply? 622

Two Other Instruments of Monetary Policy 624

The Discount Rate 624 Reserve Requirements 624

The Exchange Rate and Monetary Policy 625**The Effects of a Fixed Exchange Rate System on Monetary Policy** 626**Interventions in the Exchange Market** 627**Why Fixed Exchange Rates?** 629

Conclusion 629 Key Points 630 Key Terms 630 Questions for Review 630 Problems 630

▣ **READING THE NEWS ABOUT Surrendering Monetary Policy** 628

PART SEVEN Trade and Global Markets 633**28 Economic Growth Around the World** 634**Catching Up or Not?** 635

Catch-up Within the United States 636

Catch-up in the Advanced Countries 637

Catch-up in the Whole World 637

Economic Development 638

Billions Still in Poverty 639

Geographical Patterns 639

Terminology of Economic Development 640

Spreading and Using Technology 641

Empowering Entrepreneurs 641

Remaining Problems in Developing Countries 642

Regulation and Legal Rights 642 Lack of Human Capital 643

Increasing Capital per Worker 643

Population Growth 643

National Saving 644

Foreign Investment from the Advanced Economies 644

The Role of International Finance Institutions 645 Are the Advanced Countries Saving Enough? 645

Conclusion 647 Key Points 647 Key Terms 647 Questions for Review 648 Problems 648

▣ **ECONOMICS IN ACTION Has World Saving Shifted Down?** 646

29 The Gains from International Trade 650

Recent Trends in International Trade 651

Comparative Advantage 652

Getting a Gut Feeling for Comparative Advantage 652

Opportunity Cost, Relative Efficiency, and Comparative Advantage 653
From People to Countries 653

Productivity in Two Countries 653

An American Worker's View 654 A Korean Worker's View 655

Finding the Relative Price 655

Relative Price Without Trade 655 Relative Price with Trade 655

Measuring the Gains from Trade 656

One Country's Gain 656 The Other Country's Gain 656 Just Like a
New Discovery 657

A Graphical Measure of the Gains from Trade 657

Production Possibilities Curves Without Trade 658 Production
Possibilities Curves with Trade 658 Increasing Opportunity Costs:
Incomplete Specialization 659

Reasons for Comparative Advantage 660

Labor versus Capital Resources 661

The Effect of Trade on Wages 661

Gains from Expanded Markets 662

An Example of Gains from Trade Through Expanded Markets 662

Effects of a Larger Market 663 Intraindustry Trade versus
Interindustry Trade 664

Measuring the Gains from Expanded Markets 665

A Relationship Between Cost per Unit and the Number of Firms 665

The Effect of the Size of the Market 666 A Relationship Between
the Price and the Number of Firms 667 Equilibrium Price and Number
of Firms 667 Increasing the Size of the Market 668 The North
American Automobile Market 669

Conclusion 669 Key Points 669 Key Terms 670 Questions for Review 670
Problems 670

■ ECONOMICS IN ACTION **Doing Politics and Economics** 660

■ ECONOMICS IN ACTION **Writing "Talking Points" for the President** 664

30 International Trade Policy 672

Tariffs, Quotas, and VRAs 673

Tariffs 673

Quotas 675

Voluntary Restraint Agreements (VRAs) 676

The History of Trade Restrictions 677

U.S. Tariffs 678

From the Tariff of Abominations to Smoot-Hawley 679 From the
Reciprocal Trade Agreement Act to the WTO 680 Antidumping Duties 680
The Rise of Nontariff Barriers 680

Arguments for Trade Barriers	681
<i>High Transition Costs</i>	681
Phaseout of Trade Restrictions	681
Trade Adjustment Assistance	682
<i>The Infant Industry Argument</i>	682
<i>The National Security Argument</i>	682
<i>The Retaliation Argument</i>	682
<i>The Foreign Subsidies Argument</i>	683
<i>Environment and Labor Standards Arguments</i>	683
<i>The Political Economy of Protection</i>	683
How to Reduce Trade Barriers	684
<i>Unilateral Disarmament</i>	684
<i>Multilateral Negotiations</i>	685
The Uruguay Round	685
Most-Favored Nation Policy	686
<i>Regional Trading Areas</i>	686
Trade Diversion versus Trade Creation	686
Free Trade Areas versus Customs Unions	686
Conclusion	687
Key Points	687
Key Terms	688
Questions for Review	688
Problems	688
■ ECONOMICS IN ACTION <i>Ending the Corn Laws</i>	685

31 Emerging Market Economies 690

What Were Centrally Planned Economies Like?	691
<i>Central Planning in the Soviet Union</i>	691
The Five-Year Plans	693
Centrally Controlled Prices	693
<i>Trade Between the Soviet Union and Eastern Europe</i>	694
<i>Technological Change and the Quality of Goods</i>	695
<i>From Perestroika to the End of the Soviet Union</i>	695
<i>Soviet-Style Central Planning in China</i>	696
Economic Transition Theory	697
<i>The Elements of Reform</i>	697
<i>Shock Therapy or Gradualism?</i>	697
Economic Transition in Practice	698
<i>Reforms in Poland</i>	698
<i>Reforms in China</i>	700
Conclusion	701
Key Points	701
Key Terms	702
Questions for Review	702
Problems	702
■ ECONOMICS IN ACTION <i>Starting a Revolution</i>	692

ADVANCED TOPICS 703

Advanced Topic A Reading, Understanding, and Creating Graphs 703

Visualizing Observations with Graphs	703
<i>Time-Series Graphs</i>	703
<i>Time-Series Graphs Showing Two or More Variables</i>	705

<i>Scatter Plots</i>	706
<i>Pie Charts</i>	706
Visualizing Models with Graphs	707
<i>Slopes of Curves</i>	707
<i>Graphs of Models with More than Two Variables</i>	708
Key Terms and Definitions	709
Questions for Review	709
Problems	709
Advanced Topic B Consumer Theory with Indifference Curves	710
The Budget Line	710
The Indifference Curve	712
<i>Getting to the Highest Indifference Curve Given the Budget Line</i>	712
<i>The Utility Maximizing Rule</i>	713
<i>Effect of a Price Change on the Quantity Demanded</i>	713
<i>Effect of an Income Change on Demand</i>	714
<i>Graphical Illustration of Income Effect and Substitution Effect</i>	714
Key Points	714
Key Terms and Definitions	715
Questions for Review	715
Problems	715
Advanced Topic C Producer Theory with Isoquants	716
Combining of Capital and Labor	716
<i>Isoquants</i>	717
<i>Isocost Lines</i>	718
Minimizing Costs for a Given Quantity	718
<i>The Cost Minimization Rule</i>	720
<i>A Change in the Relative Price of Labor</i>	720
Key Terms and Definitions	720
Questions for Review	720
Problems	721
Advanced Topic D Present Discounted Value	721
Discounting the Future	721
Finding the Present Discounted Value	721
Key Points	722
Key Terms and Definitions	722
Questions for Review	722
Problems	723
Advanced Topic E The Miracle of Compound Growth	723
How Compound Growth Works	723
<i>Exponential Effects</i>	723
<i>Rule of 72</i>	725
Plotting Growing Variables	725
Key Points	725
Key Term and Definition	725
Questions for Review	725
Problems	725
Advanced Topic F Deriving the Growth Accounting Formula	726
Key Points	727
Key Term and Definition	727
Questions for Review	727
Problems	728

Advanced Topic G Deriving the Formula for the Keynesian Multiplier 728**A Graphical Review** 728**The Algebraic Derivation** 729*Following the Multiplier Through the Economy* 730*What If Net Exports Depend on Income?* 731

Key Points 732 Key Terms and Definitions 732 Questions for Review 732

Problems 732

Advanced Topic H The Forward-Looking Consumption Model 733**Forward-Looking People** 733**Tests and Applications of the Forward-Looking Model** 734*Permanent versus Temporary Tax Cuts* 735*Anticipating Future Tax Cuts or Increases* 735

Key Points 735 Key Terms and Definitions 735 Questions for Review 736

Problems 736

Glossary 737

Index 751

Credits 771