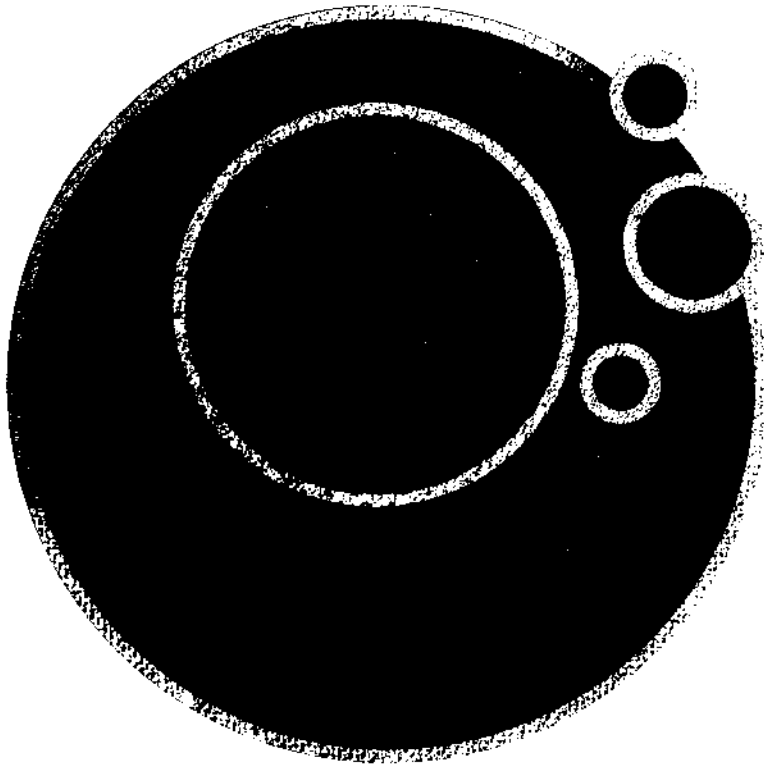


MICROECONOMICS

NINTH EDITION

GLOBAL EDITION



ROBERT S. PINDYCK

Massachusetts Institute of Technology

DANIEL L. RUBINFELD

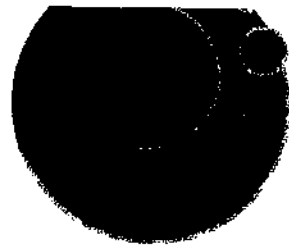
University of California, Berkeley



Pearson

Harlow, England • London • New York • Boston • San Francisco • Toronto • Sydney • Dubai • Singapore • Hong Kong
Tokyo • Seoul • Taipei • New Delhi • Cape Town • Sao Paulo • Mexico City • Madrid • Amsterdam • Munich • Paris • Milan

BRIEF CONTENTS



PART ONE

Introduction: Markets and Prices 23

- 1 Preliminaries 25
- 2 The Basics of Supply and Demand 43

PART TWO

Producers, Consumers, and Competitive Markets 87

- 3 Consumer Behavior 89
- 4 Individual and Market Demand 131
- 5 Uncertainty and Consumer Behavior 179
- 6 Production 209
- 7 The Cost of Production 237
- 8 Profit Maximization and Competitive Supply 289
- 9 The Analysis of Competitive Markets 327

PART THREE

Market Structure and Competitive Strategy 367

- 10 Market Power: Monopoly and Monopsony 369
- 11 Pricing with Market Power 413
- 12 Monopolistic Competition and Oligopoly 465
- 13 Game Theory and Competitive Strategy 501
- 14 Markets for Factor Inputs 543
- 15 Investment, Time, and Capital Markets 573

PART FOUR

Information, Market Failure, and the Role of Government 607

- 16 General Equilibrium and Economic Efficiency 609
- 17 Markets with Asymmetric Information 645
- 18 Externalities and Public Goods 675
- 19 Behavioral Economics 713

Appendix: The Basics of Regression 735

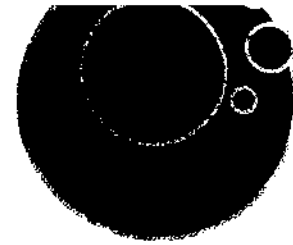
Glossary 743

Answers to Selected Exercises 753

Photo Credits 768

Index 769

CONTENTS



Preface 15

PART ONE

Introduction: Markets and Prices 23

1 Preliminaries 25

- 1.1 The Themes of Microeconomics 26
 - Trade-Offs* 26
 - Prices and Markets* 27
 - Theories and Models* 27
 - Positive versus Normative Analysis* 28
- 1.2 What Is a Market? 29
 - Competitive versus Noncompetitive Markets* 30
 - Market Price* 30
 - Market Definition—The Extent of a Market* 31
- 1.3 Real versus Nominal Prices 34
- 1.4 Why Study Microeconomics? 39
 - Corporate Decision Making: The Toyota Prius* 39
 - Public Policy Design: Fuel Efficiency Standards for the Twenty-First Century* 40

Summary 41

Questions for Review 41

Exercises 42

2 The Basics of Supply and Demand 43

- 2.1 Supply and Demand 44
 - The Supply Curve* 44
 - The Demand Curve* 45
- 2.2 The Market Mechanism 47
- 2.3 Changes in Market Equilibrium 48
- 2.4 Elasticities of Supply and Demand 55
 - Point versus Arc Elasticities* 58
- 2.5 Short-Run versus Long-Run Elasticities 62
 - Demand* 62
 - Supply* 67
- *2.6 Understanding and Predicting the Effects of Changing Market Conditions 71

- 2.7 Effects of Government Intervention—Price Controls 80

Summary 83

Questions for Review 83

Exercises 84

PART TWO

Producers, Consumers, and Competitive Markets 87

3 Consumer Behavior 89

- Consumer Behavior* 89
 - 3.1 Consumer Preferences 91
 - Market Baskets* 91
 - Some Basic Assumptions about Preferences* 92
 - Indifference Curves* 93
 - Indifference Maps* 94
 - The Shape of Indifference Curves* 95
 - The Marginal Rate of Substitution* 96
 - Perfect Substitutes and Perfect Complements* 98
 - 3.2 Budget Constraints 104
 - The Budget Line* 104
 - The Effects of Changes in Income and Prices* 106
 - 3.3 Consumer Choice 108
 - Corner Solutions* 111
 - 3.4 Revealed Preference 114
 - 3.5 Marginal Utility and Consumer Choice 117
 - Rationing* 120
 - *3.6 Cost-of-Living Indexes 122
 - Ideal Cost-of-Living Index* 123
 - Laspeyres Index* 124
 - Paasche Index* 125
 - Price Indexes in the United States: Chain Weighting* 126
- Summary 127**
- Questions for Review 128**
- Exercises 128**

4 Individual and Market Demand 131

- 4.1 Individual Demand 132
 - Price Changes* 132
 - The Individual Demand Curve* 132
 - Income Changes* 134
 - Normal versus Inferior Goods* 135
 - Engel Curves* 136
 - Substitutes and Complements* 138
- 4.2 Income and Substitution Effects 139
 - Substitution Effect* 140
 - Income Effect* 141
 - A Special Case: The Giffen Good* 142
- 4.3 Market Demand 144
 - From Individual to Market Demand* 144
 - Elasticity of Demand* 146
 - Speculative Demand* 149
- 4.4 Consumer Surplus 152
 - Consumer Surplus and Demand* 152
- 4.5 Network Externalities 155
 - Positive Network Externalities* 155
 - Negative Network Externalities* 157
- *4.6 Empirical Estimation of Demand 159
 - The Statistical Approach to Demand Estimation* 160
 - The Form of the Demand Relationship* 161
 - Interview and Experimental Approaches to Demand Determination* 163

Summary 164

Questions for Review 164

Exercises 165

5 Uncertainty and Consumer Behavior 179

- 5.1 Describing Risk 180
 - Probability* 180
 - Expected Value* 181
 - Variability* 181
 - Decision Making* 183
- 5.2 Preferences Toward Risk 185
 - Different Preferences Toward Risk* 186
- 5.3 Reducing Risk 190
 - Diversification* 190
 - Insurance* 191
 - The Value of Information* 194
- *5.4 The Demand for Risky Assets 196
 - Assets* 196
 - Risky and Riskless Assets* 197
 - Asset Returns* 197

The Trade-Off Between Risk and Return 199

The Investor's Choice Problem 200

Summary 205

Questions for Review 205

Exercises 205

6 Production 209

- The Production Decisions of a Firm* 209
 - 6.1 Firms and Their Production Decisions 210
 - Why Do Firms Exist?* 211
 - The Technology of Production* 212
 - The Production Function* 212
 - The Short Run versus the Long Run* 213
 - 6.2 Production with One Variable Input (Labor) 214
 - Average and Marginal Products* 214
 - The Slopes of the Product Curve* 215
 - The Average Product of Labor Curve* 217
 - The Marginal Product of Labor Curve* 217
 - The Law of Diminishing Marginal Returns* 218
 - Labor Productivity* 222
 - 6.3 Production with Two Variable Inputs 224
 - Isoquants* 224
 - Input Flexibility* 226
 - Diminishing Marginal Returns* 226
 - Substitution Among Inputs* 226
 - Production Functions—Two Special Cases* 228
 - 6.4 Returns to Scale 231
 - Describing Returns to Scale* 232
- Summary 234**
Questions for Review 234
Exercises 235

7 The Cost of Production 237

- 7.1 Measuring Cost: Which Costs Matter? 237
 - Economic Cost versus Accounting Cost* 238
 - Opportunity Cost* 238
 - Sunk Costs* 239
 - Fixed Costs and Variable Costs* 241
 - Fixed versus Sunk Costs* 242
 - Marginal and Average Cost* 244
- 7.2 Cost in the Short Run 245
 - The Determinants of Short-Run Cost* 245
 - The Shapes of the Cost Curves* 246
- 7.3 Cost in the Long Run 251
 - The User Cost of Capital* 251
 - The Cost-Minimizing Input Choice* 252
 - The Isocost Line* 253
 - Choosing Inputs* 253

	<i>Cost Minimization with Varying Output Levels</i>	257
	<i>The Expansion Path and Long-Run Costs</i>	258
7.4	Long-Run versus Short-Run Cost Curves	261
	<i>The Inflexibility of Short-Run Production</i>	261
	<i>Long-Run Average Cost</i>	262
	<i>Economies and Diseconomies of Scale</i>	263
	<i>The Relationship between Short-Run and Long-Run Cost</i>	266
7.5	Production with Two Outputs—Economies of Scope	267
	<i>Product Transformation Curves</i>	267
	<i>Economies and Diseconomies of Scope</i>	268
	<i>The Degree of Economies of Scope</i>	269
*7.6	Dynamic Changes in Costs—The Learning Curve	270
	<i>Graphing the Learning Curve</i>	270
	<i>Learning versus Economies of Scale</i>	271
*7.7	Estimating and Predicting Cost	275
	<i>Cost Functions and the Measurement of Scale Economies</i>	276
	Summary	278
	Questions for Review	279
	Exercises	280

8 Profit Maximization and Competitive Supply 289

8.1	Perfectly Competitive Markets	289
	<i>When Is a Market Highly Competitive?</i>	291
8.2	Profit Maximization	292
	<i>Do Firms Maximize Profit?</i>	292
	<i>Alternative Forms of Organization</i>	293
8.3	Marginal Revenue, Marginal Cost, and Profit Maximization	294
	<i>Demand and Marginal Revenue for a Competitive Firm</i>	295
	<i>Profit Maximization by a Competitive Firm</i>	297
8.4	Choosing Output in the Short Run	297
	<i>Short-Run Profit Maximization by a Competitive Firm</i>	297
	<i>When Should the Firm Shut Down?</i>	299
8.5	The Competitive Firm's Short-Run Supply Curve	302
	<i>The Firm's Response to an Input Price Change</i>	303
8.6	The Short-Run Market Supply Curve	305
	<i>Elasticity of Market Supply</i>	306
	<i>Producer Surplus in the Short Run</i>	308
8.7	Choosing Output in the Long Run	310
	<i>Long-Run Profit Maximization</i>	310

	<i>Long-Run Competitive Equilibrium</i>	311
	<i>Economic Rent</i>	314
	<i>Producer Surplus in the Long Run</i>	315
8.8	The Industry's Long-Run Supply Curve	316
	<i>Constant-Cost Industry</i>	317
	<i>Increasing-Cost Industry</i>	318
	<i>Decreasing-Cost Industry</i>	319
	<i>The Effects of a Tax</i>	320
	<i>Long-Run Elasticity of Supply</i>	321
	Summary	324
	Questions for Review	324
	Exercises	325

9 The Analysis of Competitive Markets 327

9.1	Evaluating the Gains and Losses from Government Policies—Consumer and Producer Surplus	327
	<i>Review of Consumer and Producer Surplus</i>	328
	<i>Application of Consumer and Producer Surplus</i>	329
9.2	The Efficiency of a Competitive Market	333
9.3	Minimum Prices	338
9.4	Price Supports and Production Quotas	342
	<i>Price Supports</i>	342
	<i>Production Quotas</i>	344
9.5	Import Quotas and Tariffs	351
9.6	The Impact of a Tax or Subsidy	355
	<i>The Effects of a Subsidy</i>	359
	Summary	362
	Questions for Review	362
	Exercises	363

PART THREE

Market Structure and Competitive Strategy 367

10	Market Power: Monopoly and Monopsony	369
10.1	Monopoly	370
	<i>Average Revenue and Marginal Revenue</i>	370
	<i>The Monopolist's Output Decision</i>	371
	<i>An Example</i>	373
	<i>A Rule of Thumb for Pricing</i>	375
	<i>Shifts in Demand</i>	377
	<i>The Effect of a Tax</i>	378
	<i>*The Multiplant Firm</i>	379

- 10.2 Monopoly Power 380
Production, Price, and Monopoly Power 383
Measuring Monopoly Power 383
The Rule of Thumb for Pricing 384
- 10.3 Sources of Monopoly Power 387
The Elasticity of Market Demand 388
The Number of Firms 388
The Interaction Among Firms 389
- 10.4 The Social Costs of Monopoly Power 389
Rent Seeking 390
Price Regulation 391
Natural Monopoly 392
Regulation in Practice 393
- 10.5 Monopsony 394
Monopsony and Monopoly Compared 397
- 10.6 Monopsony Power 398
Sources of Monopsony Power 398
The Social Costs of Monopsony Power 399
Bilateral Monopoly 400
- 10.7 Limiting Market Power: The Antitrust Laws 401
Restricting What Firms Can Do 402
Enforcement of the Antitrust Laws 404
Antitrust in Europe 404
- Summary** 408
Questions for Review 409
Exercises 409

11 Pricing with Market Power 413

- 11.1 Capturing Consumer Surplus 414
- 11.2 Price Discrimination 415
First-Degree Price Discrimination 415
Second-Degree Price Discrimination 418
Third-Degree Price Discrimination 418
- 11.3 Intertemporal Price Discrimination and Peak-Load Pricing 424
Intertemporal Price Discrimination 425
Peak-Load Pricing 426
- 11.4 The Two-Part Tariff 428
- *11.5 Bundling 433
Relative Valuations 434
Mixed Bundling 436
Bundling in Practice 440
Tying 443
- *11.6 Advertising 443
A Rule of Thumb for Advertising 445

Summary 448

Questions for Review 448

Exercises 449

12 Monopolistic Competition and Oligopoly 465

- 12.1 Monopolistic Competition 466
The Makings of Monopolistic Competition 466
Equilibrium in the Short Run and the Long Run 467
Monopolistic Competition and Economic Efficiency 468
- 12.2 Oligopoly 470
Equilibrium in an Oligopolistic Market 471
The Cournot Model 472
The Linear Demand Curve—An Example 475
First Mover Advantage—The Stackelberg Model 477
- 12.3 Price Competition 478
Price Competition with Homogeneous Products—The Bertrand Model 478
Price Competition with Differentiated Products 479
- 12.4 Competition versus Collusion: The Prisoners' Dilemma 483
- 12.5 Implications of the Prisoners' Dilemma for Oligopolistic Pricing 486
Price Rigidity 486
Price Signaling and Price Leadership 487
The Dominant Firm Model 490
- 12.6 Cartels 491
Analysis of Cartel Pricing 492

Summary 496

Questions for Review 497

Exercises 497

13 Game Theory and Competitive Strategy 501

- 13.1 Gaming and Strategic Decisions 501
Noncooperative versus Cooperative Games 502
- 13.2 Dominant Strategies 504
- 13.3 The Nash Equilibrium Revisited 506
Maximin Strategies 508
**Mixed Strategies* 510
- 13.4 Repeated Games 512
- 13.5 Sequential Games 517
The Extensive Form of a Game 517
The Advantage of Moving First 518
- 13.6 Threats, Commitments, and Credibility 519
Empty Threats 520
Commitment and Credibility 520
Bargaining Strategy 522
- 13.7 Entry Deterrence 524
Strategic Trade Policy and International Competition 527

- *13.8 Auctions 530
 - Auction Formats* 531
 - Valuation and Information* 531
 - Private-Value Auctions* 532
 - Common-Value Auctions* 533
 - Maximizing Auction Revenue* 535
 - Bidding and Collusion* 535
- Summary** 538
- Questions for Review** 538
- Exercises** 539

14 Markets for Factor Inputs 543

- 14.1 Competitive Factor Markets 543
 - Demand for a Factor Input When Only One Input Is Variable* 544
 - Demand for a Factor Input When Several Inputs Are Variable* 547
 - The Market Demand Curve* 548
 - The Supply of Inputs to a Firm* 551
 - The Market Supply of Inputs* 553
- 14.2 Equilibrium in a Competitive Factor Market 556
 - Economic Rent* 556
- 14.3 Factor Markets with Monopsony power 560
 - Monopsony Power: Marginal and Average Expenditure* 560
 - Purchasing Decisions with Monopsony Power* 561
 - Bargaining Power* 562
- 14.4 Factor Markets with Monopoly Power 564
 - Monopoly Power over the Wage Rate* 564
 - Unionized and Nonunionized Workers* 566
- Summary** 569
- Questions for Review** 569
- Exercises** 570

15 Investment, Time, and Capital Markets 573

- 15.1 Stocks versus Flows 574
- 15.2 Present Discounted Value 575
 - Valuing Payment Streams* 576
- 15.3 The Value of a Bond 578
 - Perpetuities* 579
 - The Effective Yield on a Bond* 580
- 15.4 The Net Present Value Criterion for Capital Investment Decisions 583
 - The Electric Motor Factory* 584
 - Real versus Nominal Discount Rates* 585
 - Negative Future Cash Flows* 586
- 15.5 Adjustments for Risk 587

- Diversifiable versus Nondiversifiable Risk* 588
- The Capital Asset Pricing Model* 589

- 15.6 Investment Decisions by Consumers 592
- 15.7 Investments in Human Capital 594
- *15.8 Intertemporal Production Decisions—Depletable Resources 598
 - The Production Decision of an Individual Resource Producer* 598
 - The Behavior of Market Price* 599
 - User Cost* 599
 - Resource Production by a Monopolist* 600
- 15.9 How Are Interest Rates Determined? 602
 - A Variety of Interest Rates* 603
- Summary** 604
- Questions for Review** 605
- Exercises** 605

PART FOUR

Information, Market Failure, and the Role of Government 607

16 General Equilibrium and Economic Efficiency 609

- 16.1 General Equilibrium Analysis 609
 - Two Interdependent Markets—Moving to General Equilibrium* 610
 - Reaching General Equilibrium* 611
 - Economic Efficiency* 615
- 16.2 Efficiency in Exchange 616
 - The Advantages of Trade* 617
 - The Edgeworth Box Diagram* 617
 - Efficient Allocations* 618
 - The Contract Curve* 620
 - Consumer Equilibrium in a Competitive Market* 621
 - The Economic Efficiency of Competitive Markets* 623
- 16.3 Equity and Efficiency 624
 - The Utility Possibilities Frontier* 624
 - Equity and Perfect Competition* 626
- 16.4 Efficiency in Production 627
 - Input Efficiency* 627
 - The Production Possibilities Frontier* 628
 - Output Efficiency* 629
 - Efficiency in Output Markets* 631
- 16.5 The Gains from Free Trade 632
 - Comparative Advantage* 632
 - An Expanded Production Possibilities Frontier* 633
- 16.6 An Overview—The Efficiency of Competitive Markets 637

- 16.7 Why Markets Fail 638
Market Power 639
Incomplete Information 639
Externalities 639
Public Goods 640
Summary 641
Questions for Review 641
Exercises 642
- 17 Markets with Asymmetric Information** 645
- 17.1 Quality Uncertainty and the Market for Lemons 646
The Market for Used Cars 646
Implications of Asymmetric Information 648
The Importance of Reputation and Standardization 649
- 17.2 Market Signaling 653
A Simple Model of Job Market Signaling 654
Guarantees and Warranties 656
- 17.3 Moral Hazard 658
- 17.4 The Principal-Agent Problem 660
The Principal-Agent Problem in Private Enterprises 660
The Principal-Agent Problem in Public Enterprises 663
Incentives in the Principal-Agent Framework 664
- *17.5 Managerial Incentives in an Integrated Firm 666
Asymmetric Information and Incentive Design in the Integrated Firm 666
Applications 668
- 17.6 Asymmetric Information in Labor Markets: Efficiency Wage Theory 669
Summary 671
Questions for Review 672
Exercises 672
- 18 Externalities and Public Goods** 675
- 18.1 Externalities 675
Negative Externalities and Inefficiency 676
Positive Externalities and Inefficiency 678
- 18.2 Ways of Correcting Market Failure 681
An Emissions Standard 682
An Emissions Fee 682
Standards versus Fees 683
Tradeable Emissions Permits 686
Recycling 689
- 18.3 Stock Externalities 693
Stock Buildup and Its Impact 694
- 18.4 Externalities and Property Rights 699
Property Rights 699
Bargaining and Economic Efficiency 700
Costly Bargaining—The Role of Strategic Behavior 701
A Legal Solution—Suing for Damages 701
- 18.5 Common Property Resources 703
- 18.6 Public Goods 705
Efficiency and Public Goods 706
Public Goods and Market Failure 708
Summary 709
Questions for Review 710
Exercises 711
- 19 Behavioral Economics** 713
- 19.1 Reference Points and Consumer Preferences 714
- 19.2 Fairness 718
- 19.3 Rules of Thumb and Biases in Decision Making 719
- 19.4 Bubbles 726
Informational Cascades 728
- 19.5 Behavioral Economics and Public Policy 731
Summing Up 733
Summary 733
Questions for Review 734
Exercises 734
- Appendix: The Basics of Regression** 735
- Glossary** 743
- Answers to Selected Exercises** 753
- Photo Credits** 768
- Index** 769