

GLOBAL  
EDITION



# Macroeconomics

SIXTH EDITION

Olivier Blanchard • David R. Johnson



ALWAYS LEARNING

PEARSON

Sixth Edition

# MACROECONOMICS

**Global Edition**

**Olivier Blanchard**

International Monetary Fund  
Massachusetts Institute of Technology

**David R. Johnson**

Wilfrid Laurier University

**PEARSON**

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

**Editor in Chief:** Donna Battista  
**AVP/Executive Editor:** David Alexander  
**International Senior Acquisitions Editor:** Laura Dent  
**International Senior Editor:** Leandra Paoli  
**International Editorial Assistant:** Toril Cooper  
**Senior Editorial Project Manager:** Lindsey Sloan  
**Executive Marketing Manager:** Lori DeShazo  
**International Marketing Manager:** Dean Erasmus  
**Senior Managing Editor:** Nancy Fenton  
**Senior Production Project Manager:** Nancy  
Freihofer

**Senior Manufacturing Buyer:** Carol Melville  
**Cover Designer:** Jodi Notowitz  
**Cover Photo:** © chungking - Fotolia.com  
**Permissions Specialist:** Jill Dougan  
**Image Manager:** Rachel Youdelman  
**Executive Media Producer:** Melissa Honig  
**MyEconLab Content Lead:** Noel Lotz  
**Cover Printer:** Courier Kendallville

**Pearson Education Limited**

Edinburgh Gate  
Harlow  
Essex CM20 2JE  
England

and Associated Companies throughout the world

Visit us on the World Wide Web at:  
[www.pearson.com/uk](http://www.pearson.com/uk)

© Pearson Education Limited 2013

The right of Olivier Blanchard and David R. Johnson to be identified as authors of this work has been asserted by them in accordance with the Copyright, Designs and Patents Act 1988.

*Authorised adaptation from the United States edition, entitled Macroeconomics, 6th Edition, ISBN: 978-0-13-306163-5 by Olivier Blanchard and David R. Johnson, published by Pearson Education, Inc., © 2013.*

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without either the prior written permission of the publisher or a licence permitting restricted copying in the United Kingdom issued by the Copyright Licensing Agency Ltd, Saffron House, 6–10 Kirby Street, London EC1N 8TS.

All trademarks used herein are the property of their respective owners. The use of any trademark in this text does not vest in the author or publisher any trademark ownership rights in such trademarks, nor does the use of such trademarks imply any affiliation with or endorsement of this book by such owners.

Credits and acknowledgments borrowed from other sources and reproduced, with permission, in this textbook appear on appropriate page within text.

ISBN 13: 978-0-273-76633-9

ISBN 10: 0-273-76633-3

**British Library Cataloguing-in-Publication Data**

A catalogue record for this book is available from the British Library

10 9 8 7 6 5 4 3 2 1

16 15 14 13 12

Typeset in Utopia 10/12 by PreMediaGlobal

Printed and bound by Courier Kendallville in The United States of America

*The publisher's policy is to use paper manufactured from sustainable forests.*

**PEARSON**

*To Noelle and Susan*



# About the Authors



**Olivier Blanchard** is the Robert M. Solow Professor of Economics at the Massachusetts Institute of Technology. He did his undergraduate work in France and received a Ph.D. in economics from MIT in 1977. He taught at Harvard from 1977 to 1982 and has taught at MIT since 1983. He has frequently received the award for best teacher in the department of economics. He is currently on leave from MIT and serves as the Chief Economist at the International Monetary Fund.

He has done research on many macroeconomic issues, including the effects of fiscal policy, the role of expectations, price rigidities, speculative bubbles, unemployment in Western Europe, transition in Eastern Europe, the role of labor market institutions, and the various aspects of the current crisis. He has done work for many governments and many international organizations, including the *World Bank*, the *IMF*, the *OECD*, the *EU Commission*, and the *EBRD*. He has published over 150 articles and edited or written over 20 books, including *Lectures on Macroeconomics* with Stanley Fischer.

He is a research associate of the National Bureau of Economic Research, a fellow of the Econometric Society, a member of the American Academy of Arts and Sciences, and a past Vice President of the American Economic Association.

He currently lives in Washington, D.C. with his wife, Noelle. He has three daughters: Marie, Serena, and Giulia.



**David Johnson** is Professor of Economics at Wilfrid Laurier University and Education Policy Scholar at the C. D. Howe Institute.

Professor Johnson's areas of specialty are macroeconomics, international finance, and, more recently, the economics of education. His published work in macroeconomics includes studies of Canada's international debt, the influence of American interest rates on Canadian interest rates, and the determination of the exchange rate between Canada and the United States. His 2005 book *Signposts of Success*, a comprehensive analysis of elementary school test scores in Ontario, was selected as a finalist in 2006 for both the Donner Prize and the Purvis Prize. He has also written extensively on inflation targets as part of monetary policy in Canada and around the world. His primary teaching area is macroeconomics. He is coauthor with Olivier Blanchard of *Macroeconomics* (fourth Canadian edition).

Professor Johnson received his undergraduate degree from the University of Toronto, his Master's degree from the University of Western Ontario, and his Ph.D. in 1983 from Harvard University, where Olivier Blanchard served as one of his supervisors. He has worked at the Bank of Canada and visited at the National Bureau of Economic Research, Cambridge University, and most recently at the University of California, Santa Barbara as Canada-U.S. Fulbright Scholar and Visiting Chair.

Professor Johnson lives in Waterloo, Ontario, with his wife Susan, who is also an economics professor. They have shared the raising of two children, Sarah and Daniel. When not studying or teaching economics, David plays Oldtimers' Hockey and enjoys cross-country skiing in the winter and sculling in the summer. For a complete change of pace, Professor Johnson has been heavily involved in the Logos program, an after-school program for children and youth at First Mennonite Church in Kitchener, Ontario.

# Brief Contents

## THE CORE

### Introduction 21

- Chapter 1 A Tour of the World 23
- Chapter 2 A Tour of the Book 39

### The Short Run 61

- Chapter 3 The Goods Market 63
- Chapter 4 Financial Markets 83
- Chapter 5 Goods and Financial Markets: The *IS–LM* Model 105

### The Medium Run 129

- Chapter 6 The Labor Market 131
- Chapter 7 Putting All Markets Together: The *AS–AD* Model 153
- Chapter 8 The Phillips Curve, the Natural Rate of Unemployment, and Inflation 181
- Chapter 9 The Crisis 203

### The Long Run 225

- Chapter 10 The Facts of Growth 227
- Chapter 11 Saving, Capital Accumulation, and Output 245
- Chapter 12 Technological Progress and Growth 269
- Chapter 13 Technological Progress: The Short, the Medium, and the Long Run 287

## EXTENSIONS

### Expectations 309

- Chapter 14 Expectations: The Basic Tools 311
- Chapter 15 Financial Markets and Expectations 333
- Chapter 16 Expectations, Consumption, and Investment 357
- Chapter 17 Expectations, Output, and Policy 377

### The Open Economy 397

- Chapter 18 Openness in Goods and Financial Markets 399
- Chapter 19 The Goods Market in an Open Economy 419
- Chapter 20 Output, the Interest Rate, and the Exchange Rate 443
- Chapter 21 Exchange Rate Regimes 465

### Back to Policy 491

- Chapter 22 Should Policy Makers Be Restrained? 493
- Chapter 23 Fiscal Policy: A Summing Up 513
- Chapter 24 Monetary Policy: A Summing Up 537
- Chapter 25 Epilogue: The Story of Macroeconomics 559



# Contents

Preface 13

## THE CORE

### Introduction 21

#### Chapter 1 A Tour of the World 23

- 1-1 The Crisis 24
- 1-2 The United States 26
  - Should You Worry about the United States Deficit? 28
- 1-3 The Euro Area 29
  - How Can European Unemployment Be Reduced? 30 • What Has the Euro Done for Its Members? 32
- 1-4 China 33
- 1-5 Looking Ahead 35
- Appendix: Where to Find the Numbers 37

#### Chapter 2 A Tour of the Book 39

- 2-1 Aggregate Output 40
  - GDP: Production and Income 40 • Nominal and Real GDP 42 • GDP: Level versus Growth Rate 44
- 2-2 The Unemployment Rate 45
  - Why Do Economists Care about Unemployment? 47
- 2-3 The Inflation Rate 49
  - The GDP Deflator 49 • The Consumer Price Index 49 • Why Do Economists Care about Inflation? 50
- 2-4 Output, Unemployment, and the Inflation Rate: Okun's Law and the Phillips Curve 51
  - Okun's Law 51 • The Phillips Curve 52
- 2-5 The Short Run, the Medium Run, the Long Run 53
- 2-6 A Tour of the Book 54
  - The Core 54 • Extensions 55 • Back to Policy 56 • Epilogue 56
- Appendix: The Construction of Real GDP, and Chain-Type Indexes 59

### The Short Run 61

#### Chapter 3 The Goods Market 63

- 3-1 The Composition of GDP 64
- 3-2 The Demand for Goods 65
  - Consumption (C) 66 • Investment (I) 68 • Government Spending (G) 68
- 3-3 The Determination of Equilibrium Output 69
  - Using Algebra 70 • Using a Graph 71 • Using Words 73 • How Long Does It Take for Output to Adjust? 74
- 3-4 Investment Equals Saving: An Alternative Way of Thinking about Goods—Market Equilibrium 76
- 3-5 Is the Government Omnipotent? A Warning 78

#### Chapter 4 Financial Markets 83

- 4-1 The Demand for Money 84
  - Deriving the Demand for Money 86
- 4-2 Determining the Interest Rate: I 87
  - Money Demand, Money Supply, and the Equilibrium Interest Rate 88 • Monetary Policy and Open Market Operations 90 • Choosing Money or Choosing the Interest Rate? 92 • Money, Bonds, and Other Assets 92
- 4-3 Determining the Interest Rate: II 93
  - What Banks Do 93 • The Supply and the Demand for Central Bank Money 94
- 4-4 Two Alternative ways of looking at the Equilibrium 99
  - The Federal Funds Market and the Federal Funds Rate 99 • The Supply of Money, the Demand for Money, and the Money Multiplier 100 • Understanding the Money Multiplier 100

**Chapter 5****Goods and Financial Markets:  
The *IS-LM* Model 105**

- 5-1 The Goods Market and the *IS* Relation 106  
Investment, Sales, and the Interest Rate 106 • Determining Output 107 • Deriving the *IS* Curve 109 • Shifts of the *IS* Curve 109
  - 5-2 Financial Markets and the *LM* Relation 110  
Real Money, Real Income, and the Interest Rate 110 • Deriving the *LM* Curve 111 • Shifts of the *LM* Curve 112
  - 5-3 Putting the *IS* and the *LM* Relations Together 113  
Fiscal Policy, Activity, and the Interest Rate 114 • Monetary Policy, Activity, and the Interest Rate 116
  - 5-4 Using a Policy Mix 118
  - 5-5 How Does the *IS-LM* Model Fit the Facts? 122
- Appendix: An Alternative Derivation of the *LM* Relation as an Interest Rate Rule 127

**The Medium Run 129****Chapter 6****The Labor Market 131**

- 6-1 A Tour of the Labor Market 132  
The Large Flows of Workers 132
  - 6-2 Movements in Unemployment 135
  - 6-3 Wage Determination 137  
Bargaining 138 • Efficiency Wages 139 • Wages, Prices, and Unemployment 140 • The Expected Price Level 140 • The Unemployment Rate 141 • The Other Factors 141
  - 6-4 Price Determination 142
  - 6-5 The Natural Rate of Unemployment 142  
The Wage-Setting Relation 143 • The Price-Setting Relation 143 • Equilibrium Real Wages and Unemployment 144 • From Unemployment to Employment 145 • From Employment to Output 146
  - 6-6 Where We Go from Here 147
- Appendix: Wage- and Price-Setting Relations versus Labor Supply and Labor Demand 151

**Chapter 7****Putting All Markets Together:  
The *AS-AD* Model 153**

- 7-1 Aggregate Supply 154
- 7-2 Aggregate Demand 156
- 7-3 Equilibrium in the Short Run and in the Medium Run 159  
Equilibrium in the Short Run 159 • From the Short Run to the Medium Run 160
- 7-4 The Effects of a Monetary Expansion 162  
The Dynamics of Adjustment 162 • Going Behind the Scenes 163 • The Neutrality of Money 164
- 7-5 A Decrease in the Budget Deficit 166  
Deficit Reduction, Output, and the Interest Rate 167 • Budget Deficits, Output, and Investment 168
- 7-6 An Increase in the Price of Oil 169  
Effects on the Natural Rate of Unemployment 170 • The Dynamics of Adjustment 171
- 7-7 Conclusions 174  
The Short Run versus the Medium Run 174 • Shocks and Propagation Mechanisms 175 • Where We Go from Here 176

**Chapter 8****The Phillips Curve, the Natural Rate of Unemployment, and Inflation 181**

- 8-1 Inflation, Expected Inflation, and Unemployment 182
  - 8-2 The Phillips Curve 184  
The Early Incarnation 184 • Mutations 184 • The Phillips Curve and the Natural Rate of Unemployment 189 • The Neutrality of Money, Revisited 191
  - 8-3 A Summary and Many Warnings 191  
Variations in the Natural Rate across Countries 192 • Variations in the Natural Rate over Time 192 • Disinflation, Credibility, and Unemployment 192 • High Inflation and the Phillips Curve Relation 197 • Deflation and the Phillips Curve Relation 198
- Appendix: From the Aggregate Supply Relation to a Relation between Inflation, Expected Inflation, and Unemployment 202



**Chapter 9****The Crisis 203**

- 9-1 **From a Housing Problem to a Financial Crisis 204**  
Housing Prices and Subprime Mortgages 204 • The Role of Banks 205
- 9-2 **The Use and Limits of Policy 209**  
Initial Policy Responses 211 • The Limits of Monetary Policy: The Liquidity Trap 212 • The Limits of Fiscal Policy: High Debt 216
- 9-3 **The Slow Recovery 216**

**The Long Run 225****Chapter 10****The Facts of Growth 227**

- 10-1 **Measuring the Standard of Living 228**
- 10-2 **Growth in Rich Countries since 1950 231**  
The Large Increase in the Standard of Living since 1950 233 • The Convergence of Output per Person 234
- 10-3 **A Broader Look across Time and Space 235**  
Looking across Two Millennia 235 • Looking across Countries 235
- 10-4 **Thinking About Growth: A Primer 237**  
The Aggregate Production Function 237 • Returns to Scale and Returns to Factors 238 • Output per Worker and Capital per Worker 239 • The Sources of Growth 240

**Chapter 11****Saving, Capital Accumulation, and Output 245**

- 11-1 **Interactions between Output and Capital 246**  
The Effects of Capital on Output 246 • The Effects of Output on Capital Accumulation 247
- 11-2 **The Implications of Alternative Saving Rates 249**  
Dynamics of Capital and Output 249 • Steady-State Capital and Output 251 • The Saving Rate and Output 251 • The Saving Rate and Consumption 255

**11-3 Getting a Sense of Magnitudes 256**

The Effects of the Saving Rate on Steady-State Output 258 • The Dynamic Effects of an Increase in the Saving Rate 259 • The U.S. Saving Rate and the Golden Rule 261

**11-4 Physical versus Human Capital 262**

Extending the Production Function 262 • Human Capital, Physical Capital, and Output 263 • Endogenous Growth 264

**Appendix: The Cobb-Douglas Production Function and the Steady State 267**

**Chapter 12****Technological Progress and Growth 269****12-1 Technological Progress and the Rate of Growth 270**

Technological Progress and the Production Function 270 • Interactions between Output and Capital 272 • Dynamics of Capital and Output 274 • The Effects of the Saving Rate 275

**12-2 The Determinants of Technological Progress 276**

The Fertility of the Research Process 277 • The Appropriability of Research Results 278

**12-3 The Facts of Growth Revisited 280**

Capital Accumulation versus Technological Progress in Rich Countries since 1985 280 • Capital Accumulation versus Technological Progress in China 281

**Appendix: Constructing a Measure of Technological Progress 285**

**Chapter 13****Technological Progress: The Short, the Medium, and the Long Run 287****13-1 Productivity, Output, and Unemployment in the Short Run 288**

Technological Progress, Aggregate Supply, and Aggregate Demand 288 • The Empirical Evidence 290

**13-2 Productivity and the Natural Rate of Unemployment 292**

Price Setting and Wage Setting Revisited 292 • The Natural Rate of Unemployment 293 • The Empirical Evidence 294

- 13-3 Technological Progress, Churning, and Distribution Effects 296
  - The Increase in Wage Inequality 299 •
  - The Causes of Increased Wage Inequality 299
- 13-4 Institutions, Technological Progress, and Growth 301

## EXTENSIONS

### Expectations 309

#### Chapter 14 Expectations: The Basic Tools 311

- 14-1 Nominal versus Real Interest Rates 312
  - Nominal and Real Interest Rates in the United States since 1978 314
- 14-2 Nominal and Real Interest Rates, and the *IS-LM* Model 317
- 14-3 Money Growth, Inflation, Nominal and Real Interest Rates 318
  - Revisiting the *IS-LM* Model 318 • Nominal and Real Interest Rates in the Short Run 318 • Nominal and Real Interest Rates in the Medium Run 320 • From the Short to the Medium Run 321 • Evidence on the Fisher Hypothesis 322
- 14-4 Expected Present Discounted Values 324
  - Computing Expected Present Discounted Values 325 • Using Present Values: Examples 327 • Nominal versus Real Interest Rates, and Present Values 328

Appendix: Deriving the Expected Present Discounted Value Using Real or Nominal Interest Rates 331

#### Chapter 15 Financial Markets and Expectations 333

- 15-1 Bond Prices and Bond Yields 334
  - Bond Prices as Present Values 335 • Arbitrage and Bond Prices 336 • From Bond Prices to Bond Yields 338 • Interpreting the Yield Curve 339 • The Yield Curve and Economic Activity 339
- 15-2 The Stock Market and Movements in Stock Prices 342
  - Stock Prices as Present Values 343 • The Stock Market

and Economic Activity 345 • A Monetary Expansion and the Stock Market 346 • An Increase in Consumer Spending and the Stock Market 347

#### 15-3 Risk, Bubbles, Fads, and Asset Prices 348

Stock Prices and Risk 348 • Asset Prices, Fundamentals, and Bubbles 350

#### Chapter 16 Expectations, Consumption, and Investment 357

##### 16-1 Consumption 357

The Very Foresighted Consumer 358 • An Example 358 • Toward a More Realistic Description 360 • Putting Things Together: Current Income, Expectations, and Consumption 363

##### 16-2 Investment 364

Investment and Expectations of Profit 364 • A Convenient Special Case 366 • Current versus Expected Profit 368 • Profit and Sales 370

##### 16-3 The Volatility of Consumption and Investment 372

Appendix: Derivation of the Expected Present Value of Profits under Static Expectations 376

#### Chapter 17 Expectations, Output, and Policy 377

##### 17-1 Expectations and Decisions: Taking Stock 378

Expectations, Consumption, and Investment Decisions 378 • Expectations and the *IS* Relation 378 • The *LM* Relation Revisited 381

##### 17-2 Monetary Policy, Expectations, and Output 382

From the Short Nominal Rate to Current and Expected Real Rates 382 • Monetary Policy Revisited 383

##### 17-3 Deficit Reduction, Expectations, and Output 387

The Role of Expectations about the Future 388 • Back to the Current Period 389

### The Open Economy 397

#### Chapter 18 Openness in Goods and Financial Markets 399

##### 18-1 Openness in Goods Markets 400

Exports and Imports 400 • The Choice between Domestic Goods and Foreign

	Goods 402 • Nominal Exchange Rates 402 • From Nominal to Real Exchange Rates 403 • From Bilateral to Multilateral Exchange Rates 407
<b>18-2</b>	<b>Openness in Financial Markets 408</b> The Balance of Payments 409 • The Choice between Domestic and Foreign Assets 411 • Interest Rates and Exchange Rates 413
<b>18-3</b>	<b>Conclusions and a Look Ahead 415</b>
<b>Chapter 19</b>	<b>The Goods Market in an Open Economy 419</b>
<b>19-1</b>	<b>The IS Relation in the Open Economy 420</b> The Demand for Domestic Goods 420 • The Determinants of $C$ , $I$ , and $G$ 420 • The Determinants of Imports 421 • The Determinants of Exports 421 • Putting the Components Together 421
<b>19-2</b>	<b>Equilibrium Output and the Trade Balance 423</b>
<b>19-3</b>	<b>Increases in Demand, Domestic or Foreign 424</b> Increases in Domestic Demand 424 • Increases in Foreign Demand 426 • Fiscal Policy Revisited 427
<b>19-4</b>	<b>Depreciation, the Trade Balance, and Output 429</b> Depreciation and the Trade Balance: The Marshall-Lerner Condition 430 • The Effects of a Depreciation 430 • Combining Exchange Rate and Fiscal Policies 431
<b>19-5</b>	<b>Looking at Dynamics: The J-Curve 433</b>
<b>19-6</b>	<b>Saving, Investment, and the Current Account Balance 435</b>
	Appendix: Derivation of the Marshall-Lerner Condition 441

<b>Chapter 20</b>	<b>Output, the Interest Rate, and the Exchange Rate 443</b>
<b>20-1</b>	<b>Equilibrium in the Goods Market 444</b>
<b>20-2</b>	<b>Equilibrium in Financial Markets 445</b> Money versus Bonds 445 • Domestic Bonds versus Foreign Bonds 446
<b>20-3</b>	<b>Putting Goods and Financial Markets Together 450</b>

<b>20-4</b>	<b>The Effects of Policy in an Open Economy 451</b> The Effects of Fiscal Policy in an Open Economy 451 • The Effects of Monetary Policy in an Open Economy 453
<b>20-5</b>	<b>Fixed Exchange Rates 455</b> Pegs, Crawling Pegs, Bands, the EMS, and the Euro 455 • Pegging the Exchange Rate, and Monetary Control 456 • Fiscal Policy under Fixed Exchange Rates 457
	Appendix: Fixed Exchange Rates, Interest Rates, and Capital Mobility 462

<b>Chapter 21</b>	<b>Exchange Rate Regimes 465</b>
<b>21-1</b>	<b>The Medium Run 466</b> Aggregate Demand under Fixed Exchange Rates 467 • Equilibrium in the Short Run and in the Medium Run 468 • The Case For and Against a Devaluation 470
<b>21-2</b>	<b>Exchange Rate Crises under Fixed Exchange Rates 471</b>
<b>21-3</b>	<b>Exchange Rate Movements under Flexible Exchange Rates 475</b> Exchange Rates and the Current Account 477 • Exchange Rates and Current and Future Interest Rates 477 • Exchange Rate Volatility 477
<b>21-4</b>	<b>Choosing between Exchange Rate Regimes 479</b> Common Currency Areas 479 • Hard Pegs, Currency Boards, and Dollarization 482
	Appendix 1: Deriving Aggregate Demand under Fixed Exchange Rates 487
	Appendix 2: The Real Exchange Rate and Domestic and Foreign Real Interest Rates 488

## Back to Policy 491

<b>Chapter 22</b>	<b>Should Policy Makers Be Restrained? 493</b>
<b>22-1</b>	<b>Uncertainty and Policy 494</b> How Much Do Macroeconomists Actually Know? 494 • Should

	Uncertainty Lead Policy Makers to Do Less? 497 • Uncertainty and Restraints on Policy Makers 497		
	<b>22-2 Expectations and Policy 498</b>		
	Hostage Takings and Negotiations 499 • Inflation and Unemployment Revisited 499 • Establishing Credibility 500 • Time Consistency and Restraints on Policy Makers 502		
	<b>22-3 Politics and Policy 502</b>		
	Games between Policy Makers and Voters 503 • Games between Policy Makers 504 • Politics and Fiscal Restraints 505		
<b>Chapter 23</b>	<b>Fiscal Policy: A Summing Up 513</b>		
	<b>23-1 What We Have Learned 514</b>		
	<b>23-2 The Government Budget Constraint: Deficits, Debt, Spending, and Taxes 515</b>		
	The Arithmetic of Deficits and Debt 515 • Current versus Future Taxes 517 • The Evolution of the Debt-to-GDP Ratio 520		
	<b>23-3 Ricardian Equivalence, Cyclical Adjusted Deficits, and War Finance 522</b>		
	Ricardian Equivalence 522 • Deficits, Output Stabilization, and the Cyclically Adjusted Deficit 523 • Wars and Deficits 524		
	<b>23-4 The Dangers of High Debt 526</b>		
	High Debt, Default Risk, and Vicious Cycles 526 • Debt Default 529 • Money Finance 530		
<b>Chapter 24</b>	<b>Monetary Policy: A Summing Up 537</b>		
	<b>24-1 What We Have Learned 538</b>		
	<b>24-2 The Optimal Inflation Rate 539</b>		
	The Costs of Inflation 540 • The Benefits of Inflation 542 • The Optimal Inflation Rate: The Current Debate 544		
	<b>24-3 The Design of Monetary Policy 544</b>		
	Money Growth Targets and Target Ranges 545 • Inflation Targeting 546 • Interest Rate Rules 549		
	<b>24-4 Challenges from the Crisis 550</b>		
	The Liquidity Trap 550 • Macro Prudential Regulation 552		
<b>Chapter 25</b>	<b>Epilogue: The Story of Macroeconomics 559</b>		
	<b>25-1 Keynes and the Great Depression 560</b>		
	<b>25-2 The Neoclassical Synthesis 560</b>		
	Progress on All Fronts 561 • Keynesians versus Monetarists 562		
	<b>25-3 The Rational Expectations Critique 563</b>		
	The Three Implications of Rational Expectations 564 • The Integration of Rational Expectations 565		
	<b>25-4 Developments in Macroeconomics Up to the 2009 Crisis 567</b>		
	New Classical Economics and Real Business Cycle Theory 567 • New Keynesian Economics 568 • New Growth Theory 569 • Toward an Integration 569		
	<b>25-5 First Lessons for Macroeconomics after the Crisis 570</b>		
<b>Appendix 1</b>	<b>An Introduction to National Income and Product Accounts A-1</b>		
<b>Appendix 2</b>	<b>A Math Refresher A-7</b>		
<b>Appendix 3</b>	<b>An Introduction to Econometrics A-12</b>		
<b>Glossary</b>	G-1		
<b>Index</b>	I-1		
<b>Credits</b>	C-1		

# Focus Boxes

- Real GDP, Technological Progress, and the Price of Computers 45
- Did Spain Have a 24% Unemployment Rate in 1994? 48
- The Lehman Bankruptcy, Fears of Another Great Depression, and Shifts in the Consumption Function 75
- The Paradox of Saving 79
- Semantic Traps: Money, Income and Wealth 85
- Who Holds U.S. Currency? 87
- Bank Runs, Deposit Insurance, and Wholesale Funding 95
- Fiscal Contraction: Good or Bad for Greece and for the Euro? 117
- The U.S. Recession of 2001 119
- The Current Population Survey 134
- Henry Ford and Efficiency Wages 139
- How Long Lasting Are the Real Effects of Money? 165
- Oil Price Increases: Why Were the 2000s so Different from the 1970s? 173
- Theory Ahead of Facts: Milton Friedman and Edmund Phelps 190
- What Explains European Unemployment? 193
- Changes in the U.S. Natural Rate of Unemployment since 1990 195
- Increasing Leverage and Alphabet Soup: SIVs, AIG, and CDSs 208
- Japan, the Liquidity Trap, and Fiscal Policy 217
- Do Banking Crises Affect the Natural Level of Output? 220
- The Construction of PPP Numbers 230
- Does Money Lead to Happiness? 232
- Capital Accumulation and Growth in France in the Aftermath of World War II 252
- Social Security, Saving, and Capital Accumulation in the United States 257
- The Diffusion of New Technology: Hybrid Corn 278
- Job Destruction, Churning, and Earnings Losses 298
- The Importance of Institutions: North and South Korea 302
- What is behind Chinese Growth? 303
- Why Deflation Can Be Very Bad: Deflation and the Real Interest Rate in the Great Depression 316
- Nominal Interest Rates and Inflation across Latin America in the Early 1990s 323
- The Vocabulary of Bond Markets 335
- The Yield Curve and the Liquidity Trap 342
- Making (Some) Sense of (Apparent) Nonsense: Why the Stock Market Moved Yesterday, and Other Stories 349
- Famous Bubbles: From Tulipmania in Seventeenth-Century Holland to Russia in 1994 351
- The Increase in U.S. Housing Prices: Fundamentals or a Bubble? 352
- Up Close and Personal: Learning from Panel Data Sets 359
- How Much Do Expectations Matter in Estonia? 362
- Investment and the Stock Market 367
- Profitability versus Cash Flow 370
- The Liquidity Trap, Quantitative Easing, and the Role of Expectations 385
- Rational Expectations 387
- Can a Budget Deficit Reduction Lead to an Output Expansion? Ireland in the 1980s 390
- Can Exports Exceed GDP? 402
- GDP versus GNP: The Example of Kuwait 412
- Buying Brazilian Bonds 414
- The G20 and the 2009 Fiscal Stimulus 429
- The U.S. Current Account Deficit: Origins and Implications 436
- Sudden Stops, Safe Havens, and the Limits to the Interest Parity Condition 447
- Monetary and Fiscal Expansions: France in the Early 2000s 454
- German Reunification, Interest Rates, and the EMS 458
- The Return of Britain to the Gold Standard: Keynes versus Churchill 472
- The 1992 EMS Crisis 474
- The Euro: A Short History 481
- Lessons from Argentina's Currency Board 483
- Twelve Macroeconometric Models 496
- The European Central Bankers: Conservatives or Liberals in Disguise? 502
- The Stability and Growth Pact: A Short History 506
- Inflation Accounting and the Measurement of Deficits 516
- How Countries Decreased Their Debt Ratios after World War II 521
- Deficits, Consumption, and Investment in the United States during World War II 525
- The U.S. Budget Deficit Challenge 527
- Money Illusion 542
- The Unsuccessful Search for the Right Monetary Aggregate 547
- LTV Ratios and Housing Price Increases from 2000 to 2007 554

# Preface

We had two main goals in writing this book:

- To make close contact with current macroeconomic events. What makes macroeconomics exciting is the light it sheds on what is happening around the world, from the major economic crisis which has engulfed the world since 2008, to the budget deficits of the United States, to the problems of the Euro area, to high growth in China. These events—and many more—are described in the book, not in footnotes, but in the text or in detailed boxes. Each box shows how you can use what you have learned to get an understanding of these events. Our belief is that these boxes not only convey the “life” of macroeconomics, but also reinforce the lessons from the models, making them more concrete and easier to grasp.
- To provide an integrated view of macroeconomics. The book is built on one underlying model, a model that draws the implications of equilibrium conditions in three sets of markets: the goods market, the financial markets, and the labor market. Depending on the issue at hand, the parts of the model relevant to the issue are developed in more detail while the other parts are simplified or lurk in the background. But the underlying model is always the same. This way, you will see macroeconomics as a coherent whole, not a collection of models. And you will be able to make sense not only of past macroeconomic events, but also of those that unfold in the future.

## New to this Edition

- Chapter 1 starts with a history of the crisis, giving a sense of the landscape, and setting up the issues to be dealt with throughout the book.
- A new Chapter 9, which comes after the short- and medium-run architecture have been put in place, focuses specifically on the crisis. It shows how one can use and extend the short-run and medium run analysis to understand the various aspects of the crisis, from

the role of the financial system to the constraints on macroeconomic policy.

- Material on depressions and slumps has been relocated from later chapters to Chapter 9, and the material on very high inflation has been reduced and included in Chapter 23.
- A rewritten Chapter 23, on fiscal policy, focuses on the current debt problems of the United States.
- Chapters 23, 24, and 25 draw the implications of the crisis for the conduct of fiscal and monetary policy in particular, and for macroeconomics in general.
- Many new Focus boxes have been introduced and look at various aspects of the crisis, among them the following: “The Lehman Bankruptcy, Fears of Another Great Depression, and Shifts in the Consumption Function” in Chapter 3; “Bank Runs, Deposit Insurance, and Wholesale Funding” in Chapter 4; “The Liquidity Trap, Quantitative Easing, and the Role of Expectations” in Chapter 17; “The G20 and the 2009 Fiscal Stimulus” in Chapter 19; “How Countries Decreased Their Debt Ratios after World War II” in Chapter 23; and “LTV Ratios and Housing Price Increases from 2000 to 2007 in Chapter 24.
- Figures and tables have been updated using the latest data available.

## Organization

The book is organized around two central parts: A core, and a set of two major extensions. An introduction precedes the core. The two extensions are followed by a review of the role of policy. The book ends with an epilogue. A flowchart on the front endpaper makes it easy to see how the chapters are organized, and fit within the book’s overall structure.

- Chapters 1 and 2 introduce the basic facts and issues of macroeconomics. Chapter 1 focuses on the crisis, and



then takes a tour of the world, from the United States, to Europe, to China. Some instructors will prefer to cover Chapter 1 later, perhaps after Chapter 2, which introduces basic concepts, articulates the notions of short run, medium run, and long run, and gives the reader a quick tour of the book.

While Chapter 2 gives the basics of national income accounting, we have put a detailed treatment of national income accounts to Appendix 1 at the end of the book. This decreases the burden on the beginning reader, and allows for a more thorough treatment in the appendix.

- Chapters 3 through 13 constitute the **core**. Chapters 3 through 5 focus on the **short run**. These three chapters characterize equilibrium in the goods market and in the financial markets, and they derive the basic model used to study short-run movements in output, the *IS-LM* model.

Chapters 6 through 8 focus on the **medium run**. Chapter 6 focuses on equilibrium in the labor market and introduces the notion of the natural rate of unemployment. Chapters 7 and 8 develop a model based on aggregate demand and aggregate supply and show how that model can be used to understand movements in activity and movements in inflation, both in the short and in the medium run.

The current crisis is a sufficiently important and complex event that it deserves its own chapter. Building on and extending Chapters 6 to 8, Chapter 9 focuses on the origins of the crisis, the role of the financial system, and the constraints facing fiscal and monetary policy, such as the liquidity trap and the high level of public debt.

Chapters 10 through 13 focus on the **long run**. Chapter 10 describes the facts, showing the evolution of output across countries and over long periods of time. Chapters 11 and 12 develop a model of growth and describe how capital accumulation and technological progress determine growth. Chapter 13 focuses on the effects of technological progress not only in the long run, but also in the short run and in the medium run. This topic is typically not covered in textbooks but is important. And the chapter shows how one can integrate the short run, the medium run, and the long run—a clear example of the payoff to an integrated approach to macroeconomics.

- Chapters 14 through 21 cover the two major **extensions**.

Chapters 14 through 17 focus on the role of **expectations** in the short run and in the medium run.

Expectations play a major role in most economic decisions, and, by implication, play a major role in the determination of output.

Chapters 18 through 21 focus on the implications of **openness** of modern economies. Chapter 21 focuses on the implications of different exchange rate regimes, from flexible exchange rates, to fixed exchange rates, currency boards, and dollarization.

- Chapters 22 through 24 return to macroeconomic **policy**. Although most of the first 41 chapters constantly discuss macroeconomic policy in one form or another, the purpose of Chapters 22 through 24 is to tie the threads together. Chapter 22 looks at the role and the limits of macroeconomic policy in general. Chapters 23 and 24 review monetary policy and fiscal policy. Some instructors may want to use parts of these chapters earlier. For example, it is easy to move forward the discussion of the government budget constraint in Chapter 23 or the discussion of inflation targeting in Chapter 24.
- Chapter 25 serves as an **epilogue**; it puts macroeconomics in historical perspective by showing the evolution of macroeconomics in the last 90 years, discussing current directions of research, and the lessons of the crisis for macroeconomics.

## Changes from the Fifth to the Sixth Edition

The structure of the sixth edition, namely the organization around a core and two extensions, is fundamentally the same as that of the fifth edition. This edition is, however, dominated in many ways by the crisis, and the many issues it raises. Thus, in addition to a first discussion of the crisis in Chapter 1, and numerous boxes and discussions throughout the book, we have added a new chapter, Chapter 9, specifically devoted to the crisis.

At the same time, we have removed the two chapters on pathologies in the fifth edition. The reason is simple, and in some ways, ironic. While we thought that it was important for macroeconomic students to know about such events as the Great Depression, or the long slump in Japan, we did not expect the world to be confronted with many of the same issues any time soon. While far from being as bad as the Great Depression, the crisis raises many of the same issues as the Great Depression did. Thus, much of the material covered in the chapters on pathologies in the fifth edition has been moved to the core and to the two extensions.

We have also removed Chapter 9 of the fifth edition, which developed a framework to think about the relation between growth, unemployment, and inflation. This was in response to teachers who found the framework too difficult for students to follow. Again, some of the material in that chapter has been kept and integrated elsewhere, in particular in Chapter 8.

## Alternative Course Outlines

Within the book's broad organization, there is plenty of opportunity for alternative course organizations. We have made the chapters shorter than is standard in textbooks, and, in our experience, most chapters can be covered in an hour and a half. A few (Chapters 5 and 7 for example) might require two lectures to sink in.

### ■ Short courses. (15 lectures or less)

A short course can be organized around the two introductory chapters and the core (Chapter 13 can be excluded at no cost in continuity). Informal presentations of one or two of the extensions, based, for example, on Chapter 17 for expectations (which can be taught as a stand alone), and on Chapter 18 for the open economy, can then follow, for a total of 14 lectures.

A short course might leave out the study of growth (the long run). In this case, the course can be organized around the introductory chapters and Chapters 3 through 9 in the core; this gives a total of 9 lectures, leaving enough time to cover, for example, Chapter 17 on expectations, Chapters 18 through 20 on the open economy, for a total of 13 lectures.

### ■ Longer courses (20 to 25 lectures)

A full semester course gives more than enough time to cover the core, plus one or both of the two extensions, and the review of policy.

The extensions assume knowledge of the core, but are otherwise mostly self contained. Given the choice, the order in which they are best taught is probably the order in which they are presented in the book. Having studied the the role of expectations first helps students to understand the interest parity condition, and the nature of exchange rate crises.

## Features

We have made sure never to present a theoretical result without relating it to the real world. In addition to

discussions of facts in the text itself, we have written a large number of **Focus** boxes, which discuss particular macroeconomic events or facts, from the United States or from around the world.

We have tried to re-create some of the student-teacher interactions that take place in the classroom by the use of **margin notes**, which run parallel to the text. The margin notes create a dialogue with the reader and, in so doing, smooth the more difficult passages and give a deeper understanding of the concepts and the results derived along the way.

For students who want to explore macroeconomics further, we have introduced the following two features:

- **Short appendixes** to some chapters, which expand on points made within the chapter.
- A **Further Readings** section at the end of most chapters, indicating where to find more information, including a number of key Internet addresses.

Each chapter ends with three ways of making sure that the material in the chapter has been digested:

- A **summary** of the chapter's main points.
- A list of **key terms**.
- A series of **end-of-chapter exercises**. "Quick Check" exercises are easy. "Dig Deeper" exercises are a bit harder, and "Explore Further" typically require either access to the Internet or the use of a spreadsheet program.

A list of symbols on the back endpapers makes it easy to recall the meaning of the symbols used in the text.

## The Teaching and Learning Package

The book comes with a number of supplements to help both students and instructors.

### For Instructors:

- **Instructor's Manual.** The Instructor's manual discusses pedagogical choices, alternative ways of presenting the material, and ways of reinforcing students' understanding. Chapters in the manual include six main sections: objectives, in the form of a motivating question; why the answer matters; key tools, concepts, and assumptions; summary; and pedagogy. Many chapters also include sections focusing on extensions and observations. The Instructor's Manual also includes the answers to all end-of-chapter questions and exercises.

- **Test Item File.** The test bank is completely revised with additional new multiple-choice questions for each chapter.
- **TestGen**—The Test Item File is designed for use with the computerized TestGen package, which allows instructors to customize, save, and generate classroom tests. The test program permits instructors to edit, add, or delete questions from the test bank; edit existing graphics and create new graphics; 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 File can be downloaded via [www.pearsonglobaleditions.com/blanchard](http://www.pearsonglobaleditions.com/blanchard).
- **Digital Image Library**—We have digitized the complete set of figures, graphs, and charts from the book. These files can be downloaded via [www.pearsonglobaleditions.com/blanchard](http://www.pearsonglobaleditions.com/blanchard).
- **PowerPoint Lecture Slides**—These electronic slides provide section titles, tables, equations, and graphs for each chapter and can be downloaded via [www.pearsonglobaleditions.com/blanchard](http://www.pearsonglobaleditions.com/blanchard).

## MyEconLab<sup>®</sup>

MyEconLab delivers rich online content and innovative learning tools in your classroom. Instructors who use MyEconLab gain access to powerful communication and assessment tools, and their students receive access to the additional learning resources described below.

- **Students and MyEconLab**—This online homework and tutorial system puts students in control of their own learning through a suite of study and practice tools correlated with the online, interactive version of the textbook and other media tools. Within MyEconLab’s structured environment, students practice what they learn, test their understanding, and then pursue a study plan that MyEconLab generates for them based on their performance on practice tests.
- **Instructors and MyEconLab**—MyEconLab provides flexible tools that allow instructors to easily and effectively customize online course materials to suit their needs. Instructors can create and assign tests, quizzes, or homework assignments. MyEconLab saves time by automatically grading all questions and tracking results in an online gradebook. MyEconLab

can even grade assignments that require students to draw a graph.

- **Real-Time Data**—The real-time data problems are new. These problems load the latest available data from FRED, a comprehensive up-to-date data set maintained by the Federal Reserve Bank of St. Louis. The questions are graded with feedback in exactly the same way as those based on static data.

After registering for MyEconLab, instructors have access to downloadable supplements such as an Instructor’s Manual, PowerPoint lecture notes, and a Test Item File. The Test Item File can also be used with MyEconLab, giving instructors ample material from which they can create assignments.

MyEconLab is delivered in Pearson’s MyLab Mastering system, which offers advanced communication and customization features. Instructors can upload course documents and assignments and use advanced course management features. For more information about MyEconLab or to request an instructor access code, visit [www.myeconlab.com](http://www.myeconlab.com).

## Acknowledgments and Thanks

This book owes much to many. We thank Adam Ashcraft, Peter Berger, Peter Benczur, Efe Cakarel, Harry Gakidis, David Hwang, Kevin Nazemi, David Reichsfeld, Jianlong Tan, Stacy Tevlin, Gaurav Tewari, Corissa Thompson, John Simon, and Jeromin Zettelmeyer for their research assistance over the years. We thank the generations of students in 14.02 at MIT who have freely shared their reactions to the book over the years.

We have benefited from comments from many colleagues and friends. Among them are John Abell, Daron Acemoglu, Tobias Adrian, Chuangxin An, Roland Benabou, Samuel Bentolila, and Juan Jimeno (who have adapted the book for a Spanish edition); Francois Blanchard, Roger Brinner, Ricardo Caballero, Wendy Carlin, Martina Copelman, Henry Chappell, Ludwig Chincarini, and Daniel Cohen (who has adapted the book for a French edition); Larry Christiano, Bud Collier, Andres Conesa, Peter Diamond, Martin Eichenbaum, Gary Fethke, David Findlay, Francesco Giavazzi, and Alessia Amighini (who have adapted the book for an Italian edition); Andrew Healy, Steinar Holden, and Gerhard Illing (who has adapted the book for a German edition); Yannis Ioannides, Angelo Melino (who has adapted the book for a Canadian edition); P. N. Junankar, Sam Keeley, Bernd Kuemmel, Paul

Krugman, Antoine Magnier, Peter Montiel, Bill Nordhaus, Tom Michl, Dick Oppermann, Athanasios Orphanides, and Daniel Pirez Enri (who has adapted the book for a Latin American edition); Michael Plouffe, Zoran Popovic, Jim Poterba, and Jeff Sheen (who has adapted the book for an Australasian edition); Ronald Schettkat, and Watanabe Shinichi (who has adapted the book for a Japanese edition); Francesco Sisci, Brian Simboli, Changyong Rhee, Julio Rotemberg, Robert Solow, Andre Watteyne, and Michael Woodford.

We have benefited from comments from many readers, reviewers, and class testers. Among them:

- John Abell, Randolph, Macon Woman's College
- Carol Adams, Cabrillo College
- Gilad Aharonovitz, School of Economic Sciences
- Terence Alexander, Iowa State University
- Roger Aliaga-Diaz, Drexel University
- Robert Archibald, College of William & Mary
- John Baffoe-Bonnie, La Salle University
- Fatolla Bagheri, University of North Dakota
- Stephen Baker, Capital University
- Erol Balkan, Hamilton College
- Jennifer Ball, Washburn University
- Richard Ballman, Augustana College
- King Banaian, St. Cloud State University
- Charles Bean, London School of Economics and Political Science
- Scott Benson, Idaho State University
- Gerald Bialka, University of North Florida
- Robert Blecker, American University
- Scott Bloom, North Dakota State University
- Pim Borren, University of Canterbury, New Zealand
- LaTanya Brown-Robertson, Bowie State University
- James Butkiewicz, University of Delaware
- Colleen Callahan, American University
- Bruce Carpenter, Mansfield University
- Kyongwook Choi, Ohio University College
- Michael Cook, William Jewell College
- Nicole Crain, Lafayette College
- Rosemary Cunningham, Agnes Scott College
- Evren Damar, Pacific Lutheran University
- Dale DeBoer, University of Colorado at Colorado Springs
- Adrian de Leon-Arias, Universidad de Guadalajara
- Brad DeLong, UC Berkeley
- Firat Demir, University of Oklahoma
- Wouter Denhaan, UC San Diego
- John Dodge, King College
- F. Trenergy Dolbear, Brandeis University
- Patrick Dolenc, Keene State College
- Brian Donhauser, University of Washington
- Michael Donihue, Colby College
- Vincent Dropsy, California State University
- Justin Dubas, St. Norbert College
- Amitava Dutt, University of Notre Dame
- John Edgren, Eastern Michigan University
- Eric Elder, Northwestern College
- Sharon J. Erenburg, Eastern Michigan University
- Antonina Espiritu, Hawaii Pacific University
- J. Peter Federer, Clark University
- Rendigs Fels, Vanderbilt University
- John Flanders, Central Methodist University
- Marc Fox, Brooklyn College
- Yee-Tien (Ted) Fu, Stanford University
- Yee-Tien Fu, National Cheng-Chi University, Taiwan
- Scott Fullwiler, Wartburg College
- Julie Gallaway, University of Missouri-Rolla
- Bodhi Ganguli, Rutgers, The State University of NJ
- Fabio Ghironi, Boston College
- Alberto Gomez-Rivas, University of Houston-Downtown
- Fidel Gonzalez, Sam Houston State University
- Harvey Gram, Queen College, City University of New York

- Randy Grant, Linfield College
- Alan Gummerson, Florida International University
- Reza Hamzaee, Missouri Western State College
- Michael Hannan, Edinboro University
- Kenneth Harrison, Richard Stockton College
- Mark Hayford, Loyola University
- Thomas Havrilesky, Duke University
- George Heitmann, Muhlenberg College
- Ana Maria Herrera, Michigan State University
- Peter Hess, Davidson College
- Eric Hilt, Wellesley College
- John Holland, Monmouth College
- Mark Hopkins, Gettysburg College
- Takeo Hoshi, University of California, San Diego
- Ralph Husby, University of Illinois, Urbana–Champaign
- Yannis Ioannides, Tufts University
- Aaron Jackson, Bentley College
- Bonnie Johnson, California Lutheran University
- Louis Johnston, College of St. Benedict
- Barry Jones, SUNY Binghamton
- Fred Joutz, George Washington University
- Cem Karayalcin, Florida International University
- Okan Kavuncu, University of California
- Miles Kimball, University of Michigan
- Paul King, Denison University
- Michael Klein, Tufts University
- Mark Klinedinst, University of Southern Mississippi
- Shawn Knabb, Western Washington University
- Todd Knoop, Cornell College
- Paul Koch, Olivet Nazarene University
- Ng Beoy Kui, Nanyang Technical University, Singapore
- Leonard Lardaro, University of Rhode Island
- James Leady, University of Notre Dame
- Charles Leathers, University of Alabama
- Hsien-Feng Lee, National Taiwan University
- Jim Lee, Texas A&M University–Corpus Christi
- John Levendis, Loyola University New Orleans
- Frank Lichtenberg, Columbia University
- Mark Lieberman, Princeton University
- Shu Lin, Florida Atlantic University
- Maria Luengo-Prado, Northeastern University
- Mathias Lutz, University of Sussex
- Bernard Malamud, University of Nevada, Las Vegas
- Ken McCormick, University of Northern Iowa
- William McLean, Oklahoma State University
- B. Starr McMullen, Oregon State University
- Mikhail Melnik, Niagara University
- O. Mikhail, University of Central Florida
- Fabio Milani, University of California, Irvine
- Rose Milbourne, University of New South Wales
- Roger Morefield, University of Saint Thomas
- Shahriar Mostashari, Campbell University
- Eshragh Motahar, Union College
- Nick Noble, Miami University
- Ilan Noy, University of Hawaii
- John Olson, College of St. Benedict
- Brian O’Roark, Robert Morris University
- Jack Osman, San Francisco State University
- Emiliano Pagnotta, Northwestern University
- Biru Paksha Paul, SUNY Cortland
- Andrew Parkes, Mesa State College
- Allen Parkman, University of Mexico
- Jim Peach, New Mexico State University
- Gavin Peebles, National University of Singapore
- Michael Quinn, Bentley College
- Charles Revier, Colorado State University
- Jack Richards, Portland State University
- Raymond Ring, University of South Dakota



- Monica Robayo, University of North Florida
- Malcolm Robinson, Thomas Moore College
- Brian Rosario, University of California, Davis
- Kehar Sangha, Old Dominion University
- Ahmad Saranjam, Bridgewater State College
- Carol Scotese, Virginia Commonwealth University
- John Seater, North Carolina State University
- Peter Sephton, University of New Brunswick
- Ruth Shen, San Francisco State University
- Kwanho Shin, University of Kansas
- Tara Sinclair, The George Washington University
- Aaron Smallwood, University of Texas, Arlington
- David Sollars, Auburn University
- Liliana Stern, Auburn University
- Edward Stuart, Northeastern Illinois University
- Abdulhanid Sukaar, Cameron University
- Peter Summers, Texas Tech University
- Mark Thomas, University of Maryland Baltimore County
- Brian Trinque, The University of Texas at Austin
- Marie Truesdell, Marian College
- David Tufte, Southern Utah University
- Abdul Turay, Radford University
- Frederick Tyler, Fordham University
- Pinar Uysal, Boston College
- Evert Van Der Heide, Calvin College
- Kristin Van Gaasbeck, California State University, Sacramento
- Lee Van Scyoc, University of Wisconsin, Oshkosh
- Paul Wachtel, New York University Stern Business School
- Susheng Wang, Hong Kong University
- Donald Westerfield, Webster University
- Christopher Westley, Jacksonville State University
- David Wharton, Washington College
- Jonathan Willner, Oklahoma City University
- Mark Wohar, University of Nebraska, Omaha
- Steven Wood, University of California, Berkeley
- Michael Woodford, Princeton University
- Ip Wing Yu, University of Hong Kong
- Chi-Wa Yuen, Hong Kong University of Science and Technology
- Christian Zimmermann, University of Connecticut
- Liping Zheng, Drake University

They have helped us beyond the call of duty, and each has made a difference to the book.

We have many people to thank at Pearson/Prentice Hall: David Alexander, executive editor for Economics; Lindsey Sloan, editorial project manager; Emily Brodeur, editorial assistant; Nancy Freihofer, production editor; and Lori DeShazo, the marketing manager for Economics, and Lauren Foster at PreMediaGlobal.

### Thanks from Olivier

I want to single out Steve Rigolosi, the editor for the first edition; Michael Elia, the editor to the second and third editions; Amy Ray, the editor of the fourth edition; and Chris Rogers, the editor of the fifth edition. Steve forced me to clarify. Michael forced me to simplify. Amy forced me to simplify further. Together, they have made all the difference to the process and to the book. I thank all of them deeply.

At MIT, I continue to thank John Arditì for his absolute reliability.

I have also benefited from often-stimulating suggestions from my daughters, Serena, Giulia and Marie: I did not, however, follow all of them. At home, I continue to thank Noelle for preserving my sanity.

Olivier Blanchard  
Cambridge, MIT  
June 2012

### Thanks from David

I have to thank Olivier for encouraging me to write the Canadian editions of this book over the past decade. I enjoyed that work and I enjoyed teaching out of the Canadian edition. I appreciated the opportunity to participate in the sixth American edition.

I would like to thank the many students in intermediate macroeconomics at Wilfrid Laurier University whom I have taught over the years. I was blessed with four excellent instructors in macroeconomics at the graduate level:



David Laidler, Michael Parkin, Benjamin Friedman and Olivier Blanchard. These professors taught macroeconomics in a way that made it engaging and exciting.

Alastair Robertson, who was a superb colleague for many years in teaching intermediate macroeconomics at WLU, taught me a lot about teaching.

Finally I would like to thank my wife Susan. I benefit so much from her love and support.

David Johnson,  
Wilfred Laurier University  
Waterloo, Ontario,  
June 2012

Pearson gratefully acknowledges and thanks the following people for their work on the Global Edition:

**Contributors**

André Watteyne, Katholieke Universiteit Leuven Kulak  
Merike Kukk, Tallinn University of Technology  
Etienne Farvaque, Université du Havre

**Reviewers**

Zou Lin, Lingnan University  
Wang Yong, Hong Kong University of Science and Technology

# Introduction

The first two chapters of this book introduce you to the issues and the approach of macroeconomics.

## Chapter 1

---

Chapter 1 takes you on a macroeconomic tour of the world. It starts with a look at the economic crisis that has dominated the world economy since the late 2000s. The tour stops at each of the world's major economic powers: the United States, the Euro area, and China.

## Chapter 2

---

Chapter 2 takes you on a tour of the book. It defines the three central variables of macroeconomics: output, unemployment, and inflation. It then introduces the three time periods around which the book is organized: the short run, the medium run, and the long run.



# A Tour of the World

What is macroeconomics? The best way to answer is not to give you a formal definition, but rather to take you on an economic tour of the world, to describe both the main economic evolutions and the issues that keep macroeconomists and macroeconomic policy makers awake at night.

The truth is, at the time of this writing (the fall of 2011), policy makers are not sleeping well and have not slept well in a long time. In 2008, the world economy entered a major macroeconomic crisis, the largest one since the Great Depression. World output growth, which typically runs at 4 to 5% a year, was actually negative in 2009. Since then, growth has turned positive, and the world economy is slowly recovering. But the crisis has left a number of scars, and many worries remain.

Our goal in this chapter is to give you a sense of these events and of some of the macroeconomic issues confronting different countries today. There is no way we can take you on a full tour, so, after an overview of the crisis, we focus on the three main economic powers of the world: the United States, the Euro area, and China.

**Section 1-1 looks at the crisis.**

**Section 1-2 looks at the United States.**

**Section 1-3 looks at the Euro area.**

**Section 1-4 looks at China.**

**Section 1-5 concludes and looks ahead.**

Read this chapter as you would read an article in a newspaper. Do not worry about the exact meaning of the words or about understanding all the arguments in detail: The words will be defined, and the arguments will be developed in later chapters. Regard this chapter as background, intended to introduce you to the issues of macroeconomics. If you enjoy reading this chapter, you will probably enjoy reading this book. Indeed, once you have read the book, come back to this chapter; see where you stand on the issues, and judge how much progress you have made in your study of macroeconomics. ●

## 1-1 The Crisis

Table 1-1 gives you output growth rates for the world economy, for advanced economies and for other countries separately, since 2000. As you can see, from 2000 to 2007 the world economy had a sustained expansion. Annual average world output growth was 3.2%, with advanced economies (the group of 30 or so richest countries in the world) growing at 2.6% per year, and emerging and developing economies (the other 150 or so other countries in the world) growing at an even faster 6.5% per year.

In 2007 however, signs that the expansion might be coming to an end started to appear. U.S. housing prices, which had doubled since 2000, started declining. In mid-2007, as we wrote the previous edition of this book, we described how economists were divided as to whether this might lead to a recession—a decrease in output. Optimists believed that, while lower housing prices might lead to lower housing construction and to lower spending by consumers, the Fed (the short name for the U.S. central bank, formally known as the *Federal Reserve Board*) could lower interest rates to stimulate demand and avoid a recession. Pessimists believed that the decrease in interest rates might not be enough to sustain demand, and that the United States may go through a short recession.

Even the pessimists turned out not to be pessimistic enough. As housing prices continued to decline, it became clear that many of the mortgage loans that had been given out during the earlier expansion were of poor quality. Many of the borrowers had taken too large a loan and were increasingly unable to make mortgage payments. And, with declining housing prices, the value of their mortgage often exceeded the price of the house, giving them an incentive to default. This was not the worst of it: The banks that had issued the mortgages had often bundled and packaged them together into new securities and then sold these securities to other banks and investors. These securities had often been repackaged into yet new securities, and so on. The result is that many banks, instead of holding the mortgages themselves, held these securities, which were so complex that their value was nearly impossible to assess.

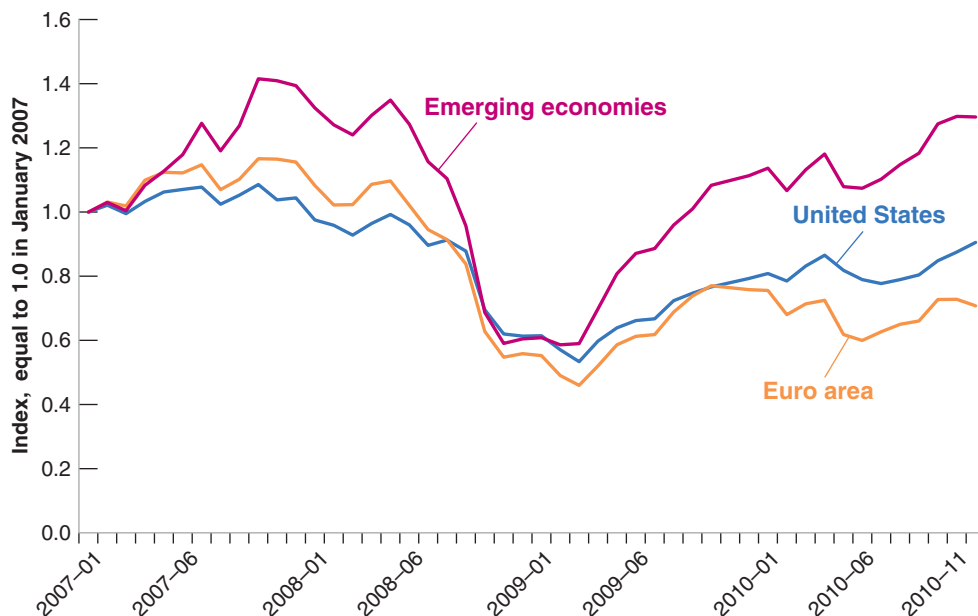
This complexity and opaqueness turned a housing price decline into a major financial crisis, a development that very few economists had anticipated. Not knowing the quality of the assets that other banks had on their balance sheets, banks became very reluctant to lend to each other for fear that the bank to which they lent might not be able to repay. Unable to borrow, and with assets of uncertain value, many banks found themselves in trouble. On September 15, 2008, a major bank, Lehman Brothers, went bankrupt. The effects were dramatic. Because the links between Lehman and other banks were so opaque, many other banks looked appeared

“Banks” here actually means “banks and other financial institutions.” But this is too long to write and we do not want to go into these complications in Chapter 1.

Table 1-1 World Output Growth since 2000						
Percent	2000–2007 (average)	2008	2009	2010	2011*	2012*
<b>World</b>	<b>3.2</b>	<b>1.5</b>	<b>–2.3</b>	<b>4.0</b>	<b>3.0</b>	<b>3.2</b>
<b>Advanced economies</b>	<b>2.6</b>	<b>0.1</b>	<b>–3.7</b>	<b>3.0</b>	<b>1.6</b>	<b>1.9</b>
<b>Emerging and developing economies</b>	<b>6.5</b>	<b>6.0</b>	<b>2.8</b>	<b>7.3</b>	<b>6.4</b>	<b>6.0</b>

Output growth: Annual rate of growth of gross domestic product (GDP). \*The numbers for 2011 and 2012 are forecasts, as of the fall of 2011.

Source: *World Economic Outlook* database, September 2011



**Figure 1-1**  
**Stock prices in the United States, the Euro area, and emerging economies, 2007-2010**

Source: Haver Analytics USA (S111ACD), Eurogroup (S023ACD), all emerging markets (S200ACD), all monthly averages)

at risk of going bankrupt as well. For a few weeks, it looked as if the whole financial system might collapse.

This financial crisis quickly turned into a major economic crisis. Stock prices collapsed. Figure 1-1 plots the evolution of three stock price indexes, for the United States, for the Euro area, and for emerging economies, from the beginning of 2007 on. The indexes are set equal to 1 in January 2007. Note how, by the end of 2008, stock prices had lost half or more of their value from their previous peak. Note also that, despite the fact that the crisis originated in the United States, European and emerging market stock prices decreased by as much as their U.S. counterparts; we shall return to this later.

Hit by the decrease in housing prices and the collapse in stock prices, and worried that this might be the beginning of another Great Depression, people sharply cut their consumption. Worried about sales and uncertain about the future, firms sharply cut back investment. With housing prices dropping and many vacant homes on the market, very few new homes were built. Despite strong actions by the Fed, which cut interest rates all the way down to zero, and by the U.S. government, which cut taxes and increased spending, demand decreased, and so did output. In the third quarter of 2008, U.S. output growth turned negative and remained so in 2009.

One might have hoped that the crisis would remain largely contained in the United States. As Table 1-1 and Figure 1-1 both show, this was not the case. The U.S. crisis quickly became a world crisis. Other countries were affected through two channels. The first channel was trade. As U.S. consumers and firms cut spending, part of the decrease fell on imports of foreign goods. Looking at it from the viewpoint of countries exporting to the United States, their exports went down, and so, in turn, did their output. The second channel was financial. U.S. banks, badly needing funds in the United States, repatriated funds from other countries, creating problems for banks in those countries as well. The result was not just a U.S. but a world recession. By 2009, average growth in advanced economies was  $-3.7\%$ , by far the lowest annual growth rate since the Great Depression. Growth in emerging and developing economies remained positive but was nearly 4 percentage points lower than the 2000-2007 average.

Since then, thanks to strong monetary and fiscal policies and to the slow repair of the financial system, most economies have turned around. As you can see from Table 1-1,

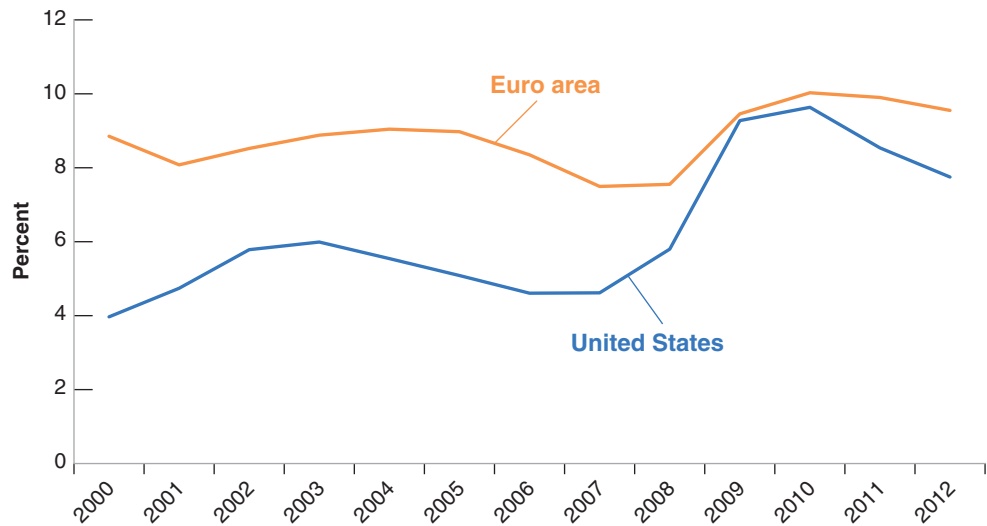
The Great Depression saw four years of negative output growth from 1929 to 1932. The unemployment rate peaked at 24.9%.



**Figure 1-2**

***Unemployment rates in the United States and the Euro area, 2000-2012***

Source: *World Economic Outlook* database, September 2011



growth in both advanced countries and in emerging and developing economies turned positive in 2010, and the forecasts are for positive but low growth for 2011 and 2012.

Emerging and developing economies have largely recovered. Their exports have increased and foreign funds have returned. Indeed, some of these countries are starting to see increasing inflation, which is an indication that they may be overheating.

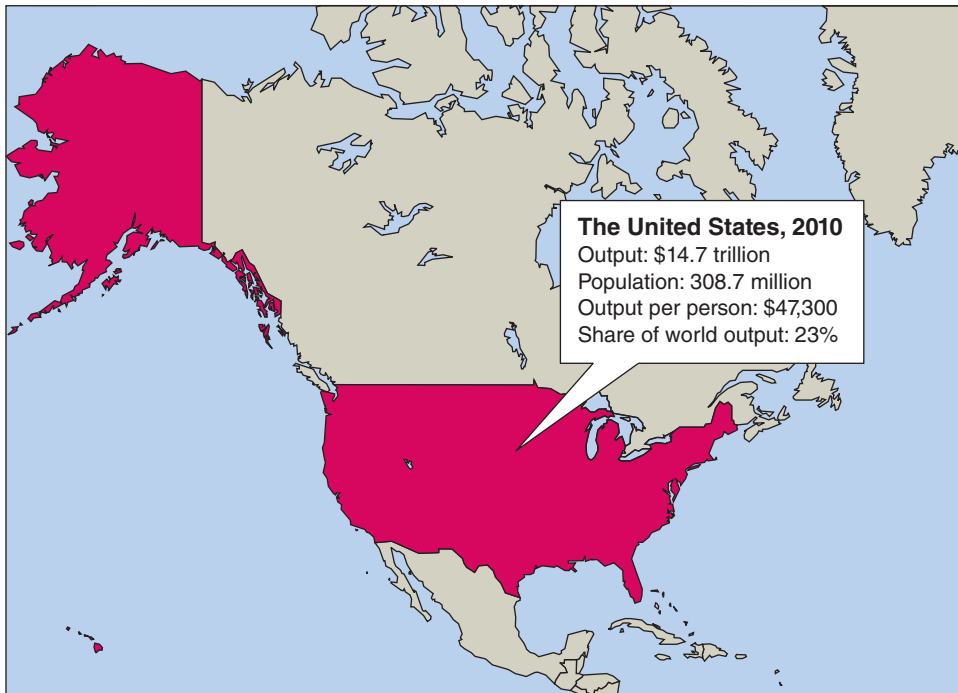
In advanced countries, however, many problems remain. As shown in Figure 1-2, both in the United States and the Euro area, unemployment increased a lot in the crisis and remains very high. The increase in the unemployment rate in the United States is particularly striking, increasing from 4.6% in 2007 to 9.6% in 2010, with forecasts implying only a slow decrease in 2011 and 2012. What is behind this persistently high unemployment is low output growth, and behind this low growth are many factors: Housing prices are still declining, and housing investment remains very low. Banks are still not in great shape, and bank lending is still tight. Consumers who have seen the value of their housing and their financial wealth fall are cutting consumption. And the crisis has led to serious fiscal problems. As output declined during the crisis, so did government revenues, leading to a large increase in budget deficits. Deficits have led in turn to a large increase in public debt over time. Countries must now reduce their deficits, and this is proving difficult. There are serious worries that, in some European countries, governments may not be able to adjust and may default on their debt. This, in turn, makes economists and policy makers worry that we may see yet another financial and economic crisis in the near future.

In short, while the worst of the crisis is probably over, it has left many problems in its wake, which will keep macroeconomists and policy makers busy for many years to come. We shall return to these issues in more detail at many points in the book. In the rest of the chapter, we take a closer look at the three main economic powers of the world: the United States, the Euro area, and China.

## 1-2 The United States

When economists first look at a country, the first two questions they ask are: How big is the country, from an economic point of view? And what is its standard of living? To answer the first, they look at output—the level of production of the country as a whole. To answer the second, they look at output per person. The

**Figure 1-3**  
*The United States*



answers, for the United States, are given in Figure 1-3: The United States is very large, with an output of \$14.7 trillion in 2010, accounting for 23% of world output. This makes it the largest country in the world, in economic terms. And the standard of living in the United States is very high: Output per person is \$47,300. It is not the country with the highest output per person in the world, but it is close to the top.

When economists want to dig deeper and look at the state of health of the country, they look at three basic variables:

- *Output growth*—the rate of change of output
- The *unemployment rate*—the proportion of workers in the economy who are not employed and are looking for a job
- The *inflation rate*—the rate at which the average price of the goods in the economy is increasing over time

Numbers for the three variables for the U.S. economy are given in Table 1-2. To put current numbers in perspective, the first column gives the average value of the rate of growth of output, the unemployment rate, and the inflation rate in the United States for the period 1980 to 1999. The next columns look at the more recent years, giving you first average numbers for the period 2000 to 2007, and then numbers for each year from 2008 to 2012. The numbers for 2011 and 2012 are forecasts as of the fall of 2011.

By looking at the first two columns, you can see why, in 2007, just before the crisis, economists felt good about the U.S. economy. The rate of growth of the economy since 2000 was 2.6%, admittedly a bit lower than the previous 20-year average, but still fairly high for an advanced country. Importantly, the average unemployment rate since 2000 was 5.0%, substantially lower than in the previous 20 years. And inflation was low, 2.8% on average since 2000, again substantially lower than it had been in the past.

Can you guess some of the countries with a higher standard of living than the United States? *Hint:* Think of oil producers and financial centers. For the answers, go to [www.imf.org/external/pubs/ft/weo/2011/01/weodata/weo-selgr.aspx](http://www.imf.org/external/pubs/ft/weo/2011/01/weodata/weo-selgr.aspx) and look for “Gross Domestic Product per capita, in current prices.”

**Table 1-2 Growth, Unemployment, and Inflation in the United States, 1980–2012**

Percent	1980–1999 (average)	2000–2007 (average)	2008	2009	2010	2011	2012
<b>Output growth rate</b>	3.0	2.6	0.0	-3.5	3.0	1.5	1.8
<b>Unemployment rate</b>	6.5	5.0	5.8	9.3	9.6	9.1	9.0
<b>Inflation rate</b>	4.2	2.8	3.8	-0.3	1.7	2.9	1.2

Output growth rate: annual rate of growth of output (GDP). Unemployment rate: average over the year. Inflation rate: annual rate of change of the price level (GDP deflator).

Source: *World Economic Outlook* database, September 2011

Then the crisis came, and you can see it in the numbers from 2008 onward. Output did not grow in 2008 and declined by 3.5% in 2009. Unemployment increased dramatically, to nearly 10%. Inflation declined, being slightly negative in 2009 and then staying positive but low since then. The economy rebounded in 2010, with growth of 3%. Since then, however, growth has decreased again, becoming so weak that unemployment is forecast to remain high for a long time to come. Inflation is forecast to remain low.

Apart from high unemployment, perhaps the most serious macroeconomic problem facing the United States is its very large budget deficit. We now turn to it, and to some of its implications.

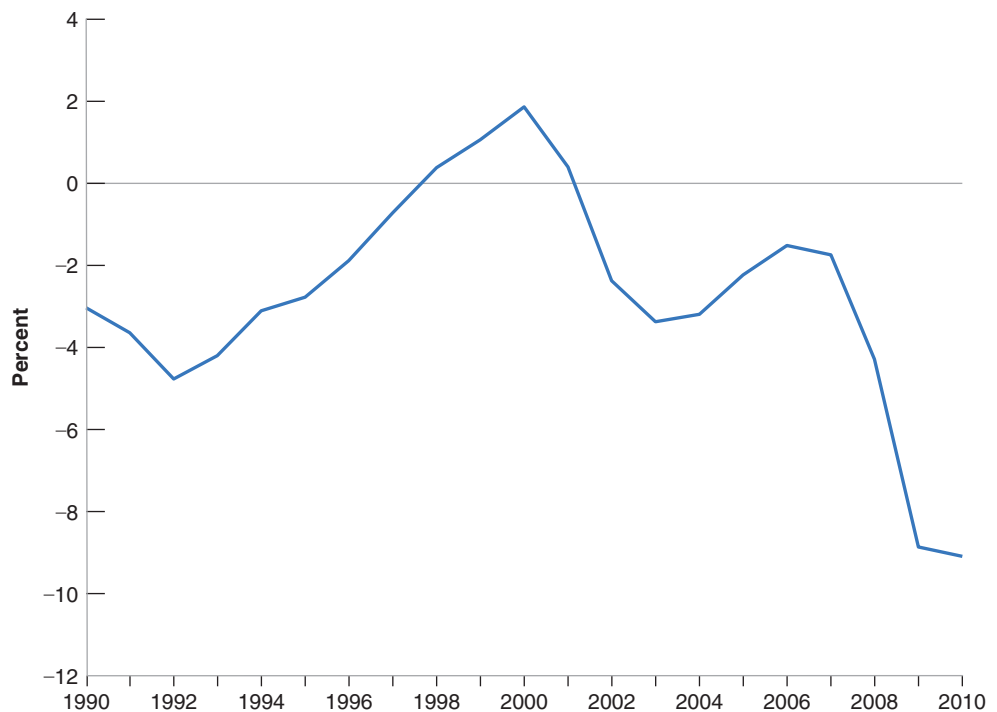
## Should You Worry about the United States Deficit?

Figure 1-4 shows the evolution of the U.S. federal budget surplus (a negative value represents a deficit) since 1990. You can see that after an increase in deficits due to the 1990–1991 recession, the rest of the decade was associated with a steady improvement and by 1998, the budget had actually gone from deficit to surplus. The main reasons for the steady improvement were twofold. First, strong output growth

**Figure 1-4**

### *U.S. Federal Budget surpluses as a percent of GDP since 1990*

Source: Table B-79 Economic Report of the President 2010. Values for 2011 and 2012 are estimates.



for most of the decade led to strong growth of government revenues. Second, rules were devised and implemented to contain government spending, from the use of spending caps on some categories of spending to the requirement that any new spending program be associated with an equal increase in revenues. Once budget surpluses appeared, however, Congress became increasingly willing to break its own rules and allow for more spending. At the same time, the Bush administration convinced Congress to cut taxes, with the stated intent of spurring growth. The result was a return to budget deficits. On the eve of the crisis, in 2007, the deficit was equal to 1.7% of GDP, not very large but still a deficit. The crisis had a dramatic effect on the deficit, which increased to 9% of GDP in 2010 and appears likely to be even higher in 2011. The factors behind the increase are straightforward. Lower output has led to lower government revenues. Federal revenues, which were equal to 18.9% of GDP in 2007, had declined to 16.2% of GDP in 2010. Federal spending, which was equal to 20.6% in 2007, had increased to 25.3% in 2010. This reflects not only an increase in transfers, such as higher unemployment benefits, but a more general increase in spending across the board as the government tried to counteract the decrease in private demand through an increase in public spending.

You may conclude that, as output recovers further and unemployment decreases, revenues will increase and some of the spending will be phased out. This is indeed likely to be the case, and forecasts are for a reduction in the deficit to around 5% by the middle of the decade. A 5% deficit, however, is still too a large number and creates a steadily increasing debt. Budget forecasts for the more distant future are even gloomier. The U.S. population is getting older, and Social Security benefits will increase substantially in the future. And, even more importantly, health expenditures are growing very fast and, with them, spending in government programs such as Medicare and Medicaid. So there is wide agreement that the budget deficit must be reduced further. But there is disagreement as to both when and how.

- Some economists argue that deficit reduction should start now and proceed rapidly. They argue that the credibility of the U.S. government is at stake, and that only a strong reduction will convince people that the government will do what is needed to stabilize the debt. Other economists argue, however, that too fast a reduction in the deficit would be dangerous. A reduction in the deficit can be achieved by a combination of an increase in taxes and a decrease in spending. Either one, they argue, will decrease demand and slow down growth at a time when unemployment is still very high. Their recommendation is thus to reduce the deficit, but to do it slowly and steadily.
- Even if there is agreement on the need for deficit reduction, there is much less agreement on how it should be achieved. The disagreement is along political lines. Republicans believe that it should be done primarily through decreases in spending. They suggest the elimination of a number of government programs and caps on such programs as Medicare. Democrats believe that most existing programs are justified, and they are more inclined to want to do the adjustment through an increase in taxes. The worry, at this juncture, is that these positions are hard to reconcile, and that, as a result, large deficits may continue for a long time to come.

## 1-3 The Euro Area

---

In 1957, six European countries decided to form a common European market—an economic zone where people and goods could move freely. Since then, 21 more countries have joined, bringing the total to 27. This group is now known as the **European Union**, or EU for short.

Until a few years ago, the official name was the *European Community*, or EC. You may still encounter that name.