



Macroeconomics

Eighth Edition

Andrew B. Abel

*The Wharton School of the
University of Pennsylvania*

Ben S. Bernanke

Dean Croushore

*Robins School of Business
University of Richmond*

PEARSON

Boston Columbus Indianapolis New York San Francisco Upper Saddle River
Amsterdam Cape Town Dubai London Madrid Milan Munich Paris Montréal Toronto
Delhi Mexico City São Paulo Sydney Hong Kong Seoul Singapore Taipei Tokyo

Brief Contents

Preface xv

PART **1 Introduction**

- 1** Introduction to Macroeconomics 1
- 2** The Measurement and Structure of the National Economy 22

PART **2 Long-Run Economic Performance**

- 3** Productivity, Output, and Employment 60
- 4** Consumption, Saving, and Investment 105
- 5** Saving and Investment in the Open Economy 168
- 6** Long-Run Economic Growth 207
- 7** The Asset Market, Money, and Prices 242

PART **3 Business Cycles and Macroeconomic Policy**

- 8** Business Cycles 280
- 9** The *IS-LM/AD-AS* Model: A General Framework for Macroeconomic Analysis 316
- 10** Classical Business Cycle Analysis: Market-Clearing Macroeconomics 367
- 11** Keynesianism: The Macroeconomics of Wage and Price Rigidity 408

PART **4 Macroeconomic Policy: Its Environment and Institutions**

- 12** Unemployment and Inflation 449
- 13** Exchange Rates, Business Cycles, and Macroeconomic Policy in the Open Economy 481
- 14** Monetary Policy and the Federal Reserve System 534
- 15** Government Spending and Its Financing 580

Appendix A Some Useful Analytical Tools 617

Glossary 624

Name Index 635

Subject Index 637

Detailed Contents

Preface xv

PART 1 Introduction

CHAPTER 1 Introduction to Macroeconomics 1

1.1 What Macroeconomics Is About 1

Long-Run Economic Growth 2

Business Cycles 4

Unemployment 5

Inflation 6

The International Economy 7

Macroeconomic Policy 8

Aggregation 9

1.2 What Macroeconomists Do 10

Macroeconomic Forecasting 10

Macroeconomic Analysis 11

Macroeconomic Research 12

IN TOUCH WITH DATA AND RESEARCH:

Developing and Testing an Economic Theory 13

Data Development 14

1.3 Why Macroeconomists Disagree 14

Classicals Versus Keynesians 15

A Unified Approach to Macroeconomics 18

CHAPTER 2 The Measurement and Structure of the National Economy 22

2.1 National Income Accounting: The Measurement of Production, Income, and Expenditure 22

IN TOUCH WITH DATA AND RESEARCH:

The National Income and Product Accounts 24

Why the Three Approaches Are Equivalent 25

2.2 Gross Domestic Product 26

The Product Approach to Measuring GDP 26

IN TOUCH WITH DATA AND RESEARCH:

Natural Resources, the Environment, and the National Income Accounts 29

The Expenditure Approach to Measuring GDP 30

The Income Approach to Measuring GDP 33

2.3 Saving and Wealth 36

Measures of Aggregate Saving 36

The Uses of Private Saving 39

Relating Saving and Wealth 40

2.4 Real GDP, Price Indexes, and Inflation 42

Real GDP 42

Price Indexes 44

IN TOUCH WITH DATA AND RESEARCH:

The Computer Revolution and Chain-Weighted GDP 45

IN TOUCH WITH DATA AND RESEARCH:

Does CPI Inflation Overstate Increases in the Cost of Living? 47

APPLICATION The Federal Reserve's Preferred Inflation Measures 49

2.5 Interest Rates 51

PART 2 Long-Run Economic Performance

CHAPTER 3 Productivity, Output, and Employment 60

3.1 How Much Does the Economy Produce? The Production Function 61

APPLICATION The Production Function of the U.S. Economy and U.S. Productivity Growth 62

The Shape of the Production Function 64

The Marginal Product of Capital 65

The Marginal Product of Labor	66
Supply Shocks	68
3.2 The Demand for Labor	70
The Marginal Product of Labor and Labor Demand: An Example	71
A Change in the Wage	73
The Marginal Product of Labor and the Labor Demand Curve	73
Factors That Shift the Labor Demand Curve	75
Aggregate Labor Demand	77
3.3 The Supply of Labor	77
The Income–Leisure Trade-Off	78
Real Wages and Labor Supply	78
The Labor Supply Curve	81
Aggregate Labor Supply	82
3.4 Labor Market Equilibrium	83
Full-Employment Output	85
APPLICATION Output, Employment, and the Real Wage During Oil Price Shocks	85
3.5 Unemployment	87
Measuring Unemployment	87
IN TOUCH WITH DATA AND RESEARCH: Labor Market Data	88
Changes in Employment Status	89
How Long Are People Unemployed?	90
APPLICATION Unemployment Duration and the 2007–2009 Recession	91
Why There Always Are Unemployed People	92
3.6 Relating Output and Unemployment: Okun’s Law	94
APPENDIX 3.A The Growth Rate Form of Okun’s Law	104
CHAPTER 4 Consumption, Saving, and Investment	105
4.1 Consumption and Saving	106
The Consumption and Saving Decision of an Individual	107
Effect of Changes in Current Income	108
Effect of Changes in Expected Future Income	109
APPLICATION Consumer Sentiment and Forecasts of Consumer Spending	110
Effect of Changes in Wealth	113
Effect of Changes in the Real Interest Rate	113
Fiscal Policy	115
IN TOUCH WITH DATA AND RESEARCH: Interest Rates	116
APPLICATION How Consumers Respond to Tax Rebates	120
4.2 Investment	122
The Desired Capital Stock	123
Changes in the Desired Capital Stock	126
APPLICATION Measuring the Effects of Taxes on Investment	129
From the Desired Capital Stock to Investment	130
Investment in Inventories and Housing	133
IN TOUCH WITH DATA AND RESEARCH: Investment and the Stock Market	133
4.3 Goods Market Equilibrium	135
The Saving–Investment Diagram	136
APPLICATION Macroeconomic Consequences of the Boom and Bust in Stock Prices	140
APPENDIX 4.A A Formal Model of Consumption and Saving	152
CHAPTER 5 Saving and Investment in the Open Economy	168
5.1 Balance of Payments Accounting	169
The Current Account	169
IN TOUCH WITH DATA AND RESEARCH: The Balance of Payments Accounts	171
The Capital and Financial Account	172
The Relationship Between the Current Account and the Capital and Financial Account	174
Net Foreign Assets and the Balance of Payments Accounts	176
APPLICATION The United States as International Debtor	177
5.2 Goods Market Equilibrium in an Open Economy	180
5.3 Saving and Investment in a Small Open Economy	181

The Effects of Economic Shocks in a Small Open Economy 184

5.4 Saving and Investment in Large Open Economies 186

APPLICATION The Impact of Globalization on the U.S. Economy 189

APPLICATION Recent Trends in the U.S. Current Account Deficit 191

5.5 Fiscal Policy and the Current Account 194

The Critical Factor: The Response of National Saving 194

The Government Budget Deficit and National Saving 195

APPLICATION The Twin Deficits 196

CHAPTER 6 Long-Run Economic Growth 207

6.1 The Sources of Economic Growth 208

Growth Accounting 210

APPLICATION The Post–1973 Slowdown in Productivity Growth 213

APPLICATION The Recent Surge in U.S. Productivity Growth 215

6.2 Long-Run Growth: The Solow Model 218

Setup of the Solow Model 219

The Fundamental Determinants of Long-Run Living Standards 226

APPLICATION The Growth of China 231

6.3 Endogenous Growth Theory 233

6.4 Government Policies to Raise Long-Run Living Standards 235

Policies to Affect the Saving Rate 235

Policies to Raise the Rate of Productivity Growth 235

CHAPTER 7 The Asset Market, Money, and Prices 242

7.1 What Is Money? 242

IN TOUCH WITH DATA AND RESEARCH:
Money in a Prisoner-of-War Camp 243

The Functions of Money 244

IN TOUCH WITH DATA AND RESEARCH:
The Monetary Aggregates 246

IN TOUCH WITH DATA AND RESEARCH:
Where Have All the Dollars Gone? 247

7.2 Portfolio Allocation and the Demand for Assets 249

Expected Return 249

Risk 250

Liquidity 250

Time to Maturity 250

Types of Assets and Their Characteristics 251

IN TOUCH WITH DATA AND RESEARCH:
The Housing Crisis That Began in 2007 254

Asset Demands 256

7.3 The Demand for Money 256

The Price Level 257

Real Income 257

Interest Rates 258

The Money Demand Function 258

Other Factors Affecting Money Demand 260

Velocity and the Quantity Theory of Money 262

7.4 Asset Market Equilibrium 265

Asset Market Equilibrium: An Aggregation Assumption 265

The Asset Market Equilibrium Condition 267

7.5 Money Growth and Inflation 268

APPLICATION Money Growth and Inflation in European Countries in Transition 269

The Expected Inflation Rate and the Nominal Interest Rate 270

APPLICATION Measuring Inflation Expectations 272



PART 3 Business Cycles and Macroeconomic Policy

CHAPTER 8 Business Cycles 280

8.1 What Is a Business Cycle? 281

8.2 The American Business Cycle: The Historical Record 283

- The Pre–World War I Period 283
- The Great Depression and World War II 283
- Post–World War II U.S. Business Cycles 285
- The “Long Boom” 286
- The Great Recession 286
- Have American Business Cycles Become Less Severe? 287

8.3 Business Cycle Facts 290

- The Cyclical Behavior of Economic Variables: Direction and Timing 290
- Production 291
- Expenditure 293
- Employment and Unemployment 294
- APPLICATION** The Job Finding Rate and the Job Loss Rate 295
- Average Labor Productivity and the Real Wage 298
- Money Growth and Inflation 299
- Financial Variables 300
- International Aspects of the Business Cycle 301
- IN TOUCH WITH DATA AND RESEARCH: Coincident and Leading Indexes 302

8.4 Business Cycle Analysis: A Preview 306

- IN TOUCH WITH DATA AND RESEARCH: The Seasonal Cycle and the Business Cycle 307
- Aggregate Demand and Aggregate Supply: A Brief Introduction 308

CHAPTER 9 The IS–LM/AD–AS Model: A General Framework for Macroeconomic Analysis 316

- 9.1 The FE Line: Equilibrium in the Labor Market 317**
 - Factors That Shift the FE Line 317
- 9.2 The IS Curve: Equilibrium in the Goods Market 319**
 - Factors That Shift the IS Curve 321
- 9.3 The LM Curve: Asset Market Equilibrium 323**
 - The Interest Rate and the Price of a Nonmonetary Asset 324

- The Equality of Money Demanded and Money Supplied 324
- Factors That Shift the LM Curve 327

9.4 General Equilibrium in the Complete IS–LM Model 330

- Applying the IS–LM Framework: A Temporary Adverse Supply Shock 332
- APPLICATION** Oil Price Shocks Revisited 334
- IN TOUCH WITH DATA AND RESEARCH: Econometric Models and Macroeconomic Forecasts for Monetary Policy Analysis 335

9.5 Price Adjustment and the Attainment of General Equilibrium 336

- The Effects of a Monetary Expansion 336
- Classical Versus Keynesian Versions of the IS–LM Model 340

9.6 Aggregate Demand and Aggregate Supply 342

- The Aggregate Demand Curve 342
- The Aggregate Supply Curve 344
- Equilibrium in the AD–AS Model 347
- Monetary Neutrality in the AD–AS Model 348

APPENDIX 9.A Worked-Out Numerical Exercise for Solving the IS–LM/AD–AS Model 357

APPENDIX 9.B Algebraic Versions of the IS–LM and AD–AS Models 360

CHAPTER 10 Classical Business Cycle Analysis: Market-Clearing Macroeconomics 367

- 10.1 Business Cycles in the Classical Model 368**
 - The Real Business Cycle Theory 368
 - APPLICATION** Calibrating the Business Cycle 371
- 10.2 Fiscal Policy Shocks in the Classical Model 378**
- 10.3 Unemployment in the Classical Model 382**
 - Jobless Recoveries 384
- 10.4 Money in the Classical Model 386**
 - Monetary Policy and the Economy 386

Monetary Nonneutrality and Reverse Causation 387

The Nonneutrality of Money: Additional Evidence 388

10.5 The Misperceptions Theory and the Nonneutrality of Money 389

Monetary Policy and the Misperceptions Theory 392

Rational Expectations and the Role of Monetary Policy 394

IN TOUCH WITH DATA AND RESEARCH:
Are Price Forecasts Rational? 396

APPENDIX 10.A Worked-Out Numerical Exercise for Solving the Classical *AD-AS* Model with Misperceptions 405

APPENDIX 10.B An Algebraic Version of the Classical *AD-AS* Model with Misperceptions 406

CHAPTER 11 Keynesianism: The Macroeconomics of Wage and Price Rigidity 408

11.1 Real-Wage Rigidity 409

Some Reasons for Real-Wage Rigidity 409

The Efficiency Wage Model 410

Wage Determination in the Efficiency Wage Model 411

Employment and Unemployment in the Efficiency Wage Model 412

Efficiency Wages and the *FE* Line 414

IN TOUCH WITH DATA AND RESEARCH:
Henry Ford's Efficiency Wage 415

11.2 Price Stickiness 416

Sources of Price Stickiness: Monopolistic Competition and Menu Costs 416

11.3 Monetary and Fiscal Policy in the Keynesian Model 422

Monetary Policy 422

Fiscal Policy 425

11.4 The Keynesian Theory of Business Cycles and Macroeconomic Stabilization 428

Keynesian Business Cycle Theory 428

Macroeconomic Stabilization 431

Supply Shocks in the Keynesian Model 433

IN TOUCH WITH DATA AND RESEARCH:
DSGE Models and the Classical–Keynesian Debate 435

APPENDIX 11.A Labor Contracts and Nominal-Wage Rigidity 442

APPENDIX 11.B Worked-Out Numerical Exercise for Calculating the Multiplier in a Keynesian Model 445

APPENDIX 11.C The Multiplier in the Keynesian Model 447



PART 4 Macroeconomic Policy: Its Environment and Institutions

CHAPTER 12 Unemployment and Inflation 449

12.1 Unemployment and Inflation: Is There a Trade-Off? 449

The Expectations-Augmented Phillips Curve 452

The Shifting Phillips Curve 455

12.2 Macroeconomic Policy and the Phillips Curve 460

IN TOUCH WITH DATA AND RESEARCH:
The Lucas Critique 461

The Long-Run Phillips Curve 462

12.3 The Problem of Unemployment 462

The Costs of Unemployment 463

The Long-Term Behavior of the Unemployment Rate 463

12.4 The Problem of Inflation 467

The Costs of Inflation 467

IN TOUCH WITH DATA AND RESEARCH:
Indexed Contracts 469

12.5 Fighting Inflation: The Role of Inflationary Expectations 471

IN TOUCH WITH DATA AND RESEARCH:
The Sacrifice Ratio 473

The U.S. Disinflation of the 1980s and 1990s 474

CHAPTER 13 Exchange Rates, Business Cycles, and Macroeconomic Policy in the Open Economy 481

- 13.1 Exchange Rates 482**
 - Nominal Exchange Rates 482
 - IN TOUCH WITH DATA AND RESEARCH: Exchange Rates 483
 - Real Exchange Rates 484
 - Appreciation and Depreciation 485
 - Purchasing Power Parity 486
 - IN TOUCH WITH DATA AND RESEARCH: McParity 487
 - The Real Exchange Rate and Net Exports 489
 - APPLICATION** The Value of the Dollar and U.S. Net Exports 491
 - 13.2 How Exchange Rates Are Determined: A Supply-and-Demand Analysis 493**
 - Macroeconomic Determinants of the Exchange Rate and Net Export Demand 495
 - 13.3 The IS–LM Model for an Open Economy 497**
 - The Open-Economy IS Curve 498
 - Factors That Shift the Open-Economy IS Curve 501
 - The International Transmission of Business Cycles 503
 - 13.4 Macroeconomic Policy in an Open Economy with Flexible Exchange Rates 504**
 - A Fiscal Expansion 504
 - A Monetary Contraction 507
 - 13.5 Fixed Exchange Rates 509**
 - Fixing the Exchange Rate 510
 - Monetary Policy and the Fixed Exchange Rate 512
 - Fixed Versus Flexible Exchange Rates 515
 - Currency Unions 516
 - APPLICATION** European Monetary Unification 517
 - APPLICATION** Crisis in Argentina 519
- APPENDIX 13.A Worked-Out Numerical Exercise for the Open-Economy IS–LM Model 528**
- APPENDIX 13.B An Algebraic Version of the Open-Economy IS–LM Model 531**

CHAPTER 14 Monetary Policy and the Federal Reserve System 534

- 14.1 Principles of Money Supply Determination 535**
 - Open-Market Operations 537
 - The Money Multiplier 538
 - Bank Runs 541
 - APPLICATION** The Money Multiplier During Severe Financial Crises 542
 - 14.2 Monetary Control in the United States 547**
 - The Federal Reserve System 547
 - The Federal Reserve’s Balance Sheet and Open-Market Operations 548
 - Reserve Requirements 550
 - Discount Window Lending 551
 - Interest Rate on Reserves 553
 - 14.3 Setting Monetary Policy Targets 553**
 - Targeting the Federal Funds Rate 553
 - 14.4 Making Monetary Policy in Practice 557**
 - Lags in the Effect of Monetary Policy 557
 - Conducting Monetary Policy Under Uncertainty 559
 - Monetary Policy in the Great Recession 560
 - APPLICATION** The Financial Crisis of 2008 564
 - 14.5 The Conduct of Monetary Policy: Rules Versus Discretion 565**
 - The Monetarist Case for Rules 566
 - Rules and Central Bank Credibility 568
 - The Taylor Rule 570
 - Other Ways to Achieve Central Bank Credibility 572
 - APPLICATION** Inflation Targeting 574
- CHAPTER 15 Government Spending and Its Financing 580**
- 15.1 The Government Budget: Some Facts and Figures 580**
 - Government Outlays 580
 - Taxes 583
 - Deficits and Surpluses 586

15.2 Government Spending, Taxes, and the Macroeconomy 588

Fiscal Policy and Aggregate Demand 588

Government Capital Formation 590

Incentive Effects of Fiscal Policy 591

APPLICATION Labor Supply and Tax Reform in the 1980s 593

15.3 Government Deficits and Debt 595

The Growth of the Government Debt 595

APPLICATION Social Security: How Can It Be Fixed? 597

The Burden of the Government Debt on Future Generations 599

Budget Deficits and National Saving: Ricardian Equivalence Revisited 600

Departures from Ricardian Equivalence 603

IN TOUCH WITH DATA AND RESEARCH:

Measuring the Impact of Government Purchases on the Economy 604

15.4 Deficits and Inflation 605

The Deficit and the Money Supply 606

Real Seignorage Collection and Inflation 607

APPENDIX 15.A The Debt–GDP Ratio 616

APPENDIX A Some Useful Analytical Tools 617

A.1 Functions and Graphs 617

A.2 Slopes of Functions 618

A.3 Elasticities 619

A.4 Functions of Several Variables 620

A.5 Shifts of a Curve 620

A.6 Exponents 621

A.7 Growth Rate Formulas 621

Problems 622

Glossary 624

Name Index 635

Subject Index 637