

MONEY, BANKING, AND THE FINANCIAL SYSTEM

THIRD EDITION

R. Glenn Hubbard

Columbia University

Anthony Patrick O'Brien

Lehigh University



New York, NY

Brief Contents

PART 1: FOUNDATIONS

Chapter 1	Introducing Money and the Financial System	1
Chapter 2	Money and the Payments System	24
Chapter 3	Interest Rates and Rates of Return	53
Chapter 4	Determining Interest Rates	92

PART 2: FINANCIAL MARKETS

Chapter 5	The Risk Structure and Term Structure of Interest Rates	139
Chapter 6	The Stock Market, Information, and Financial Market Efficiency	173
Chapter 7	Derivatives and Derivative Markets	211
Chapter 8	The Market for Foreign Exchange	246

PART 3: FINANCIAL INSTITUTIONS

Chapter 9	Transactions Costs, Asymmetric Information, and the Structure of the Financial System	277
Chapter 10	The Economics of Banking	306
Chapter 11	Beyond Commercial Banks: Shadow Banks and Nonbank Financial Institutions	344
Chapter 12	Financial Crises and Financial Regulation	387

PART 4: MONETARY POLICY

Chapter 13	The Federal Reserve and Central Banking	429
Chapter 14	The Federal Reserve's Balance Sheet and the Money Supply Process	460
Chapter 15	Monetary Policy	494
Chapter 16	The International Financial System and Monetary Policy	542

PART 5: THE FINANCIAL SYSTEM AND THE MACROECONOMY

Chapter 17	Monetary Theory I: The Aggregate Demand and Aggregate Supply Model	579
Chapter 18	Monetary Theory II: The <i>IS-MP</i> Model	613
	Glossary	659
	Index	666

Chapter 1 Introducing Money and the Financial System 1

You Get a Bright Idea ... but Then What?	1
1.1 Key Components of the Financial System	2
Financial Assets	2
Financial Institutions	4
Making the Connection: The Rise of Peer-to-Peer Lending and Fintech	6
Making the Connection: What Do People Do with Their Savings?	9
The Federal Reserve and Other Financial Regulators	10
What Does the Financial System Do?	13
Solved Problem 1.1: The Services Securitized Loans Provide	15
1.2 The Financial Crisis of 2007–2009	16
Origins of the Financial Crisis	16
The Deepening Crisis and the Response of the Fed and Treasury	18
1.3 Key Issues and Questions About Money, Banking, and the Financial System	19
*Key Terms and Problems	21
Key Terms, Review Questions	
Problems and Applications, Data Exercises	
*These end-of-chapter resource materials repeat in all chapters.	

Chapter 2 Money and the Payments System 24

The Federal Reserve: Good for Main Street or Wall Street—or Both?	24
Key Issue and Question	24
2.1 Do We Need Money?	25
Barter	26
The Invention of Money	26
Making the Connection: What's Money? Ask a Taxi Driver in Moscow!	27
2.2 The Key Functions of Money	27
Medium of Exchange	28
Unit of Account	28
Store of Value	28
Standard of Deferred Payment	29
Remember That Money, Income, and Wealth Measure Different Things	29
What Can Serve as Money?	29
The Mystery of Fiat Money	29
Making the Connection: Say Goodbye to the Benjamins?	30
2.3 The Payments System	32
The Transition from Commodity Money to Fiat Money	32
The Importance of Checks	33
New Technology and the Payments System	33
E-Money, Bitcoin, and Blockchain	34
Making the Connection: Will Sweden Become the First Cashless Society?	36
2.4 Measuring the Money Supply	37
Measuring Monetary Aggregates	37
Does It Matter Which Definition of the Money Supply We Use?	39

2.5 The Quantity Theory of Money: A First Look at the Link Between Money and Prices	40
Irving Fisher and the Equation of Exchange	40
The Quantity Theory Explanation of Inflation	41
Solved Problem 2.5: Relationship Between Money and Income	41
How Accurate Are Forecasts of Inflation Based on the Quantity Theory?	42
The Hazards of Hyperinflation	43
What Causes Hyperinflation?	44
Making the Connection: Deutsche Bank During the German Hyperinflation	44
Should Central Banks Be Independent?	46
Answering the Key Question	47

Chapter 3 Interest Rates and Rates of Return 53

Are Treasury Bonds a Risky Investment?	53
Key Issue and Question	53
3.1 The Interest Rate, Present Value, and Future Value	54
Why Do Lenders Charge Interest on Loans?	55
Most Financial Transactions Involve Payments in the Future	55
Compounding and Discounting	56
Solved Problem 3.1A: In Your Interest: Using Compound Interest to Select a Bank CD ...	57
Solved Problem 3.1B: In Your Interest: How Do You Value a College Education?	60
Discounting and the Prices of Financial Assets	62
3.2 Debt Instruments and Their Prices	62
Loans, Bonds, and the Timing of Payments	62
Making the Connection: In Your Interest: Interest Rates and Student Loans	65
3.3 Bond Prices and Yield to Maturity	66
Bond Prices	67
Yield to Maturity	67
Yields to Maturity on Other Debt Instruments	68
Solved Problem 3.3: Finding the Yield to Maturity for Different Types of Debt Instruments	70
3.4 The Inverse Relationship Between Bond Prices and Bond Yields	71
What Happens to Bond Prices When Interest Rates Change?	72
Making the Connection: Banks Take a Bath on Mortgage-Backed Bonds	73
Bond Prices and Yields to Maturity Move in Opposite Directions	74
Secondary Markets, Arbitrage, and the Law of One Price	74
Making the Connection: In Your Interest: How to Follow the Bond Market: Reading the Bond Tables	75
3.5 Interest Rates and Rates of Return	78
A General Equation for the Rate of Return on a Bond	78
Interest-Rate Risk and Maturity	79
How Much Interest-Rate Risk Do Investors in Treasury Bonds Face?	80
3.6 Nominal Interest Rates Versus Real Interest Rates	80
Answering the Key Question	83

Chapter 4 Determining Interest Rates 92

Why Are Interest Rates So Low?	92
Key Issue and Question	92
4.1 How to Build an Investment Portfolio	93
The Determinants of Portfolio Choice	93

Making the Connection: In Your Interest: Will a Black Swan Eat Your 401(k)?	97
Diversification	99
Making the Connection: In Your Interest: Does Your Portfolio Have Enough Risk?	100
4.2 Market Interest Rates and the Demand and Supply for Bonds	101
A Demand and Supply Graph of the Bond Market	102
Explaining Changes in Equilibrium Interest Rates	104
Factors That Shift the Demand Curve for Bonds	104
Factors That Shift the Supply Curve for Bonds	108
4.3 Explaining Changes in Interest Rates	110
Why Do Interest Rates Fall During Recessions?	112
How Do Changes in Expected Inflation Affect Interest Rates? The Fisher Effect	112
Making the Connection: Why Are Bond Interest Rates So Low?	114
Solved Problem 4.3: In Your Interest: What Happens to Your Investment in Bonds	
If the Inflation Rate Rises?	116
4.4 Interest Rates and the Money Market Model	118
The Demand and Supply for Money	118
Shifts in the Money Demand Curve	119
Equilibrium in the Money Market	121
Answering the Key Question	122
Appendix: The Loanable Funds Model and the International Capital Market	127
The Demand and Supply for Loanable Funds	127
Equilibrium in the Bond Market from the Loanable Funds Perspective	129
The International Capital Market and the Interest Rate	130
Small Open Economy	131
Large Open Economy	133
Making the Connection: Did a Global “Saving Glut” Cause the U.S. Housing Boom?	134

Chapter 5 The Risk Structure and Term Structure of Interest Rates 139

The Long and the Short of Interest Rates	139
Key Issue and Question	139
5.1 The Risk Structure of Interest Rates	140
Default Risk	141
Solved Problem 5.1: Political Uncertainty and Bond Yields	144
Making the Connection: Do Credit Rating Agencies Have a Conflict of Interest?	146
Liquidity and Information Costs	148
Tax Treatment	148
Making the Connection: In Your Interest: Should You Invest in Junk Bonds?	151
5.2 The Term Structure of Interest Rates	152
Making the Connection: In Your Interest: Would You Ever Pay the Government to	
Keep Your Money?	154
Explaining the Term Structure	155
The Expectations Theory of the Term Structure	155
Solved Problem 5.2A: In Your Interest: Can You Make Easy Money from the Term Structure?	159
The Segmented Markets Theory of the Term Structure	161
The Liquidity Premium Theory	162
Solved Problem 5.2B: Using the Liquidity Premium Theory to Calculate Expected	
Interest Rates	163
Can the Term Structure Predict Recessions?	165
Answering the Key Question	167

Chapter 6 The Stock Market, Information, and Financial Market Efficiency 173

Are You Willing to Invest in the Stock Market?	173
Key Issue and Question	173
6.1 Stocks and the Stock Market	174
Common Stock Versus Preferred Stock	175
How and Where Stocks Are Bought and Sold	175
Measuring the Performance of the Stock Market	177
Does the Performance of the Stock Market Matter to the Economy?	179
Making the Connection: Did the Stock Market Crash of 1929 Cause the Great Depression?	180
6.2 How Stock Prices Are Determined	182
Investing in Stock for One Year	182
The Rate of Return on a One-Year Investment in a Stock	183
Making the Connection: In Your Interest: How Should the Government Tax Your Investment in Stocks?	184
The Fundamental Value of Stock	185
The Gordon Growth Model	186
Solved Problem 6.2: Using the Gordon Growth Model to Evaluate GE Stock	187
6.3 Rational Expectations and Efficient Markets	188
Adaptive Expectations Versus Rational Expectations	188
The Efficient Markets Hypothesis	190
Are Stock Prices Predictable?	191
Efficient Markets and Investment Strategies	192
Making the Connection: In Your Interest: If Stock Prices Can't Be Predicted, Why Invest in the Market?	194
Solved Problem 6.3: Should You Follow the Advice of Investment Analysts?	196
6.4 Actual Efficiency in Financial Markets	197
Pricing Anomalies	197
Mean Reversion and Momentum Investing	199
Excess Volatility	199
Making the Connection: Does the Financial Crisis of 2007–2009 Disprove the Efficient Markets Hypothesis?	200
6.5 Behavioral Finance	201
Noise Trading and Bubbles	202
How Great a Challenge Is Behavioral Finance to the Efficient Markets Hypothesis?	203
Answering the Key Question	203

Chapter 7 Derivatives and Derivative Markets 211

You, Too, Can Buy and Sell Crude Oil ... But Should You?	211
Key Issue and Question	211
7.1 Derivatives, Hedging, and Speculating	213
7.2 Forward Contracts	214
7.3 Futures Contracts	215
Hedging with Commodity Futures	216
Speculating with Commodity Futures	218
Making the Connection: In Your Interest: So You Think You Can Beat the Smart Money in the Oil Market?	219
Hedging and Speculating with Financial Futures	220

Making the Connection: In Your Interest: How to Follow the Futures Market: Reading the Financial Futures Listings	222
Solved Problem 7.3: In Your Interest: How Can You Hedge an Investment in Treasury Notes When Interest Rates Are Low?	223
Trading in the Futures Market	224
7.4 Options	225
Why Would You Buy or Sell an Option?	226
Option Pricing and the Rise of the “Quants”	227
Making the Connection: In Your Interest: How to Follow the Options Market: Reading the Options Listings	229
Solved Problem 7.4: In Your Interest: Interpreting the Options Listings for Amazon.com	230
Using Options to Manage Risk	232
Making the Connection: In Your Interest: How Much Volatility Should You Expect in the Stock Market?	233
7.5 Swaps	234
Interest-Rate Swaps	234
Currency Swaps and Credit Swaps	236
Credit Default Swaps	236
Making the Connection: Are Derivatives “Financial Weapons of Mass Destruction”?	238
Answering the Key Question	239

Chapter 8 The Market for Foreign Exchange 246

Who Is Mario Draghi, and Why Should Proctor & Gamble Care?	246
Key Issue and Question	246
8.1 Exchange Rates and the Foreign Exchange Market	247
Making the Connection: Brexit, Exchange Rates, and the Profitability of British Firms	248
Is It Dollars per Yen or Yen per Dollar?	249
Nominal Exchange Rates Versus Real Exchange Rates	250
Foreign Exchange Markets	252
8.2 Exchange Rates in the Long Run	253
The Law of One Price and the Theory of Purchasing Power Parity	253
Is PPP a Complete Theory of Exchange Rates?	255
Solved Problem 8.2: Should Big Macs Have the Same Price Everywhere?	256
8.3 A Demand and Supply Model of Short-Run Movements in Exchange Rates	257
A Demand and Supply Model of Exchange Rates	257
Shifts in the Demand and Supply for Foreign Exchange	258
The Interest-Rate Parity Condition	260
Solved Problem 8.3: In Your Interest: Can You Make Money Investing in Mexican Bonds? ...	264
Making the Connection: What Explains Movements in the Dollar Exchange Rate?	265
Forward and Futures Contracts in Foreign Exchange	267
Exchange-Rate Risk, Hedging, and Speculation	268
Making the Connection: Can Speculators Drive Down the Value of a Currency?	270
Answering the Key Question	271

Chapter 9 Transactions Costs, Asymmetric Information, and the Structure of the Financial System 277

Can Fintech or Crowdsourcing Fund Your Startup?	277
Key Issue and Question	277

9.1 The Financial System and Economic Performance 279

9.2 Transactions Costs, Adverse Selection, and Moral Hazard 281

 The Problems Facing Small Investors 281

 How Financial Intermediaries Reduce Transactions Costs 282

 The Problems of Adverse Selection and Moral Hazard 283

 Adverse Selection 283

Making the Connection: Has Securitization Increased Adverse Selection Problems? 288

Solved Problem 9.2: Why Do Banks Ration Credit to Households and Small Businesses? 290

 Moral Hazard 291

Making the Connection: In Your Interest: Is It Safe to Invest Through Crowdfunding Sites? 295

9.3 Conclusions About the Structure of the U.S. Financial System 296

Making the Connection: In Your Interest: Corporations Are Issuing More Bonds, but Should You Buy Them? 299

Answering the Key Question 301

Chapter 10 The Economics of Banking 306

Small Businesses Flock to the Bank of Bird-in-Hand 306

Key Issue and Question 306

10.1 The Basics of Commercial Banking: The Bank Balance Sheet 307

 Bank Liabilities 309

Making the Connection: The Rise and Fall and (Partial) Rise of the Checking Account 311

 Bank Assets 312

 Bank Capital 315

Solved Problem 10.1: Constructing a Bank Balance Sheet 316

10.2 The Basic Operations of a Commercial Bank 317

 Bank Capital and Bank Profit 318

10.3 Managing Bank Risk 320

 Managing Liquidity Risk 320

 Managing Credit Risk 321

Making the Connection: In Your Interest: FICO: Can One Number Forecast Your Financial Life—and Your Romantic Life? 322

 Managing Interest-Rate Risk 325

10.4 Trends in the U.S. Commercial Banking Industry 328

 The Early History of U.S. Banking 328

 Bank Panics, the Federal Reserve, and the Federal Deposit Insurance Corporation 329

 Legal Changes, Economies of Scale, and the Rise of Nationwide Banking 330

Making the Connection: In Your Interest: Starting a Small Business?

See Your Community Banker 332

 Expanding the Boundaries of Banking 333

 The Financial Crisis, TARP, and Partial Government Ownership of Banks 336

Answering the Key Question 338

Chapter 11 Beyond Commercial Banks: Shadow Banks and Nonbank Financial Institutions 344

When Is a Bank Not a Bank? When It's a Shadow Bank! 344

Key Issue and Question 344

11.1 Investment Banking	345
What Is an Investment Bank?	346
“Repo Financing,” Leverage, and Funding Risk in Investment Banking	350
Solved Problem 11.1: The Perils of Leverage	351
Making the Connection: Did Moral Hazard Derail Investment Banks?	354
The Investment Banking Industry	356
Making the Connection: Should Congress Bring Back Glass-Steagall?	357
Where Did All the Investment Banks Go?	359
Making the Connection: In Your Interest: So, You Want to Be an Investment Banker?	360
11.2 Investment Institutions: Mutual Funds, Hedge Funds, and Finance Companies	362
Mutual Funds	362
Hedge Funds	365
Making the Connection: In Your Interest: Would You Invest in a Hedge Fund if You Could?	366
Finance Companies	368
11.3 Contractual Savings Institutions: Pension Funds and Insurance Companies	369
Pension Funds	369
Insurance Companies	372
11.4 Risk, Regulation, and the Shadow Banking System	374
Systemic Risk and the Shadow Banking System	375
Regulation and the Shadow Banking System	376
The Fragility of the Shadow Banking System	376
Are Shadow Banks Still Vulnerable to Runs Today?	377
Answering the Key Question	378

Chapter 12 Financial Crises and Financial Regulation 387

Bubbles, Bubbles, Everywhere! (Or Not)	387
Key Issue and Question	387
12.1 The Origins of Financial Crises	389
The Underlying Fragility of Commercial Banking	389
Bank Runs, Contagion, and Bank Panics	389
Government Intervention to Stop Bank Panics	390
Solved Problem 12.1: Would Requiring Banks to Hold 100% Reserves Eliminate Bank Runs?	391
Bank Panics and Recessions	391
Making the Connection: Why Was the Severity of the 2007–2009 Recession So Difficult to Predict?	393
Exchange-Rate Crises	395
Sovereign Debt Crises	396
12.2 The Financial Crisis of the Great Depression	397
The Start of the Great Depression	397
The Bank Panics of the Early 1930s	399
The Failure of Federal Reserve Policy During the Great Depression	400
Making the Connection: Did the Failure of the Bank of United States Cause the Great Depression?	402
12.3 The Financial Crisis of 2007–2009	403
The Housing Bubble Bursts	403
Bank Runs at Bear Stearns and Lehman Brothers	404
The Federal Government’s Extraordinary Response to the Financial Crisis	405

12.4 Financial Crises and Financial Regulation	406
Lender of Last Resort	407
Making the Connection: Could the Fed Have Saved Lehman Brothers?	410
Making the Connection: Will Dodd-Frank Tie the Fed’s Hands in the	
Next Financial Crisis?	413
Reducing Bank Instability	415
Capital Requirements	416
The 2007–2009 Financial Crisis and the Pattern of Crisis and Response	420
Answering the Key Question	421

Chapter 13 The Federal Reserve and Central Banking 429

Wells Fargo Owns Part of the Fed. Does It Matter?	429
Key Issue and Question	429
13.1 The Structure of the Federal Reserve System	430
Creation of the Federal Reserve System	431
Federal Reserve Banks	432
Making the Connection: St. Louis and Kansas City? What Explains the	
Locations of the District Banks?	433
Member Banks	435
Solved Problem 13.1: How Costly Are Reserve Requirements to Banks?	436
Board of Governors	437
The Federal Open Market Committee	438
Making the Connection: On the Board of Governors, Four Can Be a Crowd	439
Power and Authority Within the Fed	440
Making the Connection: Should Bankers Have a Role in Running the Fed?	442
Changes to the Fed Under the Dodd-Frank Act	443
13.2 How the Fed Operates	444
Handling External Pressure	444
Examples of Conflict Between the Fed and the Treasury	445
Factors That Motivate the Fed	446
Fed Independence	448
Making the Connection: End the Fed?	449
13.3 Central Bank Independence Outside the United States	451
The Bank of England	451
The Bank of Japan	451
The Bank of Canada	452
The European Central Bank	452
Conclusions on Central Bank Independence	454
Answering the Key Question	454

Chapter 14 The Federal Reserve’s Balance Sheet and the Money Supply Process 460

Gold: The Perfect Hedge Against Economic Chaos?	460
Key Issue and Question	460
14.1 The Federal Reserve’s Balance Sheet and the Monetary Base	462
The Federal Reserve’s Balance Sheet	463
The Monetary Base	464
How the Fed Changes the Monetary Base	465
Comparing Open Market Operations and Discount Loans	468
Making the Connection: Explaining the Explosion in the Monetary Base	468

14.2 The Simple Deposit Multiplier	470
Multiple Deposit Expansion	470
Calculating the Simple Deposit Multiplier	473
14.3 Banks, the Nonbank Public, and the Money Multiplier	474
The Effect of Increases in Currency Holdings and Increases in Excess Reserves	475
Deriving a Realistic Money Multiplier	476
Solved Problem 14.3: Using the Expression for the Money Multiplier	478
The Money Supply, the Money Multiplier, and the Monetary Base Since the Beginning of the 2007–2009 Financial Crisis	480
Making the Connection: Did the Fed's Worry over Excess Reserves Cause the Recession of 1937–1938?	482
Making the Connection: In Your Interest: If You Are Worried About Inflation, Should You Invest in Gold?	484
Answering the Key Question	486
Appendix: The Money Supply Process for M2	492

Chapter 15 Monetary Policy **494**

The End of “Normal” Monetary Policy?	494
Key Issue and Question	494
15.1 The Goals of Monetary Policy	496
Price Stability	496
High Employment	497
Economic Growth	498
Stability of Financial Markets and Institutions	498
Making the Connection: Should the Fed Deflate Asset Bubbles?	498
Interest Rate Stability	500
Foreign Exchange Market Stability	500
The Fed's Dual Mandate	501
15.2 Monetary Policy Tools and the Federal Funds Rate	501
The Federal Funds Market and the Fed's Target Federal Funds Rate	503
Open Market Operations and the Fed's Target for the Federal Funds Rate	505
The Effect of Changes in the Discount Rate and in Reserve Requirements	506
Solved Problem 15.2: Analyzing the Federal Funds Market	508
15.3 The Fed's Monetary Policy Tools and Its New Approach to Managing the Federal Funds Rate	510
Open Market Operations	510
Discount Policy	513
How the Fed Currently Manages the Federal Funds Rate	517
15.4 Monetary Targeting and Monetary Policy	519
Using Targets to Meet Goals	520
Making the Connection: What Happened to the Link Between Money and Prices?	522
The Choice Between Targeting Reserves and Targeting the Federal Funds Rate	524
The Taylor Rule: A Summary Measure of Fed Policy	526
Inflation Targeting: A New Monetary Policy Tool?	528
International Comparisons of Monetary Policy	529
Making the Connection: Are Negative Interest Rates an Effective Monetary Policy Tool?	532
Answering the Key Question	534

Chapter 16 The International Financial System and Monetary Policy 542

Can the Euro Survive?	542
Key Issue and Question	542
16.1 Foreign Exchange Intervention and the Monetary Base	543
16.2 Foreign Exchange Interventions and the Exchange Rate	545
Unsterilized Intervention	546
Sterilized Intervention	546
Solved Problem 16.2: The Swiss Central Bank Counters the Rising Franc	547
Capital Controls	549
16.3 The Balance of Payments	550
The Current Account	550
The Financial Account	551
Official Settlements	552
The Relationship Among the Accounts	552
16.4 Exchange Rate Regimes and the International Financial System	553
Fixed Exchange Rates and the Gold Standard	553
Making the Connection: Did the Gold Standard Make the Great Depression Worse?	556
Adapting Fixed Exchange Rates: The Bretton Woods System	557
Central Bank Interventions After Bretton Woods	561
Making the Connection: The “Exorbitant Privilege” of the U.S. Dollar?	562
Fixed Exchange Rates in Europe	563
Making the Connection: In Your Interest: If You Were Greek, Would You Prefer the Euro or the Drachma?	567
Currency Pegging	568
Does China Manipulate Its Exchange Rate?	569
The Policy Trilemma	570
Answering the Key Question	573

Chapter 17 Monetary Theory I: The Aggregate Demand and Aggregate Supply Model 579

Why Did Employment Grow Slowly After the Great Recession?	579
Key Issue and Question	579
17.1 The Aggregate Demand Curve	581
The Money Market and the Aggregate Demand Curve	582
Shifts of the Aggregate Demand Curve	584
17.2 The Aggregate Supply Curve	586
The Short-Run Aggregate Supply (SRAS) Curve	588
The Long-Run Aggregate Supply (LRAS) Curve	590
Shifts in the Short-Run Aggregate Supply Curve	591
Making the Connection: Fracking Transforms Energy Markets in the United States	592
Shifts in the Long-Run Aggregate Supply (LRAS) Curve	594
17.3 Equilibrium in the Aggregate Demand and Aggregate Supply Model	595
Short-Run Equilibrium	595
Long-Run Equilibrium	596
Economic Fluctuations in the United States	597

17.4 The Effects of Monetary Policy	600
An Expansionary Monetary Policy	600
Solved Problem 17.4: Dealing with Shocks to Aggregate Demand and Aggregate Supply	602
Was Monetary Policy Ineffective During the 2007–2009 Recession?	604
Making the Connection: The 1930s, Today, and the Limits to Monetary Policy	605
Answering the Key Question	606

Chapter 18 Monetary Theory II: The *IS–MP* Model **613**

Forecasting the Federal Funds Rate Is Difficult ... Even for the Fed!	613
Key Issue and Question	613
18.1 The <i>IS</i> Curve	615
Equilibrium in the Goods Market	615
Potential GDP and the Multiplier Effect	618
Solved Problem 18.1: Calculating Equilibrium Real GDP	620
Constructing the <i>IS</i> Curve	622
The Output Gap	623
Shifts of the <i>IS</i> Curve	625
18.2 The <i>MP</i> Curve and the Phillips Curve	626
The <i>MP</i> Curve	627
The Phillips Curve	627
Okun's Law and an Output Gap Phillips Curve	630
Making the Connection: Did the Aftermath of the 2007–2009 Recession Break Okun's Law?	632
18.3 Equilibrium in the <i>IS–MP</i> Model	633
Making the Connection: Where Did the <i>IS–MP</i> Model Come From?	634
Using Monetary Policy to Fight a Recession	635
Complications in Fighting the Recession of 2007–2009	636
Making the Connection: Free Fannie and Freddie?	638
Solved Problem 18.3: Using Monetary Policy to Fight Inflation	641
18.4 Are Interest Rates All That Matter for Monetary Policy?	643
The Bank Lending Channel and the Shadow Bank Lending Channel	644
The Balance Sheet Channel: Monetary Policy and Net Worth	645
Answering the Key Question	646
Appendix: The <i>IS–LM</i> Model	654
Deriving the <i>LM</i> Curve	654
Shifting the <i>LM</i> Curve	655
Monetary Policy in the <i>IS–LM</i> Model	656
Glossary	659
Index	666