

Detailed Contents

Preface 21

PART 1 Introduction

1 Introduction to Macroeconomics 31

- 1.1 What Macroeconomics Is About 31
 - Long-Run Economic Growth 32
 - Business Cycles 34
 - Unemployment 35
 - Inflation 36
 - The International Economy 37
 - Macroeconomic Policy 38
 - Aggregation 40
 - 1.2 What Macroeconomists Do 40
 - Macroeconomic Forecasting 40
 - Macroeconomic Analysis 41
 - Macroeconomic Research 41
 - Data Development 42
 - In Touch with Data and Research: Developing and Testing an Economic Theory 43
 - 1.3 Why Macroeconomists Disagree 44
 - Classicals Versus Keynesians 45
 - A Unified Approach to Macroeconomics 47
 - CHAPTER SUMMARY AND PROBLEMS 49
-
- ### 2 The Measurement and Structure of the National Economy 52
- 2.1 National Income Accounting: The Measurement of Production, Income, and Expenditure 52
 - In Touch with Data and Research: The National Income and Product Accounts in Malaysia 54
 - Why the Three Approaches Are Equivalent 55
 - 2.2 Gross Domestic Product 56
 - The Product Approach to Measuring GDP 56
 - In Touch with Data and Research: Natural Resources, the Environment, and the National Income Accounts 59
 - The Expenditure Approach to Measuring GDP 61
 - The Income Approach to Measuring GDP 64

- 2.3 Saving and Wealth 67
 - Measures of Aggregate Saving 67
 - The Uses of Private Saving 69
 - Relating Saving and Wealth 71
- 2.4 Real GDP, Price Indexes, and Inflation 74
 - Real GDP 74
 - Price Indexes 77
 - In Touch with Data and Research: The Computer Revolution and Chain-Weighted GDP 78
 - In Touch with Data and Research: Does CPI Inflation Overstate Increases in the Cost of Living? 81
 - Application: The Federal Reserve's Preferred Inflation Measures 83
- 2.5 Interest Rates 84
 - CHAPTER SUMMARY AND PROBLEMS 87

PART 2 Long-Run Economic Performance

3 Productivity, Output, and Employment 93

- 3.1 How Much Does the Economy Produce? The Production Function 94
 - Application: The Production Function and Changes in Productivity in the European Union 95
 - The Shape of the Production Function 97
 - The Marginal Product of Capital 98
 - The Marginal Product of Labor 100
 - Supply Shocks 101
- 3.2 The Demand for Labor 103
 - The Marginal Product of Labor and Labor Demand: An Example 104
 - A Change in the Wage 106
 - The Marginal Product of Labor and the Labor Demand Curve 106
 - Factors That Shift the Labor Demand Curve 108
 - Aggregate Labor Demand 110
- 3.3 The Supply of Labor 110
 - The Income–Leisure Trade-Off 111
 - Real Wages and Labor Supply 112

- Application: The Gig Economy in the ASEAN Nations 114
- The Labor Supply Curve 115
- Aggregate Labor Supply 116
- 3.4 Labor Market Equilibrium 117
 - Full-Employment Output 119
 - Application: Output, Employment, and the Real Wage During Oil Price Shocks 119
- 3.5 Unemployment 121
 - Measuring Unemployment 121
 - Changes in Employment Status 122
 - In Touch with Data and Research: Labor Market Data in Kazakhstan 122
 - How Long Are People Unemployed? 123
 - Application: Unemployment During the European Debt Crisis 125
 - Why There Always Are Unemployed People 126
 - In Touch with Data and Research: Alternative Measures of the Unemployment Rate 128
 - Application: Recent Trends in Labor Supply 129
- 3.6 Relating Output and Unemployment: Okun's Law 130
 - CHAPTER SUMMARY AND PROBLEMS 133

Appendix 3.A: The Growth Rate Form of Okun's Law 141

4 Consumption, Saving, and Investment 142

- 4.1 Consumption and Saving 143
 - The Consumption and Saving Decision of an Individual 144
 - Effect of Changes in Current Income 145
 - Effect of Changes in Expected Future Income 146
 - Application: The Impact of the Pandemic Recession of 2020 on Consumption 147
 - Effect of Changes in Wealth 148
 - Effect of Changes in the Real Interest Rate 149
 - Fiscal Policy 151
 - In Touch with Data and Research: Interest Rates 152
 - Application: How Investors Respond to Tax Incentives 156
- 4.2 Investment 158
 - The Desired Capital Stock 158
 - Changes in the Desired Capital Stock 161

- Application: Measuring the Effects of Taxes on Investment 164
 - From the Desired Capital Stock to Investment 166
 - Investment in Inventories and Housing 168
- In Touch with Data and Research: Investment and the Stock Market 169
- 4.3 Goods Market Equilibrium 171
 - The Saving–Investment Diagram 172
 - Application: Macroeconomic Consequences of the Boom and Bust in Stock Prices 176
 - CHAPTER SUMMARY AND PROBLEMS 180

Appendix 4.A: A Formal Model of Consumption and Saving 188

5 Saving and Investment in the Open Economy 205

- 5.1 Balance of Payments Accounting 206
 - The Current Account 206
 - In Touch with Data and Research: The Balance of Payments Accounts in Malaysia 208
 - The Financial Account 209
 - The Relationship Between the Current Account and the Financial Account 210
 - Net Foreign Assets and the Balance of Payments Accounts 212
 - Application: The United States as International Debtor 213
- 5.2 Goods Market Equilibrium in an Open Economy 215
- 5.3 Saving and Investment in a Small Open Economy 217
 - The Effects of Economic Shocks in a Small Open Economy 220
- 5.4 Saving and Investment in Large Open Economies 221
 - Application: The Impact of Globalization on the U.S. Economy 223
 - Application: Recent Trends in the U.S. Current Account Deficit 225
- 5.5 Fiscal Policy and the Current Account 227
 - The Critical Factor: The Response of National Saving 227
 - The Government Budget Deficit and National Saving 228
 - Application: The Twin Deficits 229
 - CHAPTER SUMMARY AND PROBLEMS 232

6 Long-Run Economic Growth 239

- 6.1 The Sources of Economic Growth 240
 - Growth Accounting 242
 - Application: Waves of Productivity Growth over Time 245
 - Application: The Rebound in U.S. Productivity Growth 246
 - 6.2 Long-Run Growth: The Solow Model 249
 - Setup of the Solow Model 250
 - The Fundamental Determinants of Long-Run Living Standards 257
 - Economic Models, Endogenous Variables, and Exogenous Variables 261
 - Application: The Growth of China 263
 - 6.3 Endogenous Growth Theory 265
 - 6.4 Government Policies to Raise Long-Run Living Standards 267
 - Policies to Affect the Saving Rate 267
 - Policies to Raise the Rate of Productivity Growth 268
 - Application: Trends in Income Distribution in South Africa 269
- CHAPTER SUMMARY AND PROBLEMS 272

7 The Asset Market, Money, and Prices 277

- 7.1 What Is Money? 277
 - In Touch with Data and Research: Money in a Prisoner-of-War Camp 278
 - The Functions of Money 279
 - In Touch with Data and Research: The Monetary Aggregates 281
 - In Touch with Data and Research: Where Have All the Dollars Gone? 282
- 7.2 Portfolio Allocation and the Demand for Assets 284
 - Expected Return 284
 - Risk 285
 - Liquidity 285
 - Time to Maturity 285
 - Types of Assets and Their Characteristics 287
 - In Touch with Data and Research: The Housing Crisis of 2007 to 2011 289
 - Asset Demands 291
- 7.3 The Demand for Money 292
 - The Price Level 292
 - Real Income 293

- Interest Rates 293
 - The Money Demand Function 294
 - Other Factors Affecting Money Demand 295
 - Application: Bitcoin and Cryptocurrencies 297
 - Velocity and the Quantity Theory of Money 299
 - 7.4 Asset Market Equilibrium 301
 - Asset Market Equilibrium: An Aggregation Assumption 302
 - The Asset Market Equilibrium Condition 303
 - 7.5 Money Growth and Inflation 304
 - Application: Money Growth and Inflation in European Countries in Transition 305
 - The Inflation Rate and the Nominal Interest Rate 307
 - Application: Measuring Inflation Expectations 308
- CHAPTER SUMMARY AND PROBLEMS 311

PART 3 Business Cycles and Macroeconomic Policy

8 Business Cycles 315

- 8.1 What Is a Business Cycle? 316
- 8.2 The American Business Cycle: The Historical Record 318
 - The Pre–World War I Period 318
 - The Great Depression and World War II 318
 - Post–World War II U.S. Business Cycles 320
 - The “Long Boom” 321
 - The Great Recession 321
 - Have American Business Cycles Become Less Severe? 322
 - Application: Do Economic Expansions Die of Old Age? 325
- 8.3 Business Cycle Facts 326
 - The Cyclical Behavior of Economic Variables: Direction and Timing 326
 - Production 327
 - Expenditure 329
 - Employment and Unemployment 330
 - Application: The Job Finding Rate and the Job Loss Rate 331
 - Average Labor Productivity and the Real Wage 334
 - Money Growth and Inflation 335
 - Financial Variables 336
 - International Aspects of the Business Cycle 337
 - In Touch with Data and Research: Coincident and Leading Indexes 338

- 8.4 Business Cycle Analysis: A Preview 342
- In Touch with Data and Research: The Seasonal Cycle and the Business Cycle 343
 - Aggregate Demand and Aggregate Supply: A Brief Introduction 344
 - ▶ CHAPTER SUMMARY AND PROBLEMS 349

9 The *IS-LM/AD-AS* Model: A General Framework for Macroeconomic Analysis 352

- 9.1 The *FE* Line: Equilibrium in the Labor Market 353
- Factors That Shift the *FE* Line 353
- 9.2 The *IS* Curve: Equilibrium in the Goods Market 355
- Factors That Shift the *IS* Curve 357
- 9.3 The *LM* Curve: Asset Market Equilibrium 359
- The Interest Rate and the Price of a Nonmonetary Asset 360
- The Equality of Money Demanded and Money Supplied 360
- Factors That Shift the *LM* Curve 363
- 9.4 General Equilibrium in the Complete *IS-LM* Model 367
- Applying the *IS-LM* Framework: A Temporary Adverse Supply Shock 368
- Application: The Oil Price Shock of 2008 370
 - In Touch with Data and Research: Econometric Models and Macroeconomic Forecasts for Monetary Policy Analysis 370
- 9.5 Price Adjustment and the Attainment of General Equilibrium 372
- The Effects of a Monetary Expansion 372
- Classical Versus Keynesian Versions of the *IS-LM* Model 376
- 9.6 Aggregate Demand and Aggregate Supply 377
- The Aggregate Demand Curve 378
- The Aggregate Supply Curve 380
- Equilibrium in the *AD-AS* Model 383
- Monetary Neutrality in the *AD-AS* Model 383
- ▶ CHAPTER SUMMARY AND PROBLEMS 386

Appendix 9.A: Worked-Out Numerical Exercise for Solving the *IS-LM/AD-AS* Model 393

Appendix 9.B: Algebraic Versions of the *IS-LM/AD-AS* Model 396

10 Classical Business Cycle Analysis: Market-Clearing Macroeconomics 403

- 10.1 The Real Business Cycle Theory 404
- Application: Calibrating the Business Cycle 407
- 10.2 Fiscal Policy Shocks in the Classical Model 413
- 10.3 Unemployment in the Classical Model 417
- Jobless Recoveries 420
- 10.4 Money in the Classical Model 422
- Monetary Policy and the Economy 422
- Monetary Nonneutrality and Reverse Causation 422
- The Nonneutrality of Money: Additional Evidence 423
- 10.5 The Misperceptions Theory and the Nonneutrality of Money 425
- Monetary Policy and the Misperceptions Theory 428
- Rational Expectations and the Role of Monetary Policy 430
- In Touch with Data and Research: Are Price Forecasts Rational? 432
- ▶ CHAPTER SUMMARY AND PROBLEMS 434

Appendix 10.A: Worked-Out Numerical Exercise for Solving the Classical *AD-AS* Model with Misperceptions 441

Appendix 10.B: An Algebraic Version of the Classical *AD-AS* Model with Misperceptions 442

11 Keynesianism: The Macroeconomics of Wage and Price Rigidity 444

- 11.1 Real-Wage Rigidity 445
- Some Reasons for Real-Wage Rigidity 445
- The Efficiency Wage Model 446
- Wage Determination in the Efficiency Wage Model 447
- Employment and Unemployment in the Efficiency Wage Model 448
- Efficiency Wages and the *FE* Line 450
- In Touch with Data and Research: Henry Ford's Efficiency Wage 451
- 11.2 Price Stickiness 452
- Sources of Price Stickiness: Monopolistic Competition and Menu Costs 452
- 11.3 Monetary and Fiscal Policy in the Keynesian Model 458
- Monetary Policy 458
- Fiscal Policy 461

- 11.4 The Keynesian Theory of Business Cycles and Macroeconomic Stabilization 465
 Keynesian Business Cycle Theory 465
 Macroeconomic Stabilization 467
 Supply Shocks in the Keynesian Model 470
- In Touch with Data and Research: DSGE Models and the Classical–Keynesian Debate 472
- CHAPTER SUMMARY AND PROBLEMS 474

Appendix 11.A: Labor Contracts and Nominal-Wage Rigidity 480

Appendix 11.B: Worked-Out Numerical Exercise for Calculating the Multiplier in a Keynesian Model 483

Appendix 11.C: The Multiplier in the Keynesian Model 485

PART 4 Macroeconomic Policy: Its Environment and Institutions

12 Unemployment and Inflation 487

- 12.1 Unemployment and Inflation: Is There a Trade-Off? 487
 The Expectations-Augmented Phillips Curve 490
 The Shifting Phillips Curve 493
- 12.2 Macroeconomic Policy and the Phillips Curve 498
- In Touch with Data and Research: The Lucas Critique 499
- The Long-Run Phillips Curve 500
- 12.3 The Problem of Unemployment 501
 The Costs of Unemployment 501
 The Long-Term Behavior of the Unemployment Rate 502
- 12.4 The Problem of Inflation 504
 The Costs of Inflation 505
- In Touch with Data and Research: Indexed Contracts 507
- 12.5 Fighting Inflation: The Role of Inflationary Expectations 509
- In Touch with Data and Research: The Sacrifice Ratio 511
- The U.S. Disinflation of the 1980s and 1990s 513
- CHAPTER SUMMARY AND PROBLEMS 515

13 Exchange Rates, Business Cycles, and Macroeconomic Policy in the Open Economy 520

- 13.1 Exchange Rates 521
 Nominal Exchange Rates 521
- In Touch with Data and Research: Exchange Rates 522
- Real Exchange Rates 523
 Appreciation and Depreciation 524
 Purchasing Power Parity 525
- In Touch with Data and Research: McParity 526
- The Real Exchange Rate and Net Exports 528
- Application: The Value of the Dollar and U.S. Net Exports 530
- 13.2 How Exchange Rates Are Determined: A Supply-and-Demand Analysis 532
 Macroeconomic Determinants of the Exchange Rate and Net Export Demand 534
- 13.3 The *IS–LM* Model for an Open Economy 537
 The Open-Economy *IS* Curve 537
 Factors That Shift the Open-Economy *IS* Curve 540
 The International Transmission of Business Cycles 542
- 13.4 Macroeconomic Policy in an Open Economy with Flexible Exchange Rates 543
 A Fiscal Expansion 543
 A Monetary Contraction 546
- 13.5 Fixed Exchange Rates 549
 Fixing the Exchange Rate 549
 Monetary Policy and the Fixed Exchange Rate 552
 Fixed Versus Flexible Exchange Rates 555
 Currency Unions 555
- Application: Is Either the United States or Europe an Optimum Currency Area? 557
 - Application: European Monetary Unification 558
- CHAPTER SUMMARY AND PROBLEMS 561
- Appendix 13.A: Worked-Out Numerical Exercise for the Open-Economy *IS–LM* Model** 567
- Appendix 13.B: An Algebraic Version of the Open-Economy *IS–LM* Model** 570

14 Monetary Policy and the Federal Reserve System 573

- 14.1 Principles of Money Supply Determination 574
 - Open-Market Transactions 575
 - Bank Runs 577
- 14.2 Monetary Control in the United States 578
 - The Federal Reserve System 578
 - The Federal Reserve's Balance Sheet 579
 - Open-Market Operations 580
 - Reserve Requirements 580
 - Discount Window Lending 581
 - Application: The Lender of Last Resort 582
 - Interest Rate on Reserves 583
 - New Monetary Policy Tools Developed in the Great Recession 583
 - Application: Is There Really a Zero Lower Bound? 584
 - Application: The Financial Crisis of 2008: Some Implications for the Global Economy 588
 - Monetary Policy in Response to the Pandemic of 2020 589
- 14.3 Setting Monetary Policy Targets 590
 - Targeting the Federal Funds Rate 590
 - Monetary Policy with Abundant Reserves 594
- 14.4 Making Monetary Policy in Practice 596
 - Lags in the Effects of Monetary Policy 596
 - Conducting Monetary Policy Under Uncertainty 598
- 14.5 The Conduct of Monetary Policy: Rules Versus Discretion 600
 - The Monetarist Case for Rules 601
 - Rules and Central Bank Credibility 603
 - The Taylor Rule 604
 - Other Ways to Achieve Central Bank Credibility 607
 - Application: Inflation Targeting 607
 - CHAPTER SUMMARY AND PROBLEMS 609

15 Government Spending and Its Financing 613

- 15.1 The Government Budget: Some Facts and Figures 613
 - Government Outlays 613
 - Taxes 615
 - Deficits and Surpluses 619

- 15.2 Government Spending, Taxes, and the Macroeconomy 621
 - Fiscal Policy and Aggregate Demand 621
 - Government Capital Formation 624
 - Incentive Effects of Fiscal Policy 624
 - Application: Supply-Side Economics 627
- 15.3 Government Deficits and Debt 629
 - The Growth of the Government Debt 629
 - Application: Social Security in the United Kingdom: How Can It Be Fixed? 631
 - The Burden of the Government Debt on Future Generations 633
 - Budget Deficits and National Saving: Ricardian Equivalence Revisited 634
 - Departures from Ricardian Equivalence 637
 - In Touch with Data and Research: Measuring the Impact of Government Purchases on the Economy 638
- 15.4 Deficits and Inflation 640
 - The Deficit and the Money Supply 640
 - Real Seignorage Collection and Inflation 642
 - CHAPTER SUMMARY AND PROBLEMS 646

Appendix 15.A: The Debt–GDP Ratio 651

Appendix A:

Some Useful Analytical Tools 653

- A.1 Functions and Graphs 653
- A.2 Slopes of Functions 654
- A.3 Elasticities 655
- A.4 Functions of Several Variables 656
- A.5 Shifts of a Curve 656
- A.6 Exponents 657
- A.7 Growth Rate Formulas 657
- Problems 658

- Glossary 661
- Name Index 673
- Subject Index 675

Summary Tables

- 1 Measures of Aggregate Saving 68
- 2 Comparing the Benefits and Costs of Changing the Amount of Labor 106
- 3 Factors That Shift the Aggregate Labor Demand Curve 110
- 4 Factors That Shift the Aggregate Labor Supply Curve 117
- 5 Determinants of Desired National Saving 155
- 6 Determinants of Desired Investment 168
- 7 Equivalent Measures of a Country's International Trade and Lending 213
- 8 The Fundamental Determinants of Long-Run Living Standards 258
- 9 Macroeconomic Determinants of the Demand for Money 296
- 10 The Cyclical Behavior of Key Macroeconomic Variables (the Business Cycle Facts) 328
- 11 Factors That Shift the Full-Employment (*FE*) Line 354
- 12 Factors That Shift the *IS* Curve 357
- 13 Factors That Shift the *LM* Curve 363
- 14 Factors That Shift the *AD* Curve 382
- 15 Terminology for Changes in Exchange Rates 525
- 16 Determinants of the Exchange Rate (Real or Nominal) 536
- 17 Determinants of Net Exports 536
- 18 International Factors That Shift the *IS* Curve 542

Key Diagrams

- 1 The production function 134
- 2 The labor market 135
- 3 The saving–investment diagram 181
- 4 National saving and investment in a small open economy 233
- 5 National saving and investment in large open economies 234
- 6 The *IS–LM* model 387
- 7 The aggregate demand–aggregate supply model 388
- 8 The misperceptions version of the *AD–AS* model 435