

Macroeconomics

Second Edition

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Brief Contents

Part 1: Introduction

Chapter 1	The Long and Short of Macroeconomics	1
Chapter 2	Measuring the Macroeconomy	25
Chapter 3	The U.S. Financial System	64
Chapter 4	The Global Financial System	108

Part 2: Macroeconomics in the Long Run: Economic Growth

Chapter 5	The Standard of Living over Time and Across Countries	147
Chapter 6	Long-Run Economic Growth	176
Chapter 7	Money and Inflation	216
Chapter 8	The Labor Market	260

Part 3: Macroeconomics in the Short Run: Theory and Policy

Chapter 9	Business Cycles	294
Chapter 10	Explaining Aggregate Demand: The <i>IS–MP</i> Model	332
Chapter 11	The <i>IS–MP</i> Model: Adding Inflation and the Open Economy	380
Chapter 12	Monetary Policy in the Short Run	412
Chapter 13	Fiscal Policy in the Short Run	461
Chapter 14	Aggregate Demand, Aggregate Supply, and Monetary Policy	504

Part 4: Extensions

Chapter 15	Fiscal Policy and the Government Budget in the Long Run	543
Chapter 16	Consumption and Investment	573
	Glossary	609
	Index	614

Contents

Chapter 1 The Long and Short of Macroeconomics 1

When You Enter the Job Market Can Matter a Lot	1
1.1 What Macroeconomics Is About	2
Macroeconomics in the Short Run and in the Long Run.....	2
Long-Run Growth in the United States.....	3
Some Countries Have Not Experienced Significant Long-Run Growth.....	5
Aging Populations Pose a Challenge to Governments Around the World.....	6
Unemployment in the United States.....	8
Unemployment Rates Differ Across Developed Countries.....	9
Inflation Rates Fluctuate Over Time and Across Countries.....	9
Economic Policy Can Help Stabilize the Economy.....	10
International Factors Have Become Increasingly Important in Explaining Macroeconomic Events.....	12
1.2 How Economists Think About Macroeconomics	14
What Is the Best Way to Analyze Macroeconomic Issues?.....	14
Macroeconomic Models.....	15
Solved Problem 1.2: Do Rising Imports Lead to a Permanent Reduction in U.S. Employment?	16
Assumptions, Endogenous Variables, and Exogenous Variables in Economic Models.....	17
Forming and Testing Hypotheses in Economic Models.....	17
Making the Connection: Why Should the United States Worry About the “Euro Crisis”?	18
1.3 Key Issues and Questions of Macroeconomics	19
*Key Terms and Problems	21
Key Terms and Concepts, Review Questions,.....	22
Problems and Applications, Data Exercise.....	22
*These end-of-chapter resource materials repeat in all chapters.....	22

Chapter 2 Measuring the Macroeconomy 25

How Do We Know When We Are in a Recession?	25
Key Issue and Question	25
2.1 GDP: Measuring Total Production and Total Income	27
How the Government Calculates GDP.....	27
Production and Income.....	29
The Circular Flow of Income.....	29
An Example of Measuring GDP.....	31
National Income Identities and the Components of GDP.....	31
The Relationship Between GDP and GNP.....	34
GDP Versus GDI.....	35
GDP and National Income.....	36

2.2 Real GDP, Nominal GDP, and the GDP Deflator	37
Solved Problem 2.2A: Calculating Real GDP	38
Price Indexes and the GDP Deflator	40
Solved Problem 2.2B: Calculating the Inflation Rate	40
The Chain-Weighted Measure of Real GDP	41
Making the Connection: Trying to Hit a Moving Target: Forecasting with “Real-Time Data”	42
Comparing GDP Across Countries	43
Making the Connection: The Incredible Shrinking Chinese Economy	44
2.3 Inflation Rates and Interest Rates	44
The Consumer Price Index	45
Making the Connection: Does the CPI Provide a Good Measure of Inflation for a Family with College Students?	46
How Accurate Is the CPI?	47
The Way the Federal Reserve Measures Inflation	48
Interest Rates	49
2.4 Measuring Employment and Unemployment	51
Answering the Key Question	53
Chapter 3 The U.S. Financial System	64
The Wonderful World of Credit	64
Key Issue and Question	64
3.1 An Overview of the Financial System	65
Financial Markets and Financial Intermediaries	66
Making the Connection: The Controversial World of Subprime Lending	68
Making the Connection: Investing in the Worldwide Stock Market	71
Banking and Securitization	73
Asymmetric Information and Principal–Agent Problems in Financial Markets	73
3.2 Financial Crises, Government Policy, and the Financial System	74
Financial Intermediaries and Leverage	75
Bank Panics	77
Government Policies to Deal with Bank Panics	79
The Financial Crisis of 2007–2009	79
The Mortgage Market and the Subprime Lending Disaster	80
Runs on the Shadow Banking System	82
Government Policies to Deal with the Financial Crisis of 2007–2009	83
Making the Connection: Fed Policy During Panics, Then and Now: The Collapse of the Bank of United States in 1930 and the Collapse of Lehman Brothers in 2008	84
3.3 The Money Market and the Risk Structure and Term Structure of Interest Rates	87
The Demand and Supply of Money	87
Shifts in the Money Demand Curve	88
Equilibrium in the Money Market	89
Calculating Bond Interest Rates and the Concept of Present Value	90
Present Value and the Prices of Stocks and Bonds	92
Solved Problem 3.3: Interest Rates and Treasury Bond Prices	95
The Economy’s Many Interest Rates	95
Answering the Key Question	99
Appendix: More on the Term Structure of Interest Rates	106

Chapter 4 The Global Financial System 108

Did U.S. Monetary Policy Slow Brazil's Growth?	108
Key Issue and Question	108
4.1 The Balance of Payments	109
The Current Account	112
The Financial Account	113
The Capital Account	114
4.2 Exchange Rates and Exchange Rate Policy	115
Nominal Exchange Rates	115
Real Exchange Rates	117
The Foreign-Exchange Market	118
Exchange Rate Policy	119
Policy Choices and the Current Exchange Rate Systems	120
Making the Connection: Greece Experiences a "Bank Jog"	121
4.3 What Factors Determine Exchange Rates?	124
Purchasing Power Parity	124
Why Purchasing Power Parity Doesn't Hold Exactly	125
The Interest Parity Condition	126
Solved Problem 4.3: Making a Financial Killing by Buying Brazilian Bonds?	127
Making the Connection: Brazilian Firms Grapple with an Unstable Exchange Rate	129
4.4 The Loanable Funds Model and the International Capital Market	130
Saving and Supply in the Loanable Funds Market	131
Investment and the Demand for Loanable Funds	132
Explaining Movements in Saving, Investment, and the Real Interest Rate	133
The International Capital Market and the Interest Rate	135
Small Open Economy	135
Large Open Economy	138
Answering the Key Question	139

Chapter 5 The Standard of Living over Time and Across Countries 147

Who Is Number One?	147
Key Issue and Question	147
5.1 The Aggregate Production Function	148
The Cobb–Douglas Production Function	149
The Demand for Labor and the Demand for Capital	152
Changes in Capital, Labor, and Total Factor Productivity	153
Making the Connection: Foreign Direct Investment Increases Real GDP in China	154
5.2 A Model of Real GDP in the Long Run	155
The Markets for Capital and Labor	156
Combining the Factor Markets with the Aggregate Production Function	158
The Division of Total Income	158
Solved Problem 5.2: Calculating the Marginal Product of Labor and the Marginal Product of Capital	160
What Determines Levels of Real GDP Across Countries?	161
5.3 Why Real GDP per Worker Varies Among Countries	161
The per Worker Production Function	162
What Determines Labor Productivity?	163

Macro Data: How Well do International Capital Markets Allocate Capital?	163
What Determines Real GDP per Capita?	164
5.4 Total Factor Productivity and Labor Productivity	164
What Explains Total Factor Productivity?.....	164
Making the Connection: Comparing Research and Development Spending and Labor Productivity in China and the United States	165
Making the Connection: How Important Were the Chinese Economic Reforms of 1978?	168
Answering the Key Question	170

Chapter 6 Long-Run Economic Growth 176

The Surprising Economic Rise of India	176
Key Issue and Question	176
6.1 The Solow Growth Model	177
Capital Accumulation.....	178
The Steady State.....	180
Transition to the Steady State	182
Saving Rates and Growth Rates	184
Macro Data: Do High Rates of Saving and Investment Lead to High Levels of Income?	185
6.2 Labor Force Growth and the Solow Growth Model	186
Labor Force Growth and the Steady State.....	186
The Effect of an Increase in the Labor Force Growth Rate.....	187
Solved Problem 6.2: The Effect of a Decrease in the Labor Force Growth Rate on Real GDP per Worker	188
6.3 Technological Change and the Solow Growth Model	190
Technological Change.....	190
Technological Change and the Steady State.....	191
Steady-State Growth Rates.....	191
6.4 Balanced Growth, Convergence, and Long-Run Equilibrium	193
Convergence to the Balanced Growth Path.....	193
Making the Connection: Will China's Standard of Living Ever Exceed that of the United States?	195
Do All Countries Converge to the Same Steady State?.....	196
6.5 Endogenous Growth Theory	197
AK Growth Models: Reconsidering Diminishing Returns	198
Two-Sector Growth Model: The Production of Knowledge	200
Policies to Promote Economic Growth.....	201
Making the Connection: What Explains Recent Economic Growth in India?	201
Making the Connection: Should the Federal Government Invest in Green Energy?	203
Answering the Key Question	206
Appendix: Growth Accounting	212
The Growth Accounting Equation for Real GDP.....	212
Growth Accounting for the United States	213
Total Factor Productivity as the Ultimate Source of Growth.....	213

Chapter 7 Money and Inflation 216

What Can You Buy with \$100 Trillion? 216

Key Issue and Question 216

7.1 What Is Money, and Why Do We Need It? 217

 The Functions of Money 218

 Commodity Money Versus Fiat Money 219

Making the Connection: When Money Is No Longer Money: Hyperinflation in Zimbabwe 220

 How Is Money Measured? 222

 Which Measure of the Money Supply Should We Use? 223

7.2 The Federal Reserve and the Money Supply 224

 How the Fed Changes the Monetary Base 224

 The Process of Money Creation 225

7.3 The Quantity Theory of Money and Inflation 227

 The Quantity Theory of Money 228

 The Quantity Theory Explanation of Inflation 228

Making the Connection: Is the Inflation Rate Around the World Going to Increase in the Near Future? 229

Solved Problem 7.3: The Effect of a Decrease in the Growth Rate of the Money Supply 230

 Can the Quantity Theory Accurately Predict the Inflation Rate? 231

7.4 The Relationships Among the Growth Rate of Money, Inflation, and the Nominal Interest Rate 232

 Real Interest Rates and Expected Real Interest Rates 233

 The Fisher Effect 234

 Money Growth and the Nominal Interest Rate 235

7.5 The Costs of Inflation 236

 Costs of Expected Inflation 236

 How Large Are the Costs of Expected Inflation? 238

 Costs of Unexpected Inflation 239

Macro Data: What Is the Expected Inflation Rate? 239

Making the Connection: Did the Fed's Actions During the Financial Crisis of 2007–2009 Increase the Expected Inflation Rate? 240

 Inflation Uncertainty 241

 Benefits of Inflation 242

7.6 Hyperinflation and Its Causes 243

 Causes of Hyperinflation 243

 German Hyperinflation After World War I 244

Answering the Key Question 245

Appendix: The Money Multiplier 255

 Open Market Operations 255

 The Simple Deposit Multiplier 256

 A More Realistic Money Multiplier 259

Chapter 8 The Labor Market 260

If Firms Have Trouble Finding Workers, Why Is the Unemployment Rate so High? 260

Key Issue and Question 260

8.1 The Labor Market 262

 Nominal and Real Wages 262

 The Demand for Labor Services 262

Shifting the Demand Curve.....262
 The Supply of Labor Services264
 Factors That Shift the Labor Supply Curve264
 Equilibrium in the Labor Market.....266
 The Effect of Technological Change266

Solved Problem 8.1: Why Don't People Work as Much as They Did Decades Ago?.....267

8.2 Categories of Unemployment269
 Frictional Unemployment and Job Search.....269
 Structural Unemployment.....270

Macro Data: Is the Decline of Industries That Produce Goods a Recent Phenomenon?271
 Cyclical Unemployment.....271

Making the Connection: Did the Structural Unemployment Rate Rise During the Recession of 2007–2009?.....272
 Full Employment.....274
 Unemployment Around the World.....274
 Duration of Unemployment Around the World.....275

8.3 The Natural Rate of Unemployment.....275
 A Simple Model of the Natural Rate of Unemployment276

Solved Problem 8.3: How Many Jobs Does the U.S. Economy Create Every Month?276
 What Determines the Natural Rate of Unemployment?279

Making the Connection: Are Strict Labor Laws to Blame for Unemployment in France?.....282

8.4 Why Does Unemployment Exist?.....284
 Equilibrium Real Wages and Unemployment.....284
 Efficiency Wages.....285
 Labor Unions Around the World286
 Minimum Wage Laws.....286

Answering the Key Question.....287

Chapter 9 Business Cycles 294

Is the Housing Cycle the Business Cycle?.....294
Key Issue and Question294

9.1 The Short Run and the Long Run in Macroeconomics296
 The Keynesian and Classical Approaches.....296
 Macroeconomic Shocks and Price Flexibility.....297
 Why Are Prices Sticky in the Short Run?298

Making the Connection: The Curious Case of the 5-Cent Bottle of Coke300

9.2 What Happens During a Business Cycle?301
 The Changing Severity of the U.S. Business Cycle.....302
 How Do We Know the Economy Is in an Expansion or a Recession?305
 Measuring Business Cycles.....305

Solved Problem 9.2: Dating U.S. Recessions306
 Costs of the Business Cycle.....308

Making the Connection: Did the 2007–2009 Recession Break Okun's Law?309
 Movements of Economic Variables During the Business Cycle.....313
 The Global Business Cycle.....314

9.3 Shocks and Business Cycles315
 Multiplier Effects.....316
 An Example of a Shock with Multiplier Effects: The Bursting of the Housing Bubble318

9.4 A Simple Model of the Business Cycle: Aggregate Demand and Aggregate Supply	319
Aggregate Demand and Aggregate Supply: An Introduction.....	319
Aggregate Supply Shocks and the Business Cycle.....	321
Aggregate Demand Shocks and the Business Cycle.....	322
Should Policy Try to Offset Shocks?	322
Making the Connection: How Important Is Housing in the Business Cycle?	323
Answering the Key Question	324
Appendix: The Formula for the Expenditure Multiplier	331

Chapter 10 Explaining Aggregate Demand: The *IS–MP* Model 332

Fear of Falling (into a Recession)	332
Key Issue and Question	332
10.1 The <i>IS</i> Curve: The Relationship Between Real Interest Rates and Aggregate Expenditure	334
Equilibrium in the Goods Market.....	334
The Multiplier Effect	337
The Government Purchases and Tax Multipliers	339
Solved Problem 10.1: Calculating Equilibrium Real GDP	340
Constructing the <i>IS</i> Curve	343
Shifts of the <i>IS</i> Curve	344
The <i>IS</i> Curve and the Output Gap	344
10.2 The Monetary Policy Curve: The Relationship Between the Central Bank’s Target Interest Rate and Output	346
The Link Between the Short-Term Nominal Interest Rate and the Long-Term Real Interest Rate.....	346
Macro Data Box: Real Interest Rates and the Global Savings Glut	349
Interest Rate Movements During the 2007–2009 Recession	350
Deriving the <i>MP</i> Curve Using the Money Market Model	350
Shifts of the <i>MP</i> Curve.....	351
10.3 Equilibrium in the <i>IS–MP</i> Model	353
Demand Shocks and Fluctuations in Output	353
Making the Connection: Will the European Financial Crisis Cause a Recession in the United States?	356
Monetary Policy and Fluctuations in Real GDP.....	357
Solved Problem 10.3: Using the <i>IS–MP</i> Model to Analyze the 2001 Tax Cut	360
<i>IS–MP</i> and Aggregate Demand.....	361
Answering the Key Question	364
Appendix: <i>IS–LM</i>: An Alternative Short-Run Macroeconomic Model	370
Asset Market Equilibrium	370
Deriving the <i>LM</i> Curve	371
Shifting the <i>LM</i> Curve.....	372
Equilibrium in the <i>IS–LM</i> Model.....	373
Solved Problem 10A.1: Monetary Policy During the Great Depression	375
An Alternative Derivation of the <i>MP</i> Curve.....	377

Chapter 11 The *IS–MP* Model: Adding Inflation and the Open Economy 380

Where's the Inflation? 380

Key Issue and Question 380

11.1 The *IS–MP* Model and the Phillips Curve 381

 Okun's Law, the Output Gap, and the Phillips Curve 385

 Movement Along an Existing Phillips Curve 388

 Shifts of the Phillips Curve 389

 How Well Does the Phillips Curve Fit the Inflation Data? 390

Making the Connection: Lots of Money but Not Much Inflation Following the Recession of 2007–2009 390

 Using Monetary Policy to Fight a Recession 392

Solved Problem 11.1: Fed Policy to Keep Inflation from Increasing 393

11.2 The Performance of the U.S. Economy During 2007–2009 396

 Using the *IS–MP* Model to Analyze the Financial Crisis and the Housing Crash 396

 The *IS–MP* Model and the Oil Shock of 2007–2008 398

11.3 The *IS–MP* Model in an Open Economy 398

 The *IS* Curve with a Floating Exchange Rate 398

 Monetary Policy with a Floating Exchange Rate 400

 Equilibrium in an Open Economy with a Floating Exchange Rate 401

 The *IS–MP* Model with a Fixed Exchange Rate 401

 The *IS* Curve with a Fixed Exchange Rate 402

 The *MP* Curve with a Fixed Exchange Rate 402

Macro Data: Did the Gold Standard Make the Great Depression Worse? 403

 Equilibrium in an Open Economy with a Fixed Exchange Rate 404

Making the Connection: Can the Euro Survive? 404

Answering the Key Question 407

Chapter 12 Monetary Policy in the Short Run 412

Why Didn't the Fed Avoid the Recession of 2007–2009? 412

Key Issue and Question 412

12.1 The Federal Reserve System 414

 Creation of the Federal Reserve System 414

 The Structure of the Federal Reserve System 415

12.2 The Goals of Monetary Policy 416

 Price Stability 417

 High Employment 417

 Financial Market Stability 417

 Interest Rate Stability 418

 The Fed's Dual Mandate 418

12.3 Monetary Policy Tools 418

 Open Market Operations 418

 Discount Loans and the Lender of Last Resort 419

Macro Data: Does the Federal Reserve Hit Its Federal Funds Rate Target? 420

 Reserve Requirements 420

 New Monetary Policy Tools in Response to the 2007–2009 Financial Crisis 421

Making the Connection: On the Board of Governors, Four Can Be a Crowd 423

12.4 Monetary Policy and the IS–MP Model	424
Monetary Policy and Aggregate Expenditure	424
Using Monetary Policy to Fight a Recession	425
Using Monetary Policy to Fight Inflation	427
Using Monetary Policy to Deal with a Supply Shock	427
Solved Problem 12.4: Did the Federal Reserve Make the Great Depression Worse?	429
The Liquidity Trap, the Zero Lower Bound, and Alternative Channels of Monetary Policy	431
12.5 The Limitations of Monetary Policy	435
Policy Lags	435
Economic Forecasts	436
Model Uncertainty	437
Consequences of Policy Limitations	438
Solved Problem 12.5: Did the Fed Help Cause the 2001 Recession?	439
Moral Hazard	443
Making the Connection: “Too Big to Fail”—The Legacy of Continental Illinois	443
12.6 Central Bank Independence	444
The Independence of the U.S. Federal Reserve	445
12.7 Monetary Policy in an Open Economy	447
Monetary Policy with Floating Exchange Rates	447
Monetary Policy with a Fixed Exchange Rate	448
The Policy Trilemma for Economic Policy	449
Answering the Key Question	453

Chapter 13 Fiscal Policy in the Short Run 461

Driving Toward a “Fiscal Cliff”	461
Key Issue and Question	461
13.1 The Goals and Tools of Fiscal Policy	463
Who Conducts Fiscal Policy?	463
Traditional Tools of Fiscal Policy	464
Making the Connection: Why Was the Severity of the 2007–2009 Recession So Difficult to Predict?	466
13.2 Budget Deficits, Discretionary Fiscal Policy, and Automatic Stabilizers	468
Discretionary Fiscal Policy and Automatic Stabilizers	468
The Budget Deficit and the Budget Surplus	468
Making the Connection: How Did the Federal Government Run a Budget Surplus in the Late 1990s and Early 2000s?	470
Macro Data: Did Fiscal Policy Fail During the Great Depression?	473
The Deficit and the Debt	474
Is the Federal Debt a Problem?	475
13.3 The Short-Run Effects of Fiscal Policy	476
Fiscal Policy and the IS Curve	476
Using Discretionary Fiscal Policy to Fight a Recession	477
Automatic Stabilizers	479
Solved Problem 13.3A: Should the Federal Government Eliminate the Budget Deficit?	481
Making the Connection: State and Local Government Spending During the 2007–2009 Recession	483
Personal Income Tax Rates and the Multiplier	484

Solved Problem 13.3B: Calculating Equilibrium Real GDP and the Expenditure Multiplier with Income Taxes 485
 The Effects of Changes in Tax Rates on Potential GDP 486

13.4 The Limitations of Fiscal Policy 488
 Policy Lags 488
 Economic Forecasts 489
 The Uncertainty of Economic Models 489
 Crowding Out and Forward-Looking Households 491
 When Will Fiscal Multipliers Be Large? 491
 Moral Hazard 492
 Consequences of Policy Limitations 492
 Evaluating the American Recovery and Reinvestment Act 493

13.5 Fiscal Policy in an Open Economy 494
 Fiscal Policy with Floating Exchange Rates 494
 Fiscal Policy with a Fixed Exchange Rate 495

Answering the Key Question 496

Chapter 14 Aggregate Demand, Aggregate Supply, and Monetary Policy 504

Did the Fed Create and Then Kill the Great Moderation? 504
Key Issue and Question 504

14.1 Aggregate Demand Revisited 506
 The Aggregate Demand Curve 507
 Shifts of the Aggregate Demand Curve 508
 When Are Shifts to the Aggregate Demand Curve Permanent? 511

14.2 Aggregate Supply and the Phillips Curve 512
 Shifts in the Aggregate Supply Curve 514

14.3 The Aggregate Demand and Aggregate Supply Model 515
 Equilibrium in the AD–AS Model 515
 The Effects of a Supply Shock 516
 Permanent Demand Shocks: Changes in the Central Bank Reaction Function 518

Macro Data: Are Oil Supply Shocks Really That Important? 519

Making the Connection: The End of Stagflation and the Volcker Recession 521
 Temporary Demand Shocks: Changes in Aggregate Expenditure 522

Solved Problem 14.3: Applying the AD–AS Model to an Increase in Housing Construction 524

14.4 Rational Expectations and Policy Ineffectiveness 526
 Rational Expectations and Anticipated Policy Changes 527
 Rational Expectations and Unanticipated Policy Changes 528
 Rational Expectations and Demand Shocks 528
 Are Anticipated and Credible Policy Changes Actually Ineffective? 529

14.5 Monetary Policy: Rules Versus Discretion 530
 The Taylor Rule 530
 The Taylor Rule and the Real Interest Rate 533
 The Case for Discretion 533
 The Case for Rules 534

Making the Connection: Central Banks Around the World Try Inflation Targeting 535
Answering the Key Question 536

Chapter 15 Fiscal Policy and the Government Budget in the Long Run 543

Drowning in a Sea of Debt?	543
Key Issue and Question	543
15.1 Debt and Deficits in Historical Perspective	544
The Government Budget Constraint.....	545
The Relationship Between the Deficit and the National Debt.....	546
Gross Federal Debt Versus Debt Held by the Public.....	547
The Debt-to-GDP Ratio.....	548
Composition of Federal Government Revenue and Expenditure.....	549
Federal Government Expenditure.....	550
15.2 The Sustainability of Fiscal Policy	551
Expressing the Deficit as a Percentage of GDP.....	551
Making the Connection: The European Debt Crisis	552
When Is Fiscal Policy Sustainable?.....	553
Solved Problem 15.2: Can Japan Grow Its Way Out of Debt?	554
15.3 The Effects of Budget Deficits in the Long Run	556
The Budget Deficit and Crowding Out.....	556
The Conventional View: Crowding Out Private Investment.....	556
Ricardian Equivalence.....	557
Macro Data: Do Government Deficits Increase Real Interest Rates?	557
15.4 The Fiscal Challenges Facing the United States	559
Projections of Federal Government Revenue and Expenditure.....	559
Making the Connection: Many Proposals but Not Much Progress on the Deficit	560
Will the United States Pay Off Its Debt?.....	561
Policy Options.....	563
Answering the Key Question	566
Appendix A: Showing the Conditions for a Sustainable Fiscal Policy.....	571
Appendix B: Showing the Relationship between Budget Deficits and Private Expenditure.....	572

Chapter 16 Consumption and Investment 573

Are All Tax Cuts Created Equal?	573
Key Issue and Question	573
16.1 The Macroeconomic Implications of Microeconomic Decision Making: Intertemporal Choice	574
Households and Firms are Forward Thinking.....	574
An Important Difference Between Consumption and Investment.....	575
16.2 Factors That Determine Consumption	576
Consumption and GDP.....	576
The Intertemporal Budget Constraint and Consumption Smoothing.....	577
Two Theories of Consumption Smoothing.....	578
Permanent Versus Transitory Changes in Income.....	581
Consumption and the Real Interest Rate.....	582
Housing Wealth and Consumption.....	583
How Policy Affects Consumption.....	584
Solved Problem 16.2: Effects of a Temporary Tax Cut on Your Consumption	585
Credit Rationing of Households.....	586

Making the Connection: The Temporary Cut in Payroll Taxes	588
Precautionary Saving	589
Tax Incentives and Saving	590
16.3 Factors That Determine Private Investment	591
The Investment Decisions of Firms	592
Corporate Taxes and the Desired Capital Stock	595
Macro Data: How Important Are Corporate Taxes for Investment?	596
Making the Connection: From Transitory Tax Cuts to Tax Reform	598
From the Desired Capital Stock to Investment	599
Solved Problem 16.3: Depreciation, Taxes, and Investment Spending	599
Tobin's q : Another Framework for Explaining Investment	601
Credit Rationing and the Financial Accelerator	601
Uncertainty and Irreversible Investment	603
Answering the Key Question	603
Glossary	609
Index	614

Preface

The financial crisis and recession of 2007–2009 have changed how students, instructors, and policymakers think about the economy. The first U.S. financial crisis in 75 years showed the importance of the financial system, including “shadow banks,” to macroeconomic theory and policy. The global nature of the crisis demonstrated that countries have become more connected economically and financially. In late 2012, the macroeconomic scene remained unsettled: The euro zone grappled with a debt crisis and austerity plans; growth slowed in the United States, China, and Brazil; recession returned to several European countries; and the U.S. Congress and president struggled to come to terms with a ballooning deficit. Many economists view the Great Recession and its aftermath as a watershed in macroeconomics second only to the Great Depression.

The events of the past few years have reinforced the views that inspired us to write the first edition:

1. The financial crisis makes it critical for students to receive more background on the financial system.
2. Short-run macroeconomic policy plays too small a role in many current texts.
3. Students will be interested in macroeconomic models when applied to understanding real-world events and current policies that are in today’s news headlines.

New to This Edition

We were gratified by the enthusiastic response of students and instructors who used the first edition. The response confirmed our view that the market needed a text that provided more coverage of the financial system and presented a modern short-run model. In this second edition, we retain the key approach of our first edition while making several changes to address feedback from instructors and students and also to reflect our own classroom experiences. Here is a summary of our key changes. Please see the pages that follow for details about these changes:

- Increased the emphasis on the open economy by adding a new early international chapter—Chapter 4, “The Global Financial System”—and increasing integration of international examples in several chapters
- Streamlined, substantially revised, and reorganized the presentation of economic growth in two chapters: Chapter 5, “The Standard of Living over Time and Across Countries,” and Chapter 6, “Long-Run Economic Growth”
- Reorganized and revised the presentation of the *IS–MP* model, which is now covered in two chapters: Chapter 10, “Explaining Aggregate Demand: The *IS–MP* Model,” and Chapter 11, “The *IS–MP* Model: Adding Inflation and the Open Economy”
- Added 10 new *Making the Connection* features
- Added 46 new real-time data exercises that students can complete on MyEconLab
- Replaced or updated approximately one-half of the questions and problems at the end of each chapter
- Updated graphs and tables with the latest available data; added 8 new figures; and added 3 new tables

“The book places welcome emphasis on financial markets (both domestic and international).”

Mark Tendall,
Stanford University

“Accessible, current, and relevant . . . students will enjoy the balance between model development and real-world applications. I really enjoyed the integration of the financial crisis, housing crash, oil shock and exchange rates. Wonderful!”

Carlos F. Liard-Muriente,
Central Connecticut
State University

“It is the best textbook to use in an Intermediate Macro course that emphasizes the ongoing financial crisis and its impact on the real economy. The discussion of the sovereign debt crisis in Europe in the second edition is valuable.”

Ted Burczak,
Denison University

"[This book] will turn students on to macroeconomics by using many real-world examples from the U.S., China, Europe, India, and across the world, by integrating crucial features of financial markets and the global economy, by analyzing extensively the Great Depression and the recent financial crisis, and by using macroeconomic models to explain the world."

Robert Gillette,
University of Kentucky

"I like the inclusion of Open Economy Macroeconomics in both Chapters 5 and 6. All of the international Macroeconomic data comparison was refreshing. (Normally, I would have to introduce multiple outside sources to cover this material.)"

Giacomo Santangelo,
Fordham University

"A key strength is the explanation of Solow model in stages by introducing one variable at a time—such as capital, labor, tech change, depreciation, etc."

Arun Srinivasan,
Indiana University

Increased the emphasis on the open economy by adding a new early international chapter—Chapter 4, "The Global Financial System"—and increasing integration of international examples in several chapters

In 2012, U.S. policymakers, firms, and investors held their breath as Europe grappled with a debt crisis and the possibility of recession. The reaction of the U.S. stock market was an indication that what was happening in Europe could potentially have a major effect on the U.S. economy. Because the international flows of goods and investment have grown so rapidly, we decided to include a new and early chapter on the global financial system: Chapter 4, "The Global Financial System." The chapter provides important background that can help students understand some of the key policy issues facing Congress, the president, and the Federal Reserve. We know, though, that many instructors are pressed for time just covering the short-run and long-run models and macroeconomic policy. So we wrote Chapter 4 in a way that allows instructors to skip it without loss of continuity.

This new chapter opens with a discussion of the economic performance of Brazil and the link between U.S. monetary policy and the value of Brazil's currency, the real. The chapter explores the topics of balance of payments, advantages and disadvantages of different exchange rate policies, factors that determine exchange rates, and the loanable funds model in an open economy. A theme of the text is to aid students' engagement by using each chapter's key features to support the topic presented in the chapter opener. We do so in Chapter 4 with the *Making the Connections* "Brazilian Firms Grapple with an Unstable Exchange Rate" and "Greece Experiences a 'Bank Jog,'" as well as a *Solved Problem* titled "Making a Financial Killing by Buying Brazilian Bonds?"

To complement the early chapter on the global financial system, we have added international examples throughout the text, including the following:

"Why Should the United States Worry About the 'Euro Crisis?'" (Chapter 1, "The Long and Short of Macroeconomics")

"Real Interest Rates and the Global Savings Glut" (Chapter 10, "Explaining Aggregate Demand: The IS-MP Model")

"Will the European Financial Crisis Cause a Recession in the United States?" (Chapter 10, "Explaining Aggregate Demand: The IS-MP Model")

"Did the Gold Standard Make the Great Depression Worse?" (Chapter 11, "The IS-MP Model: Adding Inflation and the Open Economy")

The material on monetary policy and fiscal policy in an open economy that was covered in the first edition's Chapter 15 is now covered in Chapter 12, "Monetary Policy in the Short Run," and Chapter 13, "Fiscal Policy in the Short Run."

Streamlined, substantially revised, and reorganized the presentation of economic growth in Chapter 5, "The Standard of Living over Time and Across Countries," and Chapter 6, "Long-Run Economic Growth"

Chapter 5, "The Standard of Living over Time and Across Countries," provides a complete discussion of how potential GDP is determined. We use the models developed in the chapter to explain why real GDP per capita varies across countries. The chapter provides a thorough enough discussion of potential GDP to allow instructors who want to emphasize short-run policy issues to move directly from Chapter 5 to Chapter 9 and the short-run chapters, while still introducing students to the basic determinants of the standard of living. Chapter 6, "Long-Run Economic Growth," provides a concise step-by-step introduction to the Solow growth model and to endogenous growth models. The chapter explains how policy affects the growth rate of the standard of living. Both chapters integrate information about China, India, and other developing countries to illustrate applications of the models. Chapter 6 includes expanded coverage of endogenous growth models, including AK growth models.

Reorganized and revised the presentation of the IS–MP model, which is now covered in two chapters

The IS–MP model in the first edition received a very favorable response from students and instructors. The model shifts the focus from the central bank’s targeting the money supply to the central bank’s targeting the bank lending rate. This change results in a more realistic and modern approach that allows students to tie what they learn in class to the discussions they hear on the news. Many students reading texts that use the traditional IS–LM model are surprised to learn that the Federal Reserve has no targets for M1 and M2 and that articles in the financial press rarely discuss the money supply. In the first edition, we attempted to cover the IS–MP model in a single rather long chapter. We now realize that a slower development of the model across two briefer chapters will aid student understanding.

In light of feedback, we reorganized our discussion of the short-run model as follows:

- Chapter 9, “Business Cycles,” remains largely the same as in the first edition, but we added a new section that discusses the basic aggregate demand–aggregate supply (AD–AS) model. We added this section in response to feedback that we had not made sufficiently clear that IS–MP is a model of aggregate demand. With a review of aggregate demand in Chapter 9, students are now better equipped to understand the discussion of the IS–MP model in Chapter 10.
- Chapter 10, “Explaining Aggregate Demand: The IS–MP Model,” is devoted to building the basic model with increased discussion of the determinants of the IS curve.
- Chapter 11, “The IS–MP Model: Adding Inflation and the Open Economy,” as the title indicates, adds the Phillips curve and open-economy analysis to complete the discussion of the short-run model.

New Making the Connection features and supporting exercises at the end of each chapter

Each chapter includes two or more *Making the Connection* features that provide real-world reinforcement of key concepts. The second edition includes the following 10 new *Making the Connections*:

- “Why Should the United States Worry About the ‘Euro Crisis?’” (Chapter 1, “The Long and Short of Macroeconomics”)
- “Does the CPI Provide a Good Measure of Inflation for a Family with College Students?” (Chapter 2, “Measuring the Macroeconomy”)
- “The Controversial World of Subprime Lending” (Chapter 3, “The U.S. Financial System”)
- “Greece Experiences a ‘Bank Jog’” (Chapter 4, “The Global Financial System”)
- “Making a Financial Killing by Buying Brazilian Bonds?” (Chapter 4, “The Global Financial System”)
- “Brazilian Firms Grapple with an Unstable Exchange Rate” (Chapter 4, “The Global Financial System”)
- “Should the Federal Government Invest in Green Energy?” (Chapter 6, “Long-Run Economic Growth”)
- “How Important Is Housing in the Business Cycle?” (Chapter 9, “Business Cycles”)
- “Did the 2007–2009 Recession Break Okun’s Law?” (Chapter 9, “Business Cycles”)
- “Lots of Money but Not Much Inflation Following the Recession of 2007–2009” (Chapter 11, “The IS–MP Model: Adding Inflation and the Open Economy”)

Making the Connections retained from the first edition have been updated with the most recent data.

“In the discussion of endogenous growth in Chapter 6 I like the detailed and very clear discussions of the contributions played by different growth factors.”

Benjamin Russo, University of North Carolina–Charlotte

“The book approaches both output and growth with an eye on real-world open economy macroeconomics.”

Giacomo Santangelo, Fordham University

“I think the IS–MP presentation is brilliant and the strength of the book.”

Carlos F. Liard-Muriente, Central Connecticut State University

“The fully integrated coverage of the IS–MP model, as opposed to the IS–LM model, strongly increases the likelihood of my adopting the text. The IS–MP model fits the focus of the text of explaining current real world events.”

Robert Gillette, University of Kentucky

“I think the material is accessible for students who have had principles of micro and macro.”

Frank Hefner, College of Charleston


“The best thing about [Chapter 11] is the very clear and clever way the Phillips curve is added to the model. Many macro texts ignore the PC curve model and I think it is absolutely necessary in contemporary macro models.”

Edward Stuart, Northeastern Illinois University



MyEconLab

MyEconLab is a powerful assessment and tutorial system that works hand-in-hand with *Macroeconomics*. MyEconLab includes comprehensive homework, quiz, test, and tutorial options, allowing instructors to manage all assessment needs in one program. Key innovations in the MyEconLab course for *Macroeconomics*, second edition, include the following:

- Real-time *Data Analysis Exercises*, marked with , allow students and instructors to use the absolute latest data from FRED, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis. By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.
- In the eText available in MyEconLab, select figures labeled **MyEconLab Real-time data** allow students to display a popup graph updated with real-time data from FRED.
- Current News Exercises, new to this edition of the MyEconLab course, provide a turn-key way to assign gradable news-based exercises in MyEconLab. Every week, Pearson scours the news, finds a current article appropriate for the macroeconomics course, creates an exercise around this news article, and then automatically adds it to MyEconLab. Assigning and grading current news-based exercises that deal with the latest macro events and policy issues and has never been more convenient.

“I appreciate the use of “Data Exercises.” Seeing as how Macroanalysis is based so much in “Data Science,” I feel that any opportunity that students have to deal with real-world data is a benefit to them.”

Giacomo Santangelo,
Fordham University

Other Changes

- *New Contemporary Opening Cases*

We open each chapter with a real-world example, often drawn from policy debates or from the business world. All chapter openers have been updated. The following six chapter openers are new to this edition:

“Did U.S. Monetary Policy Slow Brazil’s Growth?” (Chapter 4, “The Global Financial System”)

“Is the Housing Cycle the Business Cycle?” (Chapter 9, “Business Cycles”)

“Where’s the Inflation?” (Chapter 11, “The *IS-MP* Model: Adding Inflation and the Open Economy”)

“Why Didn’t the Fed Avoid the Recession of 2007–2009?” (Chapter 12, “Monetary Policy in the Short Run”)

“Driving Toward a ‘Fiscal Cliff’” (Chapter 13, “Fiscal Policy in the Short Run”)

“Drowning in a Sea of Debt?” (Chapter 15, “Fiscal Policy and the Government Budget in the Long Run”)

- *New Solved Problems*

Each chapter includes one or more *Solved Problems* that provide students with step-by-step guidance in applying concepts and theories to problems. Students can complete related *Solved Problems* on MyEconLab and receive tutorial help. This edition includes the following new *Solved Problems*:

Solved Problem 5.2, “Calculating the Marginal Product of Labor and the Marginal Product of Capital” (Chapter 5, “The Standard of Living over Time and Across Countries”)

Solved Problem 8.1, “Why Don’t People Work as Much as They Did Decades Ago?” (Chapter 8, “The Labor Market”)

Solved Problem 10.1, “Calculating Equilibrium Real GDP” (Chapter 10, “Explaining Aggregate Demand: The *IS-MP* Model”)

- New figures and new tables

We have updated figures and tables using the most recent data, simplified several figures, cut complex or repetitive figures, and added the following new figures and tables:

Figure 1.3, The Aging of the Population

Figure 2.3, Movements in Real GDP and Real GDI, 2005–2012

Figure 3.3, The Feedback Loop During a Bank Panic

Figure 4.2, Financial Flows as a Percentage of GDP, 1970–2007

Figure 4.3, The Trade-Weighted Exchange Rate of the U.S. Dollar Against an Index of Major Currencies, 1973–2012

Figure 4.7, Determining the Real Interest Rate in a Small Open Economy

Table 4.2, Advantages and Disadvantages of Various Exchange Rate Policies

Table 6.1, An Example of Transition to the Steady State

Table 9.3, Multiplier Estimate for the United States

Figure 10.12, Deriving the Aggregate Demand Curve

Figure 10.13, An Expansionary Monetary Policy

- Finally, we have gone over the text literally line-by-line, tightening the discussion, re-writing any unclear points, and making many other small changes. We are grateful to the students and instructors who made suggestions for improvements in the previous edition. We have done our best to incorporate as many of the suggestions as possible.

Our Approach to Intermediate Macroeconomics

There was a time when it seemed self-evident that policy should be the focus of a course in intermediate macroeconomics. The extraordinary macroeconomic events surrounding the Great Depression, World War II, and the immediate postwar era naturally focused the attention of economists on short-run policy measures. But by the 1970s, the conventional Keynesian–neoclassical synthesis of Samuelson, Hansen, and Hicks had come to seem inadequate to many economists. To summarize briefly the complicated evolution of macroeconomic theory during those years, conventional macroeconomics was seen as being inadequately grounded in microeconomic foundations and as being too neglectful of long-run considerations.

Although macroeconomic theory evolved rapidly during the 1970s and 1980s, intermediate macroeconomic textbooks largely remained unchanged. Only in the 1990s did the first generation of modern intermediate textbooks appear. These new texts dramatically refocused the intermediate course. The result was a welcome emphasis on the long run and on microfoundations. The Solow growth model, rather than the Keynesian *IS–LM* model, became the linchpin of these texts.

While in many ways we agree with the focus on the long run and on microfoundations, we have found ourselves in our own courses increasingly obliged to supplement existing texts with additional material. Our aim is certainly not to revolutionize the teaching of the intermediate macroeconomics course. Rather, we would like to shift its emphasis. We elaborate on our approach in the next sections.

A Modern Short-Run Model That Is Appropriate for the Intermediate Course (Chapters 10–13)

In the texts of the 1980s and earlier, the *IS–LM* model held center stage. The *IS–LM* model provided a useful way for instructors to present the major points of the Keynesian model of how short-run GDP is determined. Investigating the slopes of the *IS* and *LM* curves gave students some insights into the policy debates of the 1960s and early 1970s. In 2013, the *IS–LM* model has two obvious pedagogical shortcomings:

- The Keynesians versus Monetarists debates, while substantively important, are now a part of the history of macroeconomics.
- The assumption of a constant money supply used in constructing the *LM* curve no longer correctly describes the policy approach of the Fed or the central banks of other

“After developing the theory (i.e., the IS–LM–MP model), they used the model to analyze the 2007–09 recession. . . . I really like this approach. And students? Well, they don’t like it, they love it . . . when we apply theory to the checkerboard of real life.”

William Hart,
Miami University

“IS–MP is a major innovation.”

James Butkiewicz,
University of Delaware

“I absolutely love the IS–MP model, I think it is more realistic and has been a long time coming. Morphs the theory in well with the graphs that are shown. Clear, and I love the tables like Table 10.2.”

Nate Perry,
Mesa State College

“Integrating finance, as opposed to having only a separate chapter, is a strength.”

John Dalton,
Wake Forest University

“I’m really glad to see financial markets given more coverage in Chapter 3 and throughout the book—this is one of its best features.”

David Gulley,
Bentley College

“VERY relevant material and also missing from many other books (or at least the one I use).”

John Brock,
University of Colorado

“Excellent discussions of potential GDP and aggregate production function [in Chapter 5].”

Satyajit Ghosh,
University of Scranton

“The authors are very methodical in their presentation of the model and derivation of the equations [Chapter 6]. Also, I feel the material is well explained. Other books I’ve read don’t do a good job of contextualizing the importance of long-run growth and the relevance of the various determinants of growth. I think this chapter does a pretty remarkable job of that. Especially good is the progression through the various components of the Solow model before it finally arrives at technology—a fine job.”

Douglas Campbell,
University of Memphis

developed countries. When central banks target interest rates rather than the money stock, the *LM* curve is no longer as useful as it once was in discussing monetary policy.

We do believe that the *IS* curve story provides a good account of the sources of fluctuations in real GDP in the short run, when prices are fixed. But, because the Fed targets interest rates rather than the money stock, we substitute a monetary policy, *MP*, curve for the *LM* curve. The result is similar to the *IS–MP* model first suggested by David Romer. We cover the *IS–MP* model in Chapter 10, “Explaining Aggregate Demand: The *IS–MP* Model,” and Chapter 11, “The *IS–MP* Model: Adding Inflation and the Open Economy.” We include a full appendix on the *IS–LM* model at the end of Chapter 11 for those who wish to cover that model. We use the *IS–MP* model to analyze monetary policy in Chapter 12, “Monetary Policy in the Short Run,” and fiscal policy in the short run in Chapter 13, “Fiscal Policy in the Short Run.”

Significant Coverage of Financial Markets, Beginning with Chapter 3

One of the most fundamental observations about conventional monetary policy is that, while the Fed has substantial influence over short-term effect interest rates, long-term real interest rates have a much larger effect on the spending decisions of households and firms. To understand the link between nominal short-term rates and real long-term rates, students need to be introduced to the role of expectations and the term structure of interest rates. We provide a careful, but concise, discussion of the term structure in Chapter 3, “The U.S. Financial System,” and follow up this discussion in Chapter 10, “Explaining Aggregate Demand: The *IS–MP* Model,” Chapter 11, “*IS–MP* Model: Adding Inflation and the Open Economy,” and Chapter 12, “Monetary Policy in the Short Run,” by analyzing why the Fed’s interest rate targeting may sometimes fail to attain its goals.

The conventional story of a central bank’s targeting interest rates or monetary aggregates is told in terms of the commercial banking system, so an overview of commercial banks is included in all texts. The explosion in securitization in the past 20 years has caused tremendous changes in the financial system and, recently, in Fed policy. Although securitization has been an important part of the financial system for years, its significance for Fed policy only became clear with the problems in the markets for mortgage-backed securities that developed during 2007. We provide an overview of securitization in Chapter 3, including a discussion of the increased importance of investment banks and other financial firms that are part of the “shadow banking system.” Interest rate targeting is simply no longer the be-all and end-all of Fed policy. The events of 2008 have made it clear that an exclusive focus on commercial banks provides too narrow an overview of the financial system.

Early Discussion of Long-Run Growth (Chapters 5 and 6)

Students need to be able to distinguish the macroeconomic forest—long-run growth—from the macroeconomic trees—short-run fluctuations in real GDP, employment, and inflation. Because many macroeconomic principles texts put a heavy emphasis on the short run, many students enter the intermediate macro course thinking that macroeconomics is *exclusively* concerned with short-run fluctuations. The extraordinary success of the market system in raising the standard of living of the average person in the United States and the other high-income economies comes as surprising news to many students. Students know where we are today, but the economic explanation of how we got here is unfamiliar to many of them.

In addition, we believe that it makes sense for students to first understand both a basic model of long-run growth and the determination of GDP in a flexible-price model before moving on to the discussion of short-run fluctuations and short-run policy. In Chapter 5, “The Standard of Living over Time and Across Countries,” we show the determination of GDP in a classical model and also discuss the difference between flexible price models and fixed price models.

Modern Federal Reserve Policy and Its Broadened Emphasis Beyond Interest Rate Targeting

The developments of 2007–2009 have demonstrated that the Fed has moved beyond the focus on interest rate targeting that had dominated policy since the early 1980s. To understand the broader reach of Fed policy, students need to be introduced to material—in particular, the increased importance of investment banking and role of securitization in modern financial markets—that is largely missing from competing texts. In addition, recent Fed policy initiatives require more discussion of issues of moral hazard. While these discussions are common in money and banking texts, they have been largely ignored in intermediate macro texts. We cover these topics in Chapter 7, “Money and Inflation,” Chapter 12, “Monetary Policy in the Short Run,” and Chapter 14, “Aggregate Demand, Aggregate Supply, and Monetary Policy.”

Fourteen Core Chapters

This text consists of 14 core chapters and 2 “extension” chapters. Many instructors subscribe to the idea that fewer topics covered well is better than many topics covered superficially. We achieve brevity in two ways: First, we ignore almost entirely the “dueling schools of thought” approach. We do this for several reasons: Although this approach at one time provided a useful way of organizing textbooks, it no longer represents well the actual views of the profession. Emphasizing differences among economists obscures for students the broad areas of macroeconomics on which a professional consensus exists. Finally, most students find detailed discussions of disagreements among economists to be dull and unhelpful in understanding today’s policy issues.

Our second key to achieving brevity in the core presentation is to push all nonessential topics to a separate Part 4, “Extensions,” at the end of the text. While the topics covered in Part 4—long-run fiscal challenges (Chapter 15, “Fiscal Policy and the Government Budget in the Long Run”) and the microfoundations of consumption and investment decisions (Chapter 16, “Consumption and Investment”)—are important (and we typically cover many of them in our own courses), they are not *essential* to the basic macroeconomic story. In our view, it is better for instructors to present students with the key ideas in a relatively brief way with minimum distractions and then consider additional material during the last few weeks of the course when students have mastered the key ideas.

Flexible Chapter Organization

We have written the text to provide instructors with considerable flexibility. Instructors who wish to emphasize the short run can begin by covering Chapters 1–4 (Part 1, “Introduction”), and then jump to Chapters 9–13 (Part 3, “Macroeconomics in the Short Run: Theory and Policy”), before covering Chapters 5–8 (Part 2, “Macroeconomics in the Long Run: Economic Growth”). We have arranged content so that nothing in Chapters 9–13 requires knowledge of the discussion in Chapters 5–8.

Instructors wishing to omit the Solow model of long-run growth can skip Chapters 5 and 6 without loss of continuity.

Special Features

We have developed a number of special features. Some are similar to the features that have proven popular and effective aids to learning in the Hubbard and O’Brien *Economics* textbook and the Hubbard and O’Brien *Money, Banking, and the Financial System* textbook, while others were developed specifically for this book.

“I like the long-run-first arrangement. I appreciate the ‘extensions’ at the end; do them as time permits in the term. The inclusion of IS–LM as an appendix alongside the more current IS–MP model is an excellent idea. I like the relatively limited number of chapters, it’s less daunting to students.”

Christopher Burkart,
University of West Florida

“I like it. It is good to have the financial system early in the book. I always struggle teaching that section since I find it very important for the development of the course.”

Luisa Blanco,
Pepperdine University

“I like the use of the ‘Key Issue and Question.’ I feel that it is an important tool to keep the student’s focus. I find that having a unifying question that runs through the chapter exposes the students to a level of critical thinking that will benefit them and that they may not normally be accustomed to.”

Giacomo Santangelo,
Fordham University

Continued from next page

Key Issue and Question

Issue: Real GDP has increased substantially over time in the United States and other developed countries.

Question: What are the main factors that determine the growth rate of real GDP per capita?

Answered on page 206

Continued from page 176

Answering the Key Question

At the beginning of this chapter, we asked:
 “What are the main factors that determine the growth rate of real GDP per capita?”

In this chapter, we saw that the long-run growth rate is determined by technological change. If we use a broader definition of capital to include human capital and knowledge, then a higher saving rate could lead to faster long-term growth. In addition, policies that result in more resources being devoted to the production of new ideas and technology or that make researchers more productive may also increase the long-run growth rate. However, it is difficult for the government to identify which types of capital goods or technologies will be the most productive so it is difficult for the government to design policies that will increase the long-run rate of growth.

Key Issue-and-Question Approach

To provide a roadmap for the book, we use an issue-question framework that shows why learning macroeconomics gives students the tools they need to analyze intelligently some of the important issues of our time. See pages 20–21 of Chapter 1, “The Long and Short of Macroeconomics,” for a complete list of the 15 issues and questions. We start each subsequent chapter with a key issue and key question and end each of those chapters by using the concepts introduced in the chapter to answer the question.

“[This book] is very closely related to the current issues and real world. Students should enjoy reading those examples and stories.”

Liaoliao Li,
Kutztown University

“Engages students in macroeconomics with interesting real-life examples and questions.”

Fabio Mendez,
University of Arkansas

Contemporary Opening Cases

A common complaint among students is that economics is too dry and abstract. At the intermediate level, students will inevitably have to learn a greater amount of model building and algebra than they encountered in their principles course. Nevertheless, a real-world approach can keep students interested. We open each chapter with a real-world example—drawn from either policy issues in the news or the business world—to help students begin the chapter with a greater understanding that the material to be covered is directly relevant. We revisit the example within the chapter to reinforce the link between macroeconomics and the real world.

CHAPTER 10

Explaining Aggregate Demand: The IS–MP Model

Learning Objectives

After studying this chapter, you should be able to:

10.1 Explain how the IS curve represents the relationship between the real interest rate and aggregate expenditure (pages 334–346)

10.2 Use the monetary policy, MP, curve to show how the interest rate set by the central bank helps to determine the output gap (pages 346–353)

10.3 Use the IS–MP model to understand why real GDP fluctuates (pages 353–363)

10.A Appendix: Use the IS–LM model to illustrate macroeconomic equilibrium (pages 370–379)

Fear of Falling (into a Recession)

By late 2012, the U.S. economy was three years into a recovery from the severe recession of 2007–2009. But the recovery was relatively weak, with real GDP still more than 5% below potential GDP and the unemployment rate just below 8%. Even with U.S. GDP still far

it seemed possible that the federal government would sharply raise taxes and cut spending in 2013. Second, economic problems in Europe could affect the U.S. economy. Why, though, would higher taxes, reduced government spending, or problems in Europe lead to GDP sees 2012 recession risk.

“Recession, Recession, Everywhere”
 “Will World Doom Drag U.S. Back into Recession?”

Policymakers and economists feared that the U.S. economy might fall into recession for two reasons: First,

economy. Why, though, would higher taxes, reduced government spending, or problems in Europe lead to a recession in the United States? Based on our discussion of long-run growth, we can conclude that changes in taxes or government spending will affect the mix of goods and services produced, but will leave the level of total production or potential GDP unaffected. Similarly, if economic problems cause Europeans to buy fewer U.S. goods and services, then in the long run households in the United States will buy more U.S.-produced goods and services, once again leaving total production and potential GDP unaffected.

Continued on next page

Key Issue and Question

Issue: The U.S. economy has experienced 11 recessions since the end of World War II.

Question: What explains the business cycle?

Answered on page 364

Solved Problem Feature

Including solved problems in the text of each chapter may have been the most popular pedagogical innovation in the Hubbard and O'Brien *Economics* text, now in its fourth edition, and the Hubbard and O'Brien *Money, Banking, and the Financial System* text, now in its second edition. Students have fully learned the concepts and theories only when they are capable of applying them in solving problems. Certainly, most instructors expect students to solve problems on examinations. Our *Solved Problems* highlight one or two important concepts in each chapter and provide students with step-by-step guidance in solving them. Each *Solved Problem* is reinforced by a related problem at the end of the chapter. Students can complete related *Solved Problems* on MyEconLab and receive tutorial help. Here are examples of the *Solved Problems* in the book:

- Solved Problem 2.2A, “Calculating Real GDP” (Chapter 2, “Measuring the Macroeconomy”)
- Solved Problem 8.3, “How Many Jobs Does the U.S. Economy Create Every Month?” (Chapter 8, “The Labor Market”)
- Solved Problem 11.1, “Fed Policy to Keep Inflation from Increasing” (Chapter 11, “The IS–MP Model: Adding Inflation and the Open Economy”)

“The step-by-step approach to the problem is very clear and makes the material digestible to the students by breaking it down. The tie-in to end-of-chapter exercises is excellent. The student can very quickly see where to go for more practice.”

Francis Mummery, California State University, Fullerton

“I appreciate the connection between the solved problem and one of the end-of-chapter problems—this is an excellent idea. Breaking the problem down into small steps seems like a good way to lead students through and develop good problem-solving habits.”

Christopher Burkart, University of West Florida

assembling carriages and wagons pulled by horses. Similarly, most workers employed assembling and repairing typewriters eventually lost their jobs following the introduction of personal computers. So, while the analysis in Figure 8.6 allows us to conclude that the real wage in the aggregate labor market will increase following technological change, in the markets for some jobs, the real wage may fall.

Solved Problem 8.1

Why Don't People Work as Much as They Did Decades Ago?

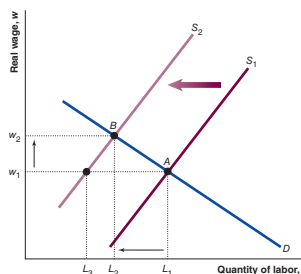
In the early twentieth century, it was common for someone to work 48 to 50 hours per week. Steel workers at some firms worked 12-hour days into the 1920s. Today, 40 hours is the typical workweek, and more people routinely work less than 40 hours than work more. What explains the decline? One clue comes from the work of Douglas Holtz-Eakin of the American Action Forum, David Joulfaian of the U.S. Treasury Department, and Harvey Rosen of Princeton University. They examined the effect of inheritances on labor supply decisions in the United States. They found that the larger the inheritance, the more likely the recipient was to reduce

his or her labor supply. Individuals who receive large funds to purchase goods do not need to work as many hours as many individuals but also raise the aggregate labor market supply. From 1950 to 2011, total household wealth in the United States increased from \$7 trillion to \$70 trillion (measured in 2005 dollars). Predict the effect of this increase in wealth had on the equilibrium quantity of labor supplied. Use a graph to

Solving the Problem

Step 1 Review the chapter material. This problem is about determining the effect of an increase in wealth on the aggregate labor market, so you may want to review the section “Equilibrium in the Labor Market,” which begins on page 266.

Step 2 Draw a graph that shows the effect of the increase in wealth on the labor demand and labor supply curves. The labor demand curve shows the relationship between the real wage and the quantity of labor that firms want to hire, holding capital, technology, and the level of efficiency constant. The increase in wealth should not affect the marginal product of labor, so the labor demand curve should not shift. The labor supply curve will shift, however. When wealth increases, individuals can purchase the same quantity of goods and services that they currently buy while working fewer hours. So, we would expect individuals to reduce the quantity of labor supplied at each real wage, which you should show on your graph as the labor supply curve shifting to the left, from S_1 to S_2 .



Step 3 Use your graph to explain the effect on the real wage and quantity of labor. The graph shows that at the original real wage of w_1 , a shortage of labor exists because the quantity of labor supplied is L_2 , and the quantity of labor demanded is L_1 . As a result, the equilibrium real wage will rise, while the equilibrium quantity of labor will decrease, from L_1 to L_2 .

Over the years, people in high-income countries such as France, Germany, and the United States have spent fewer hours working and more time in leisure. This Solved Problem helps explain why: As wealth has increased, individuals have used the increase in wealth to “purchase” more leisure time, thereby decreasing the number of hours spent working.

Source: Douglas Holtz-Eakin, David Joulfaian, and Harvey Rosen, “The Carnegie Conjecture: Some Empirical Evidence,” *Quarterly Journal of Economics*, Vol. 108, No. 2, May 1993, pp. 413–439.

See related problem 1.4 at the end of the chapter.

Making the Connection Feature

Each chapter includes two to four *Making the Connection* features that present real-world reinforcement of key concepts and help students learn how to interpret what they read on the Web and in newspapers. Most *Making the Connection* features use relevant, stimulating, and provocative news stories, many focused on pressing policy issues. Here are some examples:

- “Comparing Research and Development Spending and Labor Productivity in China and the United States” (Chapter 5, “The Standard of Living over Time and Across Countries”)
- “What Explains Recent Economic Growth in India?” (Chapter 6, “Long-Run Economic Growth”)

Macro Data: Does the Federal Reserve Hit Its Federal Funds Rate Target?

The FOMC conducts monetary policy by setting a target for the federal funds rate. The Open Market Trading Desk at the New York Federal Reserve Bank then carries out open market operations each morning to keep the federal funds rate close to the target rate. Although the Federal Reserve controls the supply of bank reserves, the federal funds rate is a market interest rate that is determined by both demand and supply. Fluctuations in the demand for bank reserves may cause the federal funds rate in the market to deviate from the target federal funds rate. The figure in the next column shows the relationship between the target federal funds rate set by the Federal Reserve and the federal funds rate in the market, using daily data from 1986 to 2012. The figure shows that the Federal Reserve has generally been successful at keeping the market rate close to the target rate. The Fed can offset fluctuations in the demand for reserves by changing the supply of reserves.

Beginning in September 2008, as the financial crisis deepened, the federal funds rate persistently fell below the target rate as the Federal Reserve injected reserves into the banking system. For example, the target federal funds rate was 2.0% on October 2, but the effective



Source: Board of Governors of the Federal Reserve System.
 federal funds rate in the market was just 0.7%. This unusual situation reflected the Fed's desire to increase reserves as much as required to help deal with the financial crisis, even if the result was to miss its federal funds rate target. In December 2008, the Fed temporarily abandoned having a single target for the federal funds rate in favor of a target range between 0.00% and 0.25%. The actual federal funds rate has remained in the target range every week through September 2012.

See related problem D12.1 at the end of the chapter

- “Will the European Financial Crisis Cause a Recession in the United States?” (Chapter 10, “Explaining Aggregate Demand: The IS-MP Model”)
- “Lots of Money but Not Much Inflation Following the Recession of 2007–2009” (Chapter 11, “The IS-MP Model: Adding Inflation and the Open Economy”)

Macro Data Feature

Most chapters include a *Macro Data* feature that explains the sources of macroeconomic data and often cites recent studies using data. This feature helps students apply data to a recent event. An exercise related to each feature appears at the end of the chapter so instructors can test students' understanding.

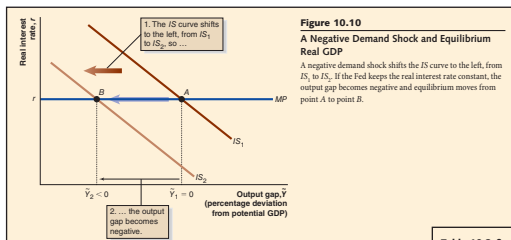


Figure 10.10
A Negative Demand Shock and Equilibrium Real GDP
 A negative demand shock shifts the IS curve to the left, from IS_1 to IS_2 . If the Fed keeps the real interest rate constant, the output gap becomes negative and equilibrium moves from point A to point B.

Graphs and Summary Tables

We use four devices to help students read and interpret graphs:

1. Detailed captions
2. Boxed notes
3. Color-coded curves
4. Summary tables with graphs

The following change ...	causes ...	Graph of the effect ...
a positive demand shock	aggregate expenditure to increase at every interest rate.	
an increase in the target federal funds rate (i increases)	the long-term real interest rate to increase and aggregate expenditure to decrease.	
an increase in the short-term interest rate investors expect in the future (TSE increases)	the long-term real interest rate to increase and aggregate expenditure to decrease.	
an increase in the term premium investors require on long-term bonds (TSE increases)	the long-term real interest rate to increase and aggregate expenditure to decrease.	
an increase in the default-risk premium (DP increases)	the long-term real interest rate to increase and aggregate expenditure to decrease.	
an increase in the expected inflation rate (π^e increases)	the long-term real interest rate to decrease and aggregate expenditure to increase.	


“I like that this book asks students to interpret quotes from policymakers, speeches and from newspaper articles.”

George Hall,
 Brandeis University

End-of-Chapter Problems Written Around the Award-Winning MyEconLab and Grouped by Learning Objective

Each chapter ends with a *Key Terms* list, *Review Questions*, *Problems and Applications*, and *Data Exercises*. The problems are written to be fully compatible with MyEconLab, an online course management, testing, and tutorial resource. Using MyEconLab, students can complete select end-of-chapter problems online, get tutorial help, and receive instant feedback and assistance on the exercises they answer incorrectly. Instructors can access sample tests,

study plan exercises, tutorial resources, and an online Gradebook to keep track of student performance and time spent on the exercises. MyEconLab has been a successful component of the Hubbard and O'Brien *Economics and Money, Banking, and the Financial System* texts because it helps students improve their grades and helps instructors manage class time.

The *Review Questions* and *Problems and Applications* are grouped under learning objectives. The goals of this organization are to make it easier for instructors to assign problems based on learning objectives, both in the book and in MyEconLab, and to help students efficiently review material that they find difficult. If students have difficulty with a particular learning objective, an instructor can easily identify which end-of-chapter questions and problems support that objective and assign them as homework or discuss them in class. Select problems that utilize real-time data are marked with .

We include one or more end-of-chapter problems that test students' understanding of the content presented in each *Solved Problem*, *Making the Connection*, *Macro Data*, and chapter opener. Instructors can cover a feature in class and assign the corresponding problem for homework. The Test Item File also includes test questions that pertain to these special features.

"There are lots of questions and problems for each section and some good data problems also."

Soma Ghosh,
Albright College

"Organizing the problems by topic is a wonderful idea that will help both instructors and students."

Kevin Sylwester,
Southern Illinois University

Key Terms and Problems

Key Terms

Default risk, p. 348	MP curve, p. 334	Risk structure of interest rates, p. 348
IS-MP model, p. 334	Multiplier, p. 338	Term premium, p. 347
IS curve, p. 334	Multiplier effect, p. 338	Term structure of interest rates, p. 346
Marginal propensity to consume (MPC), p. 336	Phillips curve, p. 334	

10.1 The IS Curve: The Relationship Between Real Interest Rates and Aggregate Expenditure


Explain how the IS curve represents the relationship between the real interest rate and aggregate expenditure.

Review Questions

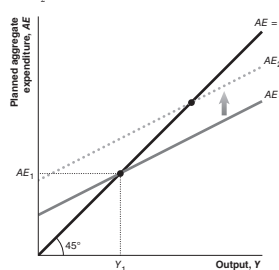
- 1.1 What are the components of aggregate expenditure? Explain how equilibrium output is determined in the goods market.
- 1.2 What is the multiplier effect? What are the formulas for the government purchases and tax multipliers?
- 1.3 Explain how the IS curve represents equilibrium in the goods market. Why is the IS curve downward sloping?
- 1.4 Give an example of a shock that could shift the IS curve to the left. Give an example of a shock that could shift the IS curve to the right.

Problems and Applications

- 1.5 Draw a 45°-line diagram and identify the equilibrium level of real GDP. Use your graph to show the effect on equilibrium real GDP of each of the following:
 - a. Households become more pessimistic about their future incomes and decide to buy fewer new homes.
 - b. The federal government increases transfer payments without changing taxes.
 - c. The federal government launches a major program to rebuild the interstate highway system without increasing taxes.
 - d. Europe enters a severe recession.

MyEconLab Visit www.myeconlab.com to complete these exercises online and get instant feedback. Exercises that update with real-time data are marked with .


- 1.6 The graph below shows the goods market initially in equilibrium at output Y_1 . Then the aggregate expenditure function shifts from AE_1 to AE_2 .
- 1.9 Suppose that the marginal propensity to consume is 0.80.
 - a. If the government increases spending by \$10 billion, what is the change in equilibrium real GDP?
 - b. If the government increases taxes by \$10 billion, what is the change in equilibrium real GDP?
 - c. If the government increases taxes by \$10 billion at the same time that it increases spending by \$10 billion, what is the change in equilibrium real GDP?



- a. Give three examples of events that might have caused this shift in aggregate expenditure.
 - b. Carefully explain the process by which the economy will adjust to the new equilibrium.
- 1.7 A newspaper article quotes Gary Painter, a professor at the University of Southern California as arguing: "Increased housing demand definitely has multiplier effects throughout the economy." What does he mean by "multiplier effects"? Why would increased housing demand have multiplier effects?
Source: Catherine Rampell, "As New Graduates Return to Nest, Economy Also Feels the Pain," *New York Times*, November 16, 2011.
 - 1.8 For each of the following values of the marginal propensity to consume (MPC), find the value of the government purchases multiplier and the tax multiplier.
 - a. $MPC = 0.80$
 - b. $MPC = 0.75$
 - c. $MPC = 0.60$
 - 1.10 [Related to Solved Problem 10.1 on page 340] Consider the following information on an economy (all values are in trillions of 2005 dollars):

Consumption:	$C = \$1.2 + 0.6Y^D$
Investment:	$I = \$2.0$
Government purchases:	$G = \$2.1$
Net exports:	$NX = -\$0.5$
Taxes:	$T = 0$
Government transfer payments:	$TR = 0$

 - a. Calculate equilibrium real GDP.
 - b. Now suppose that all the information given in part (a) remains the same except that taxes equal \$2.0 trillion and transfers equal \$1.5 trillion. Calculate equilibrium real GDP.
 - c. Now suppose that potential GDP equals \$15.0 trillion. If equilibrium real GDP equals the amount you calculated in part (b), use the value for the government purchases multiplier to calculate how much government purchases would have to change for equilibrium GDP to equal potential GDP (assuming that taxes remain unchanged). Use the value for the tax multiplier to calculate how much the government has to change taxes for equilibrium GDP to equal potential GDP (assuming that government purchases remain unchanged). Use a graph to illustrate your answer.

MyEconLab Visit www.myeconlab.com to complete these exercises online and get instant feedback. Exercises that update with real-time data are marked with .


Supplements

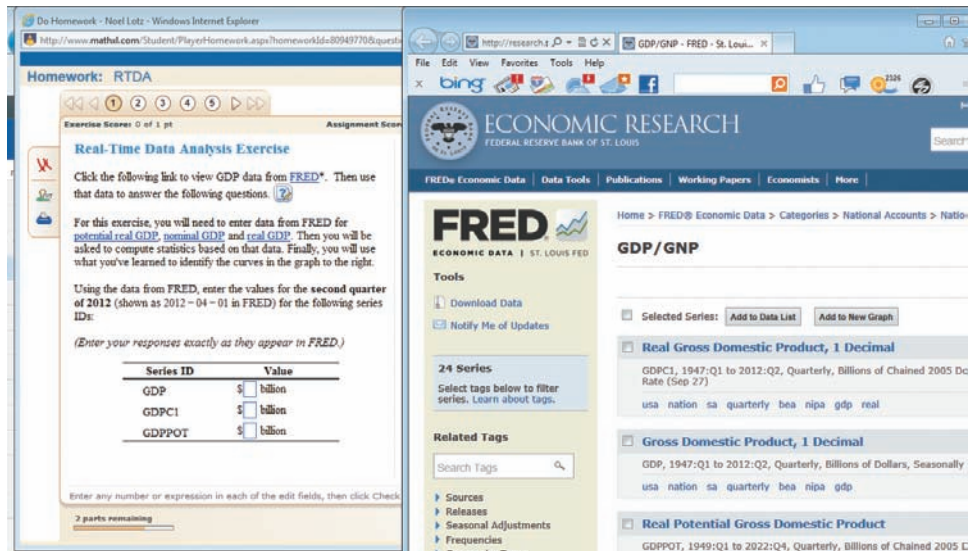
The authors and Pearson Education have worked together to integrate the text, print, and media resources to make teaching and learning easier.

MyEconLab

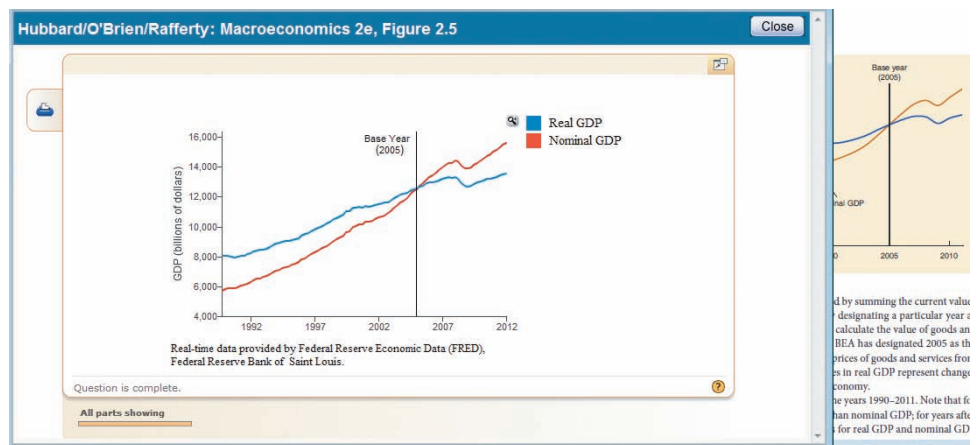
MyEconLab is a powerful assessment and tutorial system that works hand-in-hand with *Macroeconomics*. MyEconLab includes comprehensive homework, quiz, test, and tutorial options, allowing instructors to manage all assessment needs in one program. Key

innovations in the MyEconLab course for *Macroeconomics*, second edition, include the following:

- Real-time *Data Analysis Exercises*, marked with  allow students and instructors to use the very latest data from FRED®, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis. By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.



- In the eText available in MyEconLab, select figures labeled **MyEconLab** Real-time data allow students to display a popup graph updated with real-time data from FRED.



- Current News Exercises, new to this edition of the MyEconLab course, provide a turn-key way to assign gradable news-based exercises in MyEconLab. Every week, Pearson scours the news, finds a current article appropriate for the macroeconomics course, creates an exercise around this news article, and then automatically adds it to MyEconLab. Assigning and grading current news-based exercises that deal with the latest macro events and policy issues and has never been more convenient.

The image shows two overlapping browser windows. The left window displays a MyEconLab homework assignment titled "Bernanke Sees More Scope for Easing to Spur U.S. Economy". The assignment includes a source from Bloomberg, a summary of the article, and a "Thinking Critically Questions" section with a multiple-choice question: "Which of the following is a goal of the Fed?" with options "political reelection" and "economic growth". The right window shows the original Bloomberg news article with the same title, a photo of Ben Bernanke, and a quote from him regarding the Fed's role in strengthening the economy.

Other features of MyEconLab include:

- All end-of-chapter Questions and Problems, including algorithmic, graphing, and numerical questions and problems, are available for student practice or instructor assignment. Test Item File multiple-choice questions are available for assignment as homework.
- The Custom Exercise Builder allows instructors the flexibility of creating their own problems or modifying existing problems for assignment.
- The powerful Gradebook records each student's performance and time spent on the Tests and Study Plan and generates reports by student or chapter.

A more detailed walk-through of the student benefits and features of MyEconLab can be found at the beginning of this book. Visit www.myeconlab.com for more information on and an online demonstration of instructor and student features. MyEconLab content has been created through the efforts of Melissa Honig, executive media producer, and Noel Lotz and Courtney Kamauf, content leads.

Access to MyEconLab can be bundled with your printed text or purchased directly with or without the full eText at www.myeconlab.com.

Instructor's Manual

Edward Scahill of the University of Scranton prepared the *Instructor's Manual*, which includes chapter-by-chapter summaries, key term definitions, teaching outlines with teaching tips, and solutions to all review questions and problems in the book. The solutions were prepared by Randy Methenitis of Richland College and the authors. The *Instructor's Manual* is available for download from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

Test Item File

Randy Methenitis of Richland College prepared the Test Item File, which includes more than 1,500 multiple-choice, short-answer, and essay questions. Test questions are annotated with the following information:

- **Difficulty:** 1 for straight recall, 2 for some analysis, and 3 for complex analysis
- **Type:** Multiple-choice, short-answer, and essay

- **Topic:** The term or concept that the question supports
- **Learning objective:** The major sections of the main text and its end-of-chapter questions and problems are organized by learning objective. The Test Item File questions continue with this organization to make it easy for instructors to assign questions based on the objective they wish to emphasize.
- **Advanced Collegiate Schools of Business (AACSB) Assurance of Learning Standards:** Following the AACSB's learning objectives, these standards emphasize Communication; Ethical Reasoning; Analytic Skills; Use of Information Technology; Multicultural and Diversity; and Reflective Thinking.
- **Page number:** The page in the main text where the answer appears allows instructors to direct students to where supporting content appears.
- **Special feature in the main book:** Select questions support the Chapter-opening vignette, the *Key Issue and Question*, *Solved Problem*, *Making the Connection*, and *Macro Data*.

The Test Item File is available for download from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

The multiple-choice questions in the Test Item File are also available in TestGen software for both Windows and Mac computers, and questions can be assigned via MyEconLab. The computerized TestGen package allows instructors to customize, save, and generate classroom tests. The TestGen program permits instructors to edit, add, or delete questions from the Test Item Files; analyze test results; and organize a database of tests and student results. This software allows for extensive flexibility and ease of use. It provides many options for organizing and displaying tests, along with search and sort features. The software and the Test Item Files can be downloaded from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).

PowerPoint Lecture Presentation

The PowerPoint slides were prepared by Paul Holmes of State University of New York–Fredonia. Instructors can use the slides for class presentations, and students can use them for lecture preview or review. These slides include all the graphs, tables, and equations from the textbook.

Student versions of the PowerPoint slides are available as PDF files in MyEconLab. These files allow students to print the slides and bring them to class for note taking. Instructors can download these PowerPoint presentations from the Instructor's Resource Center (www.pearsonhighered.com/hubbard).



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Reviewers and Other Contributors

The guidance and recommendations of the following instructors helped us to revise the content and organization of this text. While we could not incorporate every suggestion from every reviewer, we carefully considered each piece of advice we received. We are grateful for the hard work that went into their reviews and truly believe that their feedback was indispensable in revising this text. We appreciate their assistance in making this the best text it could be; they have helped teach a new generation of students about the exciting world of macroeconomics.

Special thanks to Edward Scahill of the University of Scranton for preparing many of the *Making the Connection* features and Randy Methenitis for revising many of the end-of-chapter questions and problems.

We also extend special thanks to Bob Gillette of the University of Kentucky for his extraordinary work accuracy checking these chapters in page proof format and playing a critical role in improving the quality of the final product.

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First Edition Class Testers

We extend special thanks to both the instructors who class tested manuscript chapters of the first edition and their nearly 200 students for providing recommendations on how to make the chapters engaging and relevant.

Gilad Aharonovitz, Washington State University

Don Coes, University of New Mexico

Kelfala Kallon, University of Northern Colorado

Jeffrey Miller, University of Delaware

Andre Neveu, James Madison University

Walter Park, American University

First Edition Reviewers and Focus Group Participants

We also appreciate the thoughtful comments of our first edition reviewers and focus group participants. They brought home to us once again that there are many ways to teach a macroeconomics class. We hope that we have written a text with sufficient flexibility to meet the needs of most instructors. We carefully read and considered every comment and suggestion we received and incorporated many of them into the text. We believe that our text has been greatly improved as a result of the review process.

Gilad Aharonovitz, Washington State University

Francis Ahking, University of Connecticut–Storrs

Nazneen Ahmad, Weber State University

Mohammed Akacem, Metropolitan State College of Denver

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First Edition Accuracy Checkers

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The Long and Short of Macroeconomics

Learning Objectives

After studying this chapter, you should be able to:

- 1.1** Become familiar with the focus of macroeconomics (pages 2–14)
- 1.2** Explain how economists approach macroeconomic questions (pages 14–19)
- 1.3** Become familiar with key macroeconomic issues and questions (pages 19–21)

When You Enter the Job Market Can Matter a Lot

If you could choose a year to be born, 1983 or 1984 would have been pretty good choices because you might have graduated college and entered the job market in 2005. You would have entered the labor force when the economy was expanding: Sales of houses and cars were strong, Wall Street was booming, and unemployment was low and declining. As stock prices and home prices both soared, many people felt wealthier than ever before.

The year 2008, on the other hand, was *not* a good year to be graduating and entering the job market. Nor were 2009, 2010, or 2011. By 2009, the unemployment rate was higher than it had been in 25 years. By 2011, more people had been out of work for longer than a year than at any other time since the Great Depression of the 1930s. In 2011, a study found that more than 25% of people under age 25 with bachelor's degrees were unemployed and another 25% were stuck in jobs for which they were overqualified.

The U.S. economy endured one of the worst economic downturns in history from 2007 to 2009. During 2008 and 2009, over 600,000 more firms closed than

opened. Sales of houses and cars were at depressed levels. The prices of homes and shares of stock were well below their levels of a few years earlier, which meant that trillions of dollars of wealth had been wiped out. The median wealth for families declined from \$126,400 in 2007 to \$77,300 in 2010. This decline of almost 40% in just three years brought the wealth of the average family to about the same level as in 1992. Many older workers delayed retirement. Clearly, this was not the best of times to enter the labor force. Even though an economic recovery began in June 2009, the recovery was weak, and the job market remained difficult for new college grads.

The U.S. economy has its ups and downs, and the consequences of the ups and downs can significantly affect people's lives. For instance, a recent study found that college students who graduate during an economic recession have to search longer to find a job and end up accepting jobs that, on average, pay 9% less than the jobs accepted by students who graduate during economic expansions. What's more, students who graduate during recessions will continue to earn less for 8 to 10 years after they graduate. On the other hand, strong

expansions result in rising income, profits, and employment. Searching for a job or starting a new business is a lot easier during a strong expansion than during a

recession or a weak expansion. Clearly, understanding why the economy experiences periods of recession and expansion is important.

Sources: James R. Hagerty, “Young Adults See Their Pay Decline,” *Wall Street Journal*, March 6, 2012; Associated Press, “Half of New Graduates Are Jobless or Underemployed,” *USA Today*, April 23, 2012; Lisa Kahn, “The Long-Term Labor Market Consequences of Graduating from College in a Bad Economy,” *Labour Economics*, Vol. 17, No. 2, April 2010, pp. 303–316; Jesse Bricker, Arthur B. Kennickell, Kevin B. Moore, and John Sabelhaus, “Changes in U.S. Family Finances from 2007 to 2010: Evidence from the Survey of Consumer Finances,” *Federal Reserve Bulletin*, Vol. 98, No. 2, June 2012; and Bureau of Labor Statistics, “Business Employment Dynamics—Third Quarter 2011,” May 1, 2012.

Microeconomics The study of how households and firms make choices, how they interact in markets, and how the government attempts to influence their choices.

Macroeconomics The study of the economy as a whole, including topics such as inflation, unemployment, and economic growth.

How can we understand these fluctuations in the economy? By learning *macroeconomics*. Economics is traditionally divided into the fields of microeconomics and macroeconomics. **Microeconomics** is the study of how households and firms make choices, how they interact in markets, and how the government attempts to influence their choices. **Macroeconomics** is the study of the economy as a whole, including topics such as inflation, unemployment, and economic growth. Both microeconomics and macroeconomics study important issues, but the very severe recession of 2007–2009 made macroeconomic issues seem particularly pressing. Although economic theory has the reputation for being dull, there was nothing dull about the events of 2007–2009, which had a major impact on millions of families and thousands of firms.

Many students open an economics textbook and think, “Do I have to memorize all these graphs and equations? How am I going to use this stuff?” Once the final exam is over (at last!) everything learned is quickly forgotten. And it should be forgotten, because economics as an undigested lump of graphs and equations has no value. Graphs and equations are tools; if they are not used for their intended purpose, then they have no more value than a blunt pair of scissors forgotten in the back of a drawer. We have to admit that this textbook has its share of graphs you should know and equations you should memorize. But no more than are necessary. When we present you with a tool, we use it, and we show you how to use it. Our intention is for you to remember these tools long after the final exam, even if this is the last economics course you ever take. With these tools, you can make sense of things that will have a huge effect on your life. Studying macroeconomics will be less of a chore if you keep in mind that *by learning this material you will come to understand how and why economic events affect you, your family, and the well-being of people around the world.*

1.1

Learning Objective

Become familiar with the focus of macroeconomics.

Business cycle

Alternating periods of economic expansion and economic recession.

What Macroeconomics Is About

In this text, we will analyze the macroeconomics of the U.S. and world economies. This section provides you with an overview of some of the important ideas about macroeconomics. We will discuss these ideas in more detail in the following chapters.

Macroeconomics in the Short Run and in the Long Run

The key macroeconomic issue of the short run—a period of a few years—is different from the key macroeconomic issue of the long run—a period of decades or more. In the short run, macroeconomic analysis focuses on the **business cycle**, which refers to

alternating periods of *economic expansion* and *economic recession* experienced by the U.S. and other economies. The U.S. economy has experienced periods of expanding production and employment followed by periods of recession during which production and employment decline dating back to at least the early nineteenth century. The business cycle is not uniform: Each period of expansion is not the same length, nor is each period of recession, but every period of expansion in U.S. history has been followed by a period of recession, and every period of recession has been followed by a period of expansion.

For the long run, the focus of macroeconomics switches from the business cycle to **long-run economic growth**, which is the process by which increasing productivity raises the average standard of living. A successful economy is capable of increasing production of goods and services faster than the growth in population. Increasing production faster than population growth is the only lasting way that the standard of living of the average person in a country can increase. Achieving this outcome is possible only through increases in *labor productivity*. **Labor productivity** is the quantity of goods and services that can be produced by one worker or by one hour of work. If the quantity of goods and services consumed by the average person is to increase, the quantity of goods and services produced per worker must also increase.

Unfortunately, many economies around the world are not growing at all or are growing very slowly. In some countries in sub-Saharan Africa, living standards are barely higher, or are even lower, than they were 50 years ago. Many people in these countries live in the same grinding poverty as their ancestors did. In the United States and other developed countries, however, living standards are much higher than they were 50 years ago. An important macroeconomic topic is why some countries grow much faster than others.

As we will see, one determinant of economic growth is the ability of firms to expand their operations, buy additional equipment, train workers, and adopt new technologies. To carry out these activities, firms must acquire funds from households, either directly through financial markets—such as the stock and bond markets—or indirectly through financial intermediaries—such as banks. Financial markets and financial intermediaries together comprise the *financial system*. As we will see in later chapters, the financial system has become an increasingly important part of the study of macroeconomics.

The focus of this book is the exploration of these two key aspects of macroeconomics: the long-run growth that has steadily raised living standards in the United States and some other countries and the short-run fluctuations of the business cycle.

Long-Run Growth in the United States

By current standards, nearly everyone in the world was poor not very long ago. For instance, in 1900, although the United States was already enjoying the highest standard of living in the world, the typical American was quite poor by today's standards. In 1900, only 3% of U.S. homes had electricity, only 15% had indoor flush toilets, and only 25% had running water. The lack of running water meant that before people could cook or bathe, they had to pump water from wells and haul it to their homes in buckets—on average about 10,000 gallons per year per family. Not

Long-run economic growth The process by which increasing productivity raises the average standard of living.

Labor productivity The quantity of goods and services that can be produced by one worker or by one hour of work.

surprisingly, water consumption in the United States averaged only about 5 gallons per person per day, compared with about 150 gallons today. The result was that people washed themselves and their clothing only infrequently. A majority of families living in cities had to use outdoor toilets, which they shared with other families. Few families had electric lights, relying instead on candles or lamps that burned kerosene or coal.

Most homes were heated in the winter by burning coal, which was also used as fuel in stoves. In the northern United States, many families saved on winter fuel costs by heating only the kitchen, abandoning their living rooms and relying on clothing and blankets for warmth in their bedrooms. The typical family used more than 7 tons of coal per year just for cooking. Burning so much coal contributed to the severe pollution that fouled the air of most large cities. Poor sanitation and high levels of pollution, along with ineffective medical care, resulted in high rates of illness and premature death. Many Americans became ill or died from diseases such as smallpox, typhus, dysentery, measles, and cholera that are now uncommon in developed nations. Life expectancy in 1900 was about 47 years, compared with 78 years in 2012. In 1900, 5,000 of the 45,000 children born in Chicago died before their first birthday. And, there were, of course, no televisions, radios, computers, air conditioners, washing machines, dishwashers, or refrigerators. Without modern appliances, most women worked inside the home at least 80 hours per week. The typical American homemaker in 1900 baked a half-ton of bread per year.¹

How did the United States get from the relative poverty of 1900 to the relative affluence of today? Will these increases in living standards continue? Will people living in the United States in 2100 look back on the people of 2013 as having lived in relative poverty? The answer to these questions is that changes in living standards depend on the rate of long-run economic growth. Most people in the United States, Western Europe, Japan, and other developed countries expect that over time, their standard of living will improve. They expect that year after year, firms will introduce new and improved products, new prescription drugs and better surgical techniques will overcome more diseases, and their ability to afford these goods and services will increase. For most people, these are reasonable expectations.

The process of long-run economic growth brought the typical American from the standard of living of 1900 to the standard of living of today and has the potential to bring the typical American of 100 years from now to a standard of living that people today can only imagine. **Real gross domestic product (GDP)**, which is the value of final goods and services, adjusted for changes in the price level, provides a measure of the total level of income in the economy. Accordingly, the best measure of the standard of living is real GDP per person, which is usually referred to as *real GDP per capita*. We typically measure long-run economic growth by increases in real GDP per capita

Real gross domestic product (GDP) The value of final goods and services, adjusted for changes in the price level.

¹Most of the data on economic conditions in the United States in 1900 come from Stanley Lebergott, *Pursuing Happiness: American Consumers in the Twentieth Century*, Princeton, NJ: Princeton University Press, 1993. Data on economic conditions in 2012 come from the U.S. Census Bureau, *The 2012 Statistical Abstract*, www.census.gov/compendia/statab/, and other sources.

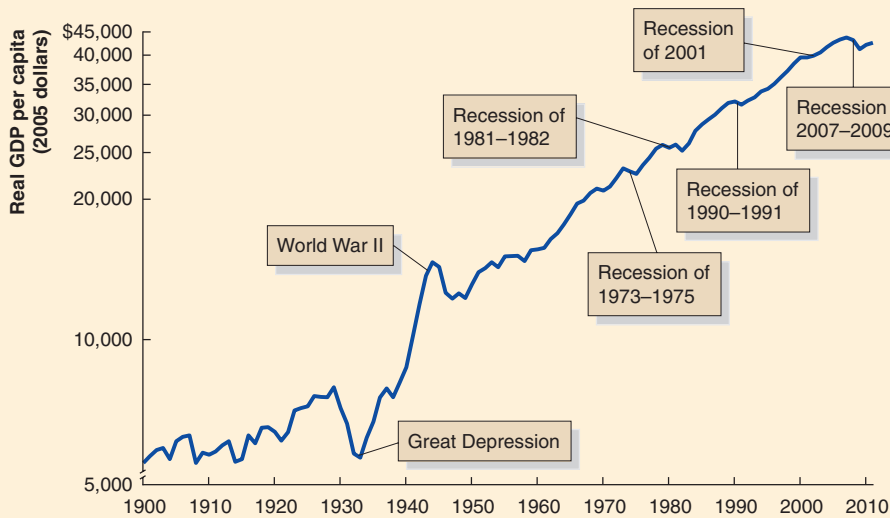


Figure 1.1
The Growth in U.S. Real GDP per Capita, 1900–2011

Measured in 2005 dollars, real GDP per capita in the United States grew from about \$5,500 in 1900 to about \$42,671 in 2011. The average American in the year 2011 could buy nearly eight times as many goods and services as the average American in the year 1900.

Note: The values in this graph are plotted on a logarithmic scale so that equal distances represent equal percentage increases. For example, the 100% increase from \$5,000 to \$10,000 is the same distance as the 100% increase from \$10,000 to \$20,000.

Sources: Louis Johnston and Samuel H. Williamson, “What Was the U.S. GDP Then?” *MeasuringWorth*, 2012, www.measuringworth.org/usgdp/; U.S. Bureau of Economic Analysis; and U.S. Census Bureau.

over long periods of time, generally decades or more. Figure 1.1 shows real GDP per capita in the United States from 1900 to 2011. The figure shows that the long-run trend in real GDP per capita is strongly upward. The figure also shows that real GDP per capita fluctuates in the short run. For instance, real GDP per capita declined significantly during the Great Depression of the 1930s and by smaller amounts during later recessions, including the recession of 2007–2009. But it is the upward trend in real GDP per capita that we focus on when discussing long-run economic growth.

In Chapters 5 and 6, we will explore in detail *why* the U.S. economy has experienced strong growth over the long run, including the role of the financial system in facilitating this growth.

Some Countries Have Not Experienced Significant Long-Run Growth

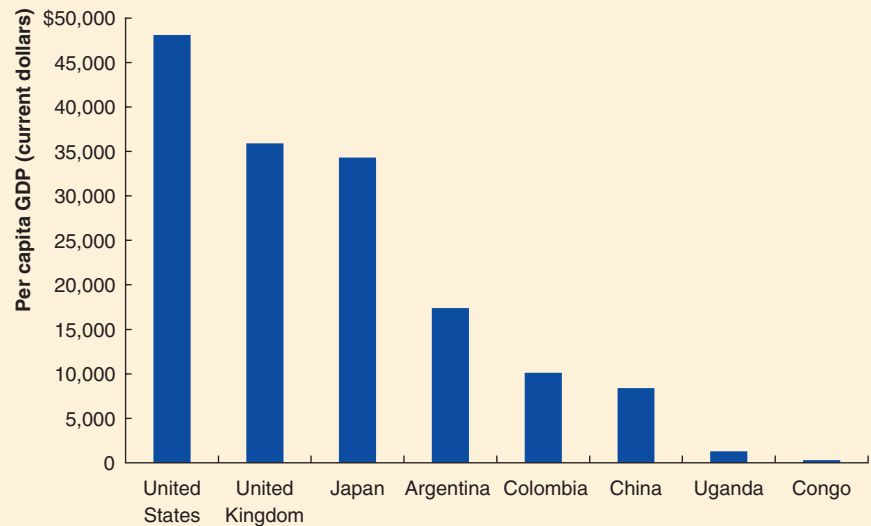
One of the key macroeconomic puzzles that we will examine is why rates of economic growth have varied so widely across countries. Because countries have experienced such different rates of economic growth, their current levels of GDP per capita are also very different, as Figure 1.2 shows. GDP per capita is higher in the United States than in most other countries because the United States has experienced higher rates of economic growth than have most other countries. Figure 1.2 shows that the gap between U.S. GDP per capita and GDP per capita in other high-income countries, such as the United Kingdom and Japan, is relatively small, but the gap between the high-income countries and the low-income countries is quite large. Although China has recently been experiencing rapid economic growth, this rapid growth began only in the late 1970s, when the Chinese government introduced economic reforms. As a result, GDP per capita in

Figure 1.2**Differing Levels of GDP per Capita, 2011**

Differing levels of long-run economic growth have resulted in countries today having very different levels of GDP per capita.

Note: Values are GDP per capita, measured in dollars corrected for differences in price levels across countries.

Source: U.S. Central Intelligence Agency, *The World Factbook 2012*, Washington, DC: Central Intelligence Agency, 2012.



the United States is nearly six times greater than GDP per capita in China, which is not much smaller than the gap between real GDP per capita in the United States today and real GDP per capita in the United States in 1900. The gap between the United States and the poorest countries is larger still: U.S. GDP per capita is almost 40 times greater than GDP per capita in the African country of Uganda and a staggering 160 times greater than GDP per capita in the African country of Congo.

Why is average income in the United States so much higher than that in Uganda and China? Why is China closing the gap with the United States, while Uganda falls further behind? What explains the stark differences in income levels across countries? Why has it been so difficult to raise the incomes of the very poorest countries? In Chapters 5 and 6, we will address these important questions.

Aging Populations Pose a Challenge to Governments Around the World

Panel (a) of Figure 1.3 shows that the percentage of the world population over age 65 has been continually expanding. Between 1950 and 2012, the percentage increased by two-thirds and is expected to almost triple between 2012 and the end of the twenty-first century. Panel (b) shows the same pattern for the United States. In 2012, more than 13% of the U.S. population was older than 65. This percentage is expected to double by the end of the century. The aging of the population is the result of lower birthrates and of people living longer. While in 1990 there were only about 7 million people in the United States age 80 and older, by 2010 there were almost 12 million, and by the end of the century there are expected to be more than 50 million.

Some economists and policymakers fear that aging populations may pose a threat to long-run economic growth. A key part of the problem is that governments have

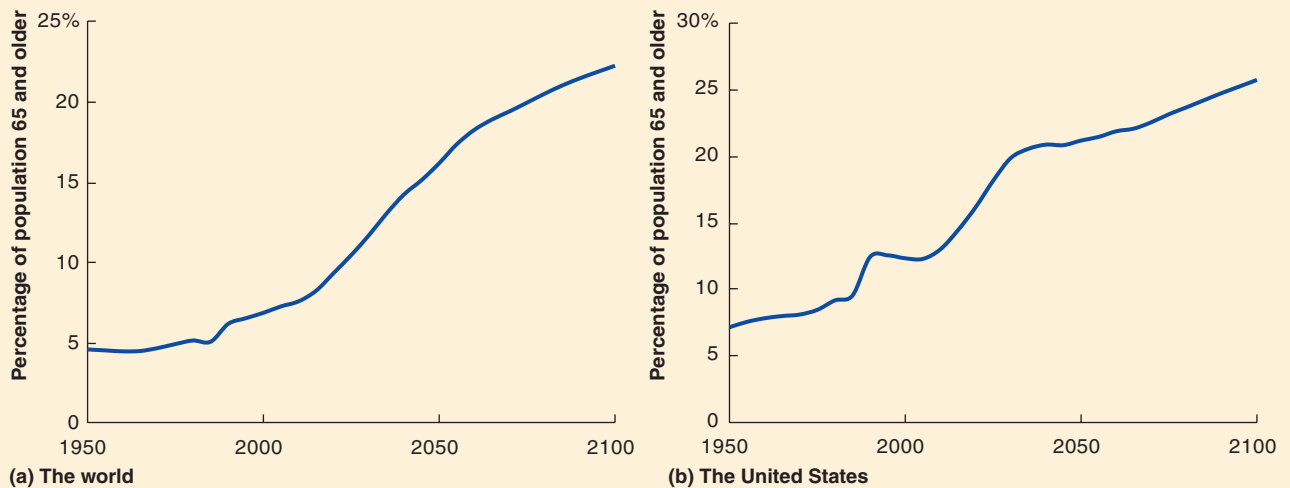


Figure 1.3 The Aging of the Population

Panel (a) shows that low birthrates and increases in life span combined have resulted in an increasing percentage of people 65 and older in the world.

Panel (b) shows that this trend also holds for the United States.

Source: United Nations, Department of Economic and Social Affairs, *World Population Prospects, the 2010 Revision*.

programs to make payments to retired workers and to cover some or all of their health-care costs. For instance, the United States has three programs that fill these roles:

1. *Social Security*, established in 1935 to provide payments to retired workers and the disabled
2. *Medicare*, established in 1965 to provide health care coverage to people age 65 and older
3. *Medicaid*, established in 1965 to provide health care coverage to the poor, including elderly poor in nursing homes and other facilities

Spending on Social Security, Medicare, and Medicaid was about 3% of GDP in 1962 (Medicare and Medicaid did not exist yet), but is projected to grow to nearly 20% of GDP by 2050. In other words, by 2050, the federal government will be spending, as a fraction of GDP, nearly as much on these three programs as it currently does now on all programs. Most of the money for Social Security, Medicare, and Medicaid comes from taxes paid by people currently working. As the population ages, there are fewer workers paying taxes relative to the number of retired people receiving government payments. The result is a funding crisis that countries can solve only by either reducing government payments to retired workers, reducing spending on all other programs, or by raising the taxes paid by current workers.

In some European countries and Japan, birthrates have fallen so low that the total population has already begun to decline, which will make the funding crisis for government retirement programs even worse. How countries deal with the consequences of aging populations will be one of the most important macroeconomic issues of the coming decades.

Unemployment in the United States

The three topics we have just discussed concern the macroeconomic long run. As we already noted, the key macroeconomic issue of the short run is the business cycle. Figure 1.1 on page 5 shows the tremendous increase during the past century in the standard of living of the average American. But close inspection of the figure reveals that real GDP per capita did not increase every year during that century. For example, during the first half of the 1930s, real GDP per capita fell for several years in a row as the United States experienced a severe economic downturn called the Great Depression. The fluctuations in real GDP per capita shown in Figure 1.1 reflect the underlying fluctuations in real GDP caused by the business cycle. Because real GDP is our best measure of economic activity, the business cycle is usually illustrated using movements in real GDP.

Labor force The sum of employed and unemployed workers in the economy.

Unemployment rate The percentage of the labor force that is unemployed.

Most people experience the business cycle in the job market. The **labor force** is the sum of employed and unemployed workers in the economy, and the **unemployment rate** is the percentage of the labor force that is unemployed. As Figure 1.4 shows, the unemployment rate in the United States has risen and fallen with the business cycle. The figure shows that prior to the 1940s, unemployment rates were typically higher during recessions than they have been in the years since. In particular, following the end of the severe 1981–1982 recession, the United States entered into a period of mild business cycles, with relatively low peak unemployment rates. Some economists called this period the *Great Moderation*. The Great Moderation ended in December 2007,

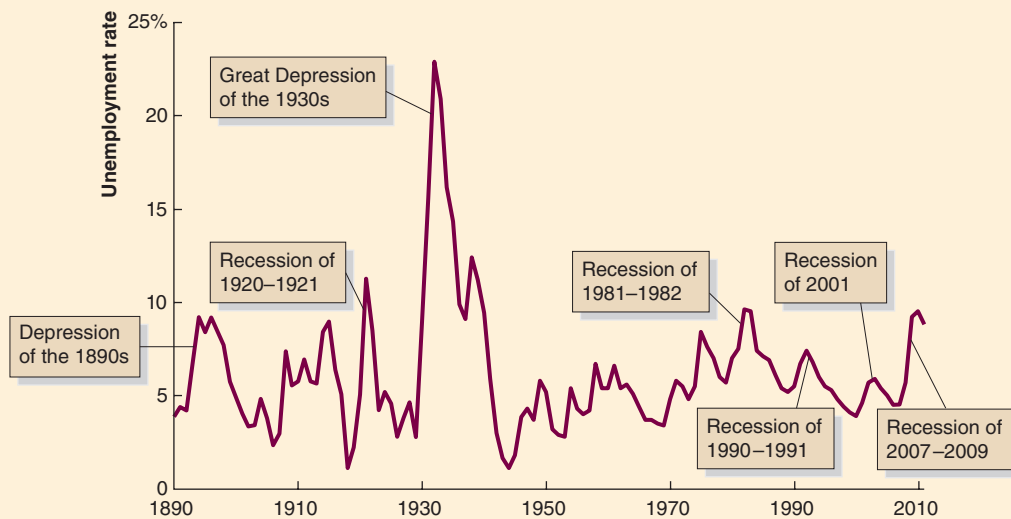
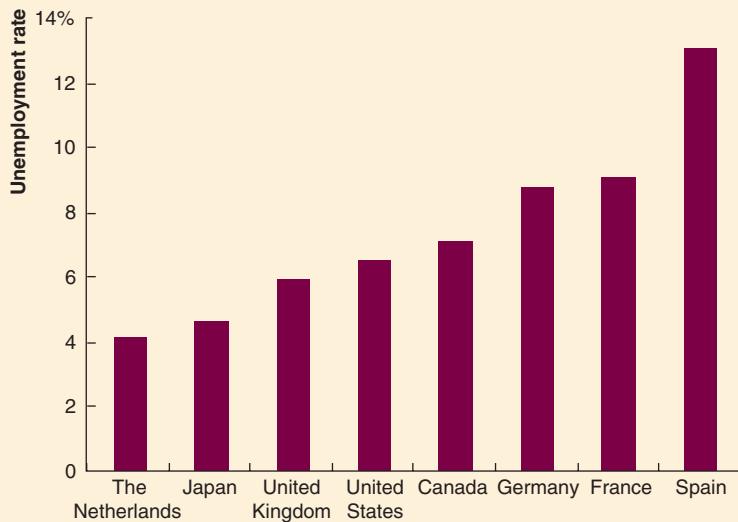


Figure 1.4 Unemployment Rate in the United States, 1890–2011

Unemployment rises and falls with the business cycle.

Sources: Data for 1890–1947 from *Historical Statistics of the United States Millennial Edition Online*, edited by Susan B. Carter, Scott Sigmund Gartner, Michael R. Haines, Alan L. Olmstead, Richard Sutch, and Gavin Wright, Cambridge University Press. Series Ba475; data for 1948–2011 from the Bureau of Labor Statistics.

**Figure 1.5**

Average Unemployment Rates in the United States and Other High-Income Countries, 2002–2011

The average unemployment rate varies significantly across high-income countries. It has been relatively low in the Netherlands, Japan, the United Kingdom, and the United States and relatively high in France, Germany, and Spain. Differences in labor-market policies are the most likely explanation for these differences in unemployment rates.

Sources: U.S. Bureau of Labor Statistics; and International Monetary Fund.

with the start of the 2007–2009 recession. During that recession, the unemployment rate soared from less than 5% to more than 10%—with more than 8.5 million workers losing their jobs.

In later chapters, we will explore why unemployment has been so much higher in some periods than in others. In particular, we will look at why the unemployment rate in the United States was so low during the Great Moderation and so high during the 2007–2009 recession and its aftermath.

Unemployment Rates Differ Across Developed Countries

Figure 1.5 shows the average unemployment over the 10-year period from 2002 to 2011 for the United States and several other high-income countries. The average unemployment rates range from a low of 4.1% in the Netherlands to a high of 13.1% in Spain. These differences indicate that although some swings in unemployment are caused by the business cycle, unemployment has been persistently higher in some countries than in others for reasons not connected to the business cycle. What explains these differences? The varying labor-market policies governments have pursued seem to be the key to explaining these differences in unemployment rates. As we will see, though, economists have not yet reached consensus on which policy differences are most important.

Inflation Rates Fluctuate Over Time and Across Countries

Just as the unemployment rate varies over time in the United States and differs between the United States and other countries, so does the *inflation rate*. Figure 1.6 shows the **inflation rate** in the United States as measured by the percentage change in the average level of prices (here measured by the consumer price index) from one year to the next. The data

Inflation rate The percentage increase in the price level from one year to the next.