

SIXTH CANADIAN EDITION

# THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS

FREDERIC S. MISHKIN  
APOSTOLOS SERLETIS

1.39 -4.08 0.0

The background of the cover is a vibrant blue with a grid of white dots. Overlaid on this are several financial charts: a line graph with an upward trend, a candlestick chart, and a bar chart. At the bottom, large, semi-transparent numbers '1.39' and '4.08' are visible. The overall aesthetic is modern and data-driven.

SIXTH CANADIAN EDITION

# THE ECONOMICS OF MONEY, BANKING, AND FINANCIAL MARKETS

FREDERIC S. MISHKIN

Columbia University

APOSTOLOS SERLETIS

University of Calgary

PEARSON

Toronto



Editorial Director: Claudine O'Donnell  
Acquisitions Editor: Megan Farrell  
Marketing Manager: Loula March  
Program Manager: Patricia Ciardullo  
Project Manager: Richard di Santo  
Manager of Content Development: Suzanne Schaan  
Developmental Editor: Rebecca Ryoji  
Production Services: Cenveo® Publisher Services  
Permissions Project Manager: Joanne Tang  
Photo Permissions Research: Lumina  
Text Permissions Research: Lumina  
Art Director: Alex Li  
Interior and Cover Designer: Anthony Leung  
Cover Image: Thep Urai/Shutterstock

Vice-President, Cross Media and Publishing Services: Gary Bennett

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

Original edition published by Pearson Education, Inc., Upper Saddle River, New Jersey, USA. Copyright © 2016 Pearson Education, Inc. This edition is authorized for sale only in Canada.

If you purchased this book outside the United States or Canada, you should be aware that it has been imported without the approval of the publisher or the author.

---

Copyright © 2016 Pearson Canada Inc. All rights reserved. Manufactured in the United States of America. This publication is protected by copyright and permission should be obtained from the publisher prior to any prohibited reproduction, storage in a retrieval system, or transmission in any form or by any means, electronic, mechanical, photocopying, recording, or likewise. To obtain permission(s) to use material from this work, please submit a written request to Pearson Canada Inc., Permissions Department, 26 Prince Andrew Place, Don Mills, Ontario, M3C 2T8, or fax your request to 416-447-3126, or submit a request to Permissions Requests at [www.pearsoncanada.ca](http://www.pearsoncanada.ca).

10 9 8 7 6 5 4 3 2 1 [VOSA]

### Library and Archives Canada Cataloguing in Publication

Mishkin, Frederic S., author

The economics of money, banking and financial markets / Frederic S. Mishkin (Columbia University), Apostolos Serletis (University of Calgary).—Six Canadian edition.

Includes bibliographical references and index.  
ISBN 978-0-13-389738-8 (bound)

1. Finance—Textbooks. 2. Money—Textbooks. 3. Banks and banking—Textbooks. I. Serletis, Apostolos, 1954-, author II. Title.

HG173.M58 2015

332

C2015-906778-2

**PEARSON**

ISBN: 978-0-13-389738-8

*To Aglaia*

# BRIEF CONTENTS

<b>PART 1 INTRODUCTION</b>	<b>1</b>
1 Why Study Money, Banking, and Financial Markets? .....	2
2 An Overview of the Financial System .....	22
3 What Is Money? .....	50
<b>PART 2 FINANCIAL MARKETS</b>	<b>67</b>
4 The Meaning of Interest Rates .....	68
5 The Behavior of Interest Rates .....	89
6 The Risk and Term Structure of Interest Rates .....	120
7 The Stock Market, the Theory of Rational Expectations, and the Efficient Market Hypothesis .....	147
<b>PART 3 FINANCIAL INSTITUTIONS</b>	<b>169</b>
8 An Economic Analysis of Financial Structure .....	170
9 Financial Crises .....	194
10 Economic Analysis of Financial Regulation .....	222
11 Banking Industry: Structure and Competition .....	245
<b>PART 4 THE MANAGEMENT OF FINANCIAL INSTITUTIONS</b>	<b>282</b>
12 Banking and the Management of Financial Institutions .....	283
13 Risk Management with Financial Derivatives .....	312
<b>PART 5 CENTRAL BANKING AND THE CONDUCT OF MONETARY POLICY</b>	<b>341</b>
14 Central Banks and the Bank of Canada .....	342
15 The Money Supply Process .....	365
16 Tools of Monetary Policy .....	390
17 The Conduct of Monetary Policy: Strategy and Tactics .....	430
<b>PART 6 INTERNATIONAL FINANCE AND MONETARY POLICY</b>	<b>459</b>
18 The Foreign Exchange Market .....	460
19 The International Financial System .....	484
<b>PART 7 MONETARY THEORY</b>	<b>512</b>
20 Quantity Theory, Inflation, and the Demand for Money .....	513
21 The <i>IS</i> Curve .....	530
22 The Monetary Policy and Aggregate Demand Curves .....	550
23 Aggregate Demand and Supply Analysis .....	565
24 Monetary Policy Theory .....	607
25 The Role of Expectations in Monetary Policy .....	634
26 Transmission Mechanisms of Monetary Policy .....	653
<b>CHAPTERS ON THE WEB</b>	
1 Financial Crises in Emerging Market Economies	
2 The <i>ISLM</i> Model	
3 Nonbank Finance	

# CONTENTS

## PART 1 INTRODUCTION 1

### CHAPTER 1

#### Why Study Money, Banking, and Financial Markets? 2

<b>Why Study Financial Markets?</b> .....	<b>2</b>
The Bond Market and Interest Rates.....	3
The Stock Market.....	3
<b>Why Study Financial Institutions and Banking?</b> .....	<b>5</b>
Structure of the Financial System.....	5
Banks and Other Financial Institutions.....	6
Financial Innovation.....	6
Financial Crises.....	7
<b>Why Study Money and Monetary Policy?</b> .....	<b>7</b>
Money and Business Cycles.....	7
Money and Inflation.....	8
Money and Interest Rates.....	10
Conduct of Monetary Policy.....	11
Fiscal Policy and Monetary Policy.....	11
<b>Why Study International Finance?</b> .....	<b>12</b>
The Foreign Exchange Market.....	12
The International Financial System.....	13
<b>How We Will Study Money, Banking, and Financial Markets</b> .....	<b>14</b>
Exploring the Web.....	14
<b>Concluding Remarks</b> .....	<b>15</b>

Summary 15 • Key Terms 16 • Questions 16 • Applied Problems 17 • Data Analysis Problems 17 • Web Exercises 18 • Web References 18

### APPENDIX TO CHAPTER 1

#### Defining Aggregate Output, Income, the Price Level, and the Inflation Rate 19

<b>Aggregate Output and Income</b> .....	<b>19</b>
<b>Real Versus Nominal Magnitudes</b> .....	<b>19</b>
<b>Aggregate Price Level</b> .....	<b>20</b>
<b>Growth Rates and the Inflation Rate</b> .....	<b>21</b>

### CHAPTER 2

#### An Overview of the Financial System 22

<b>Function of Financial Markets</b> .....	<b>22</b>
<b>Structure of Financial Markets</b> .....	<b>25</b>
Debt and Equity Markets.....	25
Primary and Secondary Markets.....	25
Exchanges and Over-the-Counter Markets.....	26
Money and Capital Markets.....	26
<b>Financial Market Instruments</b> .....	<b>27</b>
Money Market Instruments.....	27

#### **Following the Financial News** Money Market Rates 28

Capital Market Instruments.....	29
---------------------------------	----

#### **Following the Financial News** Capital Market Interest Rates 30

#### **Internationalization of Financial Markets**..... 32

International Bond Market, Eurobonds, and Eurocurrencies.....	32
---	----

#### **Global** Are U.S. Capital Markets Losing Their Edge? 33

#### **Following the Financial News** Foreign Stock Market Indexes 34

World Stock Markets.....	34
--------------------------	----

#### **Global** The Importance of Financial Intermediaries Relative to Securities Markets: An International Comparison 35

#### **Function of Financial Intermediaries: Indirect Finance**..... 35

Transaction Costs.....	36
Risk Sharing.....	36
Asymmetric Information: Adverse Selection and Moral Hazard.....	37
Economies of Scope and Conflicts of Interest.....	38

#### **Types of Financial Intermediaries**..... 39

Depository Institutions.....	40
Contractual Savings Institutions.....	41
Investment Intermediaries.....	42

#### **Regulation of the Financial System**..... 43

Increasing Information Available to Investors.....	43
Ensuring the Soundness of Financial Intermediaries.....	44
Financial Regulation Abroad.....	45

Summary 46 • Key Terms 46 • Questions 47 • Applied Problems 48 • Data Analysis Problems 48 • Web Exercises 49 • Web References 49

### CHAPTER 3

#### What Is Money? 50

#### **Meaning of Money**..... 50

#### **Functions of Money**..... 51

Medium of Exchange.....	51
Unit of Account.....	52

#### **FYI** Money in a Prisoner-of-War Camp and Modern Prisons 52

Store of Value.....	53
---------------------	----

#### **Evolution of the Payments System**..... 54

Commodity Money.....	54
Fiat Money.....	55
Cheques.....	55
Electronic Payment.....	56
E-Money.....	56

#### **FYI** Are We Headed for a Cashless Society? 57

#### **APPLICATION** Will Bitcoin Become the Money of the Future?..... 57

**Measuring Money** ..... 58  
 The Bank of Canada's Monetary Aggregates..... 58

**FYI** Where Are All the Dollars? 62  
 Money as a Weighted Aggregate..... 62

Summary 64 • Key Terms 64 • Questions 64 •  
 Applied Problems 66 • Data Analysis Problems 66 •  
 Web Exercises 66 • Web References 66

**PART 2 FINANCIAL MARKETS 67**

**CHAPTER 4**

**The Meaning of Interest Rates 68**

**Measuring Interest Rates**..... 68  
 Present Value ..... 69

**APPLICATION** Simple Present Value..... 70

**APPLICATION** How Much Is That Jackpot Worth? ..... 71  
 Four Types of Credit Market Instruments..... 71  
 Yield to Maturity..... 72

**APPLICATION** Yield to Maturity on a Simple Loan ..... 72

**APPLICATION** Yield to Maturity and the Yearly Payment  
 on a Fixed-Payment Loan..... 74

**APPLICATION** Yield to Maturity and Bond Price  
 for a Coupon Bond..... 75

**APPLICATION** Yield to Maturity on a Perpetuity..... 77

**APPLICATION** Yield to Maturity on a Discount Bond..... 78

**The Distinction Between Interest Rates and  
 Returns** ..... 79  
 Maturity and the Volatility of Bond Returns:  
 Interest-Rate Risk..... 82  
 Summary ..... 83

**The Distinction Between Real and Nominal  
 Interest Rates** ..... 83

**APPLICATION** Calculating Real Interest Rates..... 84

Summary 86 • Key Terms 86 • Questions 86 •  
 Applied Problems 87 • Data Analysis Problems 88 •  
 Web Exercises 88 • Web References 88

**CHAPTER 4 WEB APPENDIX  
 Measuring Interest-Rate Risk: Duration**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 5**

**The Behaviour of Interest Rates 89**

**Determinants of Asset Demand**..... 89  
 Wealth..... 90

Expected Returns..... 90  
 Risk ..... 90  
 Liquidity..... 91  
 Theory of Portfolio Choice..... 91

**Supply and Demand in the Bond Market** ..... 92

Demand Curve ..... 92  
 Supply Curve..... 93  
 Market Equilibrium ..... 94  
 Supply and Demand Analysis ..... 95

**Changes in Equilibrium Interest Rates**..... 95

Shifts in the Demand for Bonds ..... 96  
 Shifts in the Supply of Bonds..... 99

**APPLICATION** Changes in the Interest Rate Due to  
 Expected Inflation: The Fisher Effect ..... 101

**APPLICATION** Changes in the Interest Rate Due  
 to a Business Cycle Expansion ..... 103

**APPLICATION** Explaining Low Japanese Interest Rates..... 104

**Supply and Demand in the Market for Money:  
 The Liquidity Preference Framework** ..... 105

**Changes in Equilibrium Interest Rates in the  
 Liquidity Preference Framework**..... 108  
 Shifts in the Demand for Money ..... 108  
 Shifts in the Supply of Money..... 108

**APPLICATION** Changes in the Equilibrium Interest  
 Rate Due to Changes in Income, the Price Level,  
 or the Money Supply ..... 108  
 Changes in Income ..... 109  
 Changes in the Price Level..... 110  
 Changes in the Money Supply ..... 110

**APPLICATION** Money and Interest Rates ..... 111

**Does a Higher Rate of Growth of the Money  
 Supply Lower Interest Rates?**..... 113

Summary 116 • Key Terms 116 • Questions 116 •  
 Applied Problems 117 • Data Analysis Problems 118 •  
 Web Exercises 119 • Web References 119

**CHAPTER 5 WEB APPENDIX 1  
 Models of Asset Pricing**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 5 WEB APPENDIX 2  
 Applying the Asset Market Approach to a Commodity  
 Market: The Case of Gold**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 5 WEB APPENDIX 3  
 LOANABLE FUNDS FRAMEWORK**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 6**  
**The Risk and Term Structure of Interest Rates 120**

**Risk Structure of Interest Rates ..... 120**  
 Default Risk ..... 120

**FYI** Conflicts of Interest at Credit-Rating Agencies and the Global Financial Crisis 124

**APPLICATION** The Global Financial Crisis and the BBB-Treasury Spread in the United States ..... 124  
 Liquidity ..... 125  
 Income Tax Considerations ..... 125

**APPLICATION** Tax-Exempt Versus Taxable Bonds ..... 126  
 Summary ..... 126

**Term Structure of Interest Rates ..... 126**

**Following the Financial News** Yield Curves 128  
 Expectations Theory ..... 128

**APPLICATION** Expectations Theory and the Yield Curve ..... 130  
 Segmented Markets Theory ..... 132  
 Liquidity Premium and Preferred Habitat Theories ..... 133

**APPLICATION** Liquidity Premium Theory and the Yield Curve ..... 135  
 Evidence on the Term Structure ..... 136  
 Summary ..... 137

**FYI** The Yield Curve as a Forecasting Tool for Inflation and the Business Cycle 138

**APPLICATION** Interpreting Yield Curves, 1986–2014 ..... 138

**APPLICATION** Using the Term Structure to Forecast Interest Rates ..... 139

**APPLICATION** Forward Rate ..... 141  
 Summary 142 • Key Terms 143 • Questions 143 • Applied Problems 144 • Data Analysis Problems 145 • Web Exercises 146 • Web References 146

**CHAPTER 7**  
**The Stock Market, the Theory of Rational Expectations, and the Efficient Market Hypothesis 147**

**Computing the Price of Common Stock ..... 147**  
 The One-Period Valuation Model ..... 148  
 The Generalized Dividend Valuation Model ..... 149  
 The Gordon Growth Model ..... 149

**How the Market Sets Stock Prices ..... 150**

**APPLICATION** Monetary Policy and Stock Prices ..... 152

**APPLICATION** The Global Financial Crisis and the Stock Market ..... 152

**The Theory of Rational Expectations ..... 152**

Formal Statement of the Theory ..... 154  
 Rationale Behind the Theory ..... 154  
 Implications of the Theory ..... 155

**The Efficient Market Hypothesis: Rational Expectations in Financial Markets ..... 156**

Rationale Behind the Hypothesis ..... 157  
 Random-Walk Behaviour of Stock Prices ..... 158

**Global** Should Foreign Exchange Rates Follow a Random Walk? 159

**APPLICATION** Practical Guide to Investing in the Stock Market ..... 159  
 How Valuable Are Reports Published by Investment Advisers? ..... 159

**FYI** Should You Hire an Ape as Your Investment Adviser? 160  
 Should You Be Skeptical of Hot Tips? ..... 161  
 Do Stock Prices Always Rise When There is Good News? ..... 161  
 Efficient Market Prescription for the Investor ..... 161

**Why the Efficient Market Hypothesis Does Not Imply that Financial Markets are Efficient ..... 162**

**APPLICATION** What Do Stock Market Crashes Tell Us About the Efficient Market Hypothesis and the Efficiency of Financial Markets? ..... 163

**Behavioural Finance ..... 164**  
 Summary 165 • Key Terms 165 • Questions 166 • Applied Problems 167 • Data Analysis Problems 167 • Web Exercises 167 • Web References 168

**CHAPTER 7 WEB APPENDIX**  
**Evidence on the Efficient Market Hypothesis**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

---

**PART 3 FINANCIAL INSTITUTIONS 169**

**CHAPTER 8**  
**An Economic Analysis of Financial Structure 170**

**Basic Facts About Financial Structure Throughout the World ..... 170**

**Transaction Costs ..... 173**  
 How Transaction Costs Influence Financial Structure ..... 173  
 How Financial Intermediaries Reduce Transaction Costs ..... 174

**Asymmetric Information: Adverse Selection and Moral Hazard ..... 175**

**The Lemons Problem: How Adverse Selection Influences Financial Structure ..... 175**  
 Lemons in the Stock and Bond Markets ..... 176  
 Tools to Help Solve Adverse Selection Problems ..... 176

**FYI** The Enron Implosion 178



**How Moral Hazard Affects the Choice Between Debt and Equity Contracts..... 181**  
 Moral Hazard in Equity Contracts:  
 The Principal–Agent Problem ..... 181  
 Tools to Help Solve the Principal–Agent Problem ..... 182  
**How Moral Hazard Influences Financial Structure in Debt Markets ..... 184**  
 Tools to Help Solve Moral Hazard in Debt Contracts..... 184  
 Summary ..... 186

**APPLICATION** Financial Development and Economic Growth ..... 187

**FYI** The Tyranny of Collateral 188

**APPLICATION** Is China a Counterexample to the Importance of Financial Development? ..... 189

Summary 190 • Key Terms 191 • Questions 191 • Applied Problems 192 • Data Analysis Problems 193 • Web Exercises 193 • Web References 193

**CHAPTER 9**  
**Financial Crises 194**

**What Is A Financial Crisis?..... 195**  
**Dynamics of Financial Crises..... 195**  
 Stage One: Initial Phase ..... 195  
 Stage Two: Banking Crisis ..... 197  
 Stage Three: Debt Deflation ..... 198

**APPLICATION** The Mother of All Financial Crises:  
 The Great Depression in the United States..... 199  
 Stock Market Crash ..... 199  
 Bank Panics ..... 199  
 Continuing Decline in Stock Prices..... 200  
 Debt Deflation ..... 201  
 International Dimensions..... 201

**The Global Financial Crisis of 2007–2009 ..... 201**  
 Causes of the 2007–2009 Financial Crisis ..... 201

**FYI** Collateralized Debt Obligations (CDOs) 202  
 Effects of the 2007–2009 Financial Crisis ..... 203

**FYI** Was the Fed to Blame for the Housing Price Bubble? 205

**Global** The European Sovereign Debt Crisis 207  
 Height of the 2007–2009 Financial Crisis..... 208  
 Government Intervention and the Recovery..... 208

**Global** Worldwide Government Bailouts During the 2007–2009 Financial Crisis 210

**Canada and the 2007–2009 Financial Crisis..... 210**  
 Subprime Mortgages in Canada ..... 210

**FYI** Canada’s Asset-Backed Commercial Paper Crisis 211

Why was Canada Spared the Worst of the Financial Crisis? ..... 212

**Response of Financial Regulation ..... 213**  
 Macroprudential Versus Microprudential Supervision..... 213  
 Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ..... 214

**Too-Big-To-Fail and Future Regulation..... 216**  
 What Can Be Done About the Too-Big-to-Fail Problem?..... 216  
 Other Issues for Future Regulation ..... 217

Summary 218 • Key Terms 219 • Questions 219 • Data Analysis Problems 220 • Web Exercises 220 • Web References 221

**CHAPTER 10**  
**Economic Analysis of Financial Regulation 222**

**Asymmetric Information and the Government Safety Net ..... 222**  
 Bank Panics and the Need for Deposit Insurance ..... 222

**Global** The Spread of Government Deposit Insurance Throughout the World: Is It a Good Thing? 224

Other Forms of the Government Safety Net..... 224  
 Moral Hazard and the Government Safety Net..... 225  
 Adverse Selection and the Government Safety Net..... 225  
 “Too Big to Fail” ..... 225  
 Financial Consolidation and the Government Safety Net..... 226

**Types of Financial Regulation ..... 226**  
 Restrictions on Asset Holdings..... 226  
 Capital Requirements..... 227  
 Prompt Corrective Action ..... 228  
 Financial Supervision: Chartering and Examination ..... 228

**Global** Where Is the Basel Accord Heading After the Global Financial Crisis? 229  
 Assessment of Risk Management..... 230  
 Disclosure Requirements ..... 231  
 Consumer Protection ..... 232  
 Restrictions on Competition ..... 232

**FYI** Mark-to-Market Accounting and the Global Financial Crisis 233  
 Summary ..... 233

**Global** International Financial Regulation 234

**CDIC Deposit Insurance Coverage ..... 237**  
 Differential Premiums ..... 237  
 Opting Out..... 238

**APPLICATION** Evaluating CDIC Deposit Insurance Coverage and Other Proposed Reforms of the Banking Regulatory System ..... 239

<b>Limits on the Scope of Deposit Insurance</b> .....	<b>239</b>
<b>Prompt Corrective Action</b> .....	<b>239</b>
<b>Risk-Based Insurance Premiums</b> .....	<b>240</b>
<b>Other CDIC Provisions</b> .....	<b>240</b>
<b>Other Proposed Changes in Banking Regulations</b> .....	<b>241</b>
Regulatory Consolidation.....	241
<b>Overall Evaluation</b> .....	<b>241</b>
Summary 241 • Key Terms 242 • Questions 242 •	
Applied Problems 243 • Data Analysis Problems 243 •	
Web Exercises 244 • Web References 244	

## CHAPTER 10 WEB APPENDIX 1

### The 1980s Canadian Banking Crisis

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

## CHAPTER 10 WEB APPENDIX 2

### Banking Crises Throughout the World

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

## CHAPTER 11

### Banking Industry: Structure and Competition 245

<b>Historical Development of the Canadian Banking System</b> .....	<b>246</b>
--	------------

**FYI** The Dual Banking System in the United States 247

The Free Banking Experiment .....	247
The Provincial Notes Act, 1866 .....	248
The Dominion Notes Act, 1870 .....	248
The First Bank Act, 1871 .....	249
The Bank Act, 1881–1913 .....	249
The Finance Act, 1914.....	250

<b>Financial Innovation and the Growth of the “Shadow Banking System”</b> .....	<b>251</b>
Responses to Changes in Demand Conditions:	
Interest-Rate Volatility.....	251
Responses to Changes in Supply Conditions:	
Information Technology.....	252

**Global** Will “Clicks” Dominate “Bricks” in the Banking Industry? 254

Securitization and the Shadow Banking System .....	255
Avoidance of Existing Regulations.....	257

**FYI** Bruce Bent and the Money Market

Mutual Fund Panic of 2008 258

Financial Innovation and the Decline of Traditional Banking.....	259
--	-----

<b>Structure of the Canadian Chartered Banking Industry</b> .....	<b>261</b>
Schedule I, Schedule II, and Schedule III Banks .....	261
Competition and Technology.....	262
<b>Comparison with the United States</b> .....	<b>263</b>

Response on Branching.....	264
Response to Branching Restrictions.....	265
<b>Competition Across All Four Pillars</b> .....	<b>266</b>
Convergence .....	266
Implications for Financial Consolidation .....	267
Separation of Banking and Other Financial Services Industries Throughout the World.....	267

**FYI** The Global Financial Crisis and the Demise of Large, Free-Standing Investment Banks 268

<b>The Near Banks: Regulation and Structure</b> .....	<b>268</b>
Trust Companies.....	268
Loan Companies.....	269
Cooperatives: Credit Unions and <i>Caisses Populaires</i> .....	269
Government Savings Institutions .....	271
<b>International Banking</b> .....	<b>271</b>
Eurocurrencies Market.....	271

**Global** Ironic Birth of the Eurodollar Market 272

Canadian Banking Overseas.....	273
Foreign Banks in Canada .....	273

<b>The 2001 Bank Act Reform</b> .....	<b>275</b>
Bank Holding Companies.....	275
Permitted Investments .....	276
Ownership Rules .....	276
The CP Act and Access to the Payments and Clearance System.....	277
Merger Review Policy.....	277
The National Financial Services OmbudService .....	278
Implications for the Canadian Banking Industry.....	278

Summary 279 • Key Terms 279 • Questions 280 • Data Analysis Problems 280 • Web Exercises 281 • Web References 281

## PART 4 THE MANAGEMENT OF FINANCIAL INSTITUTIONS 282

### CHAPTER 12

#### Banking and the Management of Financial Institutions 283

<b>The Bank Balance Sheet</b> .....	<b>283</b>
Liabilities .....	283
Assets .....	285
<b>Basic Banking</b> .....	<b>287</b>
<b>General Principles of Bank Management</b> .....	<b>290</b>
Liquidity Management and the Role of Reserves .....	290
Asset Management.....	293
Liability Management .....	294
Capital Adequacy Management.....	295

**APPLICATION** Strategies for Managing Bank Capital ..... 297

**APPLICATION** How a Capital Crunch Caused a Credit Crunch During the Global Financial Crisis ..... 298

**Managing Credit Risk**..... **298**  
 Screening and Monitoring..... 299  
 Long-Term Customer Relationships..... 300  
 Loan Commitments..... 301  
 Collateral and Compensating Balances..... 301  
 Credit Rationing..... 302  
**Managing Interest-Rate Risk**..... **302**  
 Gap and Duration Analysis..... 303

**APPLICATION** Strategies for Managing Interest-Rate Risk..... 304

**Off-Balance-Sheet Activities**..... **305**  
 Loan Sales..... 305  
 Generation of Fee Income..... 305  
 Trading Activities and Risk Management Techniques..... 306

**Global** Barings, Daiwa, Sumitomo, Société Générale, and JP Morgan Chase: Rogue Traders and the Principal-Agent Problem 307  
 Summary 308 • Key Terms 309 • Questions 309 • Applied Problems 310 • Data Analysis Problems 311 • Web Exercises 311 • Web References 311

**CHAPTER 12 WEB APPENDIX 1**  
**Duration Gap Analysis**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 12 WEB APPENDIX 2**  
**Measuring Bank Performance**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 13**  
**Risk Management with Financial Derivatives 312**

**Hedging**..... **312**  
**Forward Contracts and Markets**..... **313**  
 Interest-Rate Forward Contracts..... 313

**APPLICATION** Hedging with Interest-Rate Forward Contracts..... 313  
 Pros and Cons of Forward Contracts..... 314

**Financial Futures Contracts and Markets**..... **315**  
 Interest-Rate Futures Contracts..... 315

**APPLICATION** Hedging with Interest-Rate Futures..... 316  
 Organization of Trading in Financial Futures Markets..... 317  
 The Globalization of Financial Futures Markets..... 318  
 Explaining the Success of Futures Markets..... 319

**APPLICATION** Hedging Foreign Exchange Risk..... 320  
 Hedging Foreign Exchange Risk with Forward Contracts..... 321  
 Hedging Foreign Exchange Risk with Futures Contracts..... 321

**Stock Index Futures**..... **322**  
 Stock Index Futures Contracts..... 322

**APPLICATION** Hedging with Stock Index Futures..... 323

**Options**..... **323**

Stock Options..... 324  
 Futures Options..... 327

**APPLICATION** Hedging with Futures Options..... 329  
 Factors Affecting the Prices of Option Premiums..... 331  
 Summary..... 332

**Swaps**..... **332**  
 Interest-Rate Swap Contracts..... 332

**APPLICATION** Hedging with Interest-Rate Swaps..... 333  
 Advantages of Interest-Rate Swaps..... 334  
 Disadvantages of Interest-Rate Swaps..... 334  
 Financial Intermediaries in Interest-Rate Swaps..... 334

**Credit Derivatives**..... **335**  
 Credit Options..... 335  
 Credit Swaps..... 336  
 Credit-Linked Notes..... 336

**APPLICATION** Lessons from the Global Financial Crisis: When Are Financial Derivatives Likely to Be a Worldwide Time Bomb?..... 336

Summary 338 • Key Terms 338 • Questions 339 • Applied Problems 339 • Data Analysis Problems 340 • Web Exercises 340 • Web References 340

**PART 5 CENTRAL BANKING AND THE CONDUCT OF MONETARY POLICY 341**

**CHAPTER 14**  
**Central Banks and the Bank of Canada 342**

**Origins of the Bank of Canada**..... **342**

**Global** Establishment of Selected Central Banks 343

**Formal Structure of the Bank of Canada**..... **343**

**The Functions of the Bank of Canada**..... **344**

**FYI** The Political Environment and the Bank of Canada 344  
 Currency..... 345  
 Funds Management..... 345  
 Financial System..... 345  
 Monetary Policy..... 346

**FYI** Role of the Bank's Research Staff 347

**How Independent Is the Bank of Canada?**..... **347**

**The Changing Face of the Bank of Canada**..... **349**  
 From Opaqueness to Accountability and Transparency..... 351

**Should the Bank of Canada Be Independent?**..... **352**  
 The Case for Independence..... 352

**FYI** Economics and Politics 353  
 The Case Against Independence..... 353

Central Bank Independence and Macroeconomic Performance Throughout the World ..... 354

**Explaining Central Bank Behaviour ..... 354**

**Structure and Independence of Foreign Central Banks ..... 355**

Federal Reserve System ..... 355

**FYI** The Special Role of the Federal Reserve Bank of New York 358

European Central Bank ..... 359

Bank of England ..... 361

Bank of Japan ..... 361

The Trend Toward Greater Independence ..... 362

Summary 362 • Key Terms 363 • Questions 363 • Data Analysis Problems 364 • Web Exercises 364 • Web References 364

**CHAPTER 15**

**The Money Supply Process 365**

**Three Players in the Money Supply Process ..... 365**

**The Bank of Canada’s Balance Sheet ..... 366**

Liabilities ..... 366

Assets ..... 367

**Control of the Monetary Base ..... 368**

Bank of Canada Open Market Operations ..... 368

Shifts from Deposits into Currency ..... 370

Loans to Financial Institutions ..... 370

Other Factors That Affect the Monetary Base ..... 371

Overview of the Bank of Canada’s Ability to Control the Monetary Base ..... 372

**Multiple Deposit Creation: A Simple Model ..... 372**

Deposit Creation: The Single Bank ..... 372

Deposit Creation: The Banking System ..... 374

Deriving the Formula for Multiple Deposit Creation ..... 376

Critique of the Simple Model ..... 378

**Factors That Determine the Money Supply ..... 378**

Changes in the Nonborrowed Monetary Base,  $MB_n$  ..... 378

Changes in Borrowed Reserves,  $BR$ , from the Bank of Canada ..... 379

Changes in the Desired Reserve Ratio,  $r_d$  ..... 379

Changes in Excess Reserves ..... 379

Changes in Currency Holdings ..... 379

**Overview of the Money Supply Process ..... 379**

**The Money Multiplier ..... 380**

Deriving the Money Multiplier ..... 380

Intuition Behind the Money Multiplier ..... 382

**FYI** The 2007–2009 Financial Crisis and the Money Multiplier in the United States 383

Money Supply Response to Changes in the Factors ..... 383

**APPLICATION** Quantitative Easing and the Money Supply, 2007–2014 ..... 384

Summary 386 • Key Terms 387 • Questions 387 • Applied Problems 388 • Data Analysis Problems 388 • Web Exercises 389 • Web References 389

**CHAPTER 15 WEB APPENDIX 1**

**The Bank of Canada’s Balance Sheet and the Monetary Base**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 15 WEB APPENDIX 2**

**The M2+ Money Multiplier**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 15 WEB APPENDIX 3**

**The Great Depression Bank Panics, 1930–1933, and the Money Supply in the United States**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 16**

**Tools of Monetary Policy 390**

**The Framework for the Implementation of Monetary Policy ..... 390**

The Large Value Transfer System (LVTS) ..... 391

Non-LVTS (ACSS) Transactions ..... 392

The Bank of Canada’s Policy Rate ..... 392

The Operating Band for the Overnight Interest Rate ..... 393

**FYI** Monetary Policy Implementation in the LVTS Environment 394

The Bank of Canada’s Standing Facilities ..... 395

The Bank of Canada’s Implementation of the Operating Band for the Overnight Interest Rate ..... 395

**The Market for Settlement Balances and the Channel/Corridor System for Setting the Overnight Interest Rate ..... 396**

Demand and Supply in the Market for Reserves ..... 396

Demand Curve ..... 396

Supply Curve ..... 397

Market Equilibrium ..... 398

**APPLICATION** How the Bank of Canada’s Operating Procedures Limit Fluctuations in the Overnight Interest Rate ..... 398

**The Bank of Canada’s Approach to Monetary Policy ..... 399**

**FYI** Price-Level Targeting Versus Inflation-Rate Targeting 399

How Monetary Policy Affects the Economy ..... 400

Nominal Interest Rates and Monetary Policy ..... 402

**Conventional Monetary Policy Tools ..... 403**

Open Market Operations ..... 404

Settlement Balances Management ..... 406

**APPLICATION** Monetary Control in the Channel/Corridor System ..... 409

Bank of Canada Lending ..... 410

Operation of the Standing Lending Facility ..... 410

**FYI** Emergency Lending Assistance to Troubled Banks 413

**Nonconventional Monetary Policy Tools During the Global Financial Crisis** ..... 413

    Liquidity Provision ..... 414

    Large-Scale Asset Purchases ..... 414

**FYI Quantitative Easing in the Channel/Corridor System** 416

    Quantitative Easing Versus Credit Easing..... 416

    Forward Guidance and the Commitment to Future Policy Actions..... 418

    Summary ..... 419

    Policy Tools of the Federal Reserve..... 419

    Open Market Operations ..... 421

    Discount Lending ..... 422

    Monetary Policy Tools of the European Central Bank..... 425

Summary 426 • Key Terms 427 • Questions 427 • Applied Problems 428 • Data Analysis Problems 429 • Web Exercises 429 • Web References 429

**CHAPTER 17**  
**The Conduct of Monetary Policy: Strategy and Tactics** 430

**The Price Stability Goal and the Nominal Anchor** ..... 430

    The Role of a Nominal Anchor..... 431

    The Time-Inconsistency Problem..... 431

**Other Goals of Monetary Policy**..... 432

    High Employment and Output Stability ..... 432

    Economic Growth..... 433

    Stability of Financial Markets..... 433

    Interest-Rate Stability..... 433

    Stability in Foreign Exchange Markets ..... 434

**Should Price Stability Be the Primary Goal of Monetary Policy?** ..... 434

    Hierarchical Versus Dual Mandates ..... 434

    Price Stability as the Primary Long-Run Goal of Monetary Policy..... 435

**Inflation Targeting**..... 435

    Inflation Targeting in New Zealand, Canada, and the United Kingdom ..... 436

**Global** The European Central Bank's Monetary Policy Strategy 438

    Advantages of Inflation Targeting..... 439

    Disadvantages of Inflation Targeting ..... 440

**Lessons for Monetary Policy Strategy from the Global Financial Crisis** ..... 442

    Implications for Inflation Targeting..... 443

**Should Central Banks Try to Stop Asset-Price Bubbles?**..... 444

    Two Types of Asset-Price Bubbles ..... 444

    The Debate over Whether Central Banks Should Try to Pop Bubbles..... 445

**Tactics: Choosing the Policy Instrument**..... 448

    Criteria for Choosing the Policy Instrument..... 451

**Tactics: The Taylor Rule** ..... 452

**FYI** The Bank of Canada's Use of the Taylor Rule 454

**FYI** Bank of Canada Watchers 454

Summary 455 • Key Terms 455 • Questions 456 • Applied Problems 457 • Data Analysis Problems 457 • Web Exercises 458 • Web References 458

**CHAPTER 17 WEB APPENDIX 1**  
**Monetary Targeting**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 17 WEB APPENDIX 2**  
**A Brief History of Bank of Canada Policymaking**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**PART 6 INTERNATIONAL FINANCE AND MONETARY POLICY** 459

**CHAPTER 18**  
**The Foreign Exchange Market** 460

**Foreign Exchange Market**..... 460

    What Are Foreign Exchange Rates?..... 461

**Financial News** Foreign Exchange Rates 462

    Why Are Exchange Rates Important? ..... 462

    How Is Foreign Exchange Traded? ..... 463

**Exchange Rates in the Long Run** ..... 463

    Law of One Price ..... 463

    Theory of Purchasing Power Parity ..... 464

    Why the Theory of Purchasing Power Parity Cannot Fully Explain Exchange Rates ..... 464

    Factors That Affect Exchange Rates in the Long Run ..... 465

**Exchange Rates in the Short Run: A Supply and Demand Analysis** ..... 467

    Supply Curve for Domestic Assets ..... 467

    Demand Curve for Domestic Assets ..... 467

    Equilibrium in the Foreign Exchange Market..... 468

**Explaining Changes in Exchange Rates** ..... 469

    Shifts in the Demand for Domestic Assets..... 469

    Recap: Factors That Change the Exchange Rate..... 472

**APPLICATION** Effects of Changes in Interest Rates on the Equilibrium Exchange Rate ..... 474

**APPLICATION** Why Are Exchange Rates So Volatile?..... 476

**APPLICATION** The Global Financial Crisis and the U.S. Dollar..... 476

Summary 477 • Key Terms 477 • Questions 478 • Applied Problems 478 • Data Analysis Problems 479 • Web Exercises 479 • Web References 480



**APPENDIX TO CHAPTER 18**

**The Interest Parity Condition 481**

**Comparing Expected Returns on Domestic and Foreign Assets.....481**  
**Interest Parity Condition.....483**

**CHAPTER 19**

**The International Financial System 484**

**Intervention in the Foreign Exchange Market.....484**  
 Foreign Exchange Intervention and the Money Supply ..... 484  
 Unsterilized Intervention ..... 486  
 Sterilized Intervention ..... 487  
**Balance of Payments.....488**

**Global** Why the Large U.S. Current Account Deficit Worries Economists 488

**Exchange Rate Regimes in the International Financial System .....489**  
 Gold Standard ..... 490  
 The Bretton Woods System ..... 490  
 How a Fixed Exchange Rate Regime Works ..... 491  
 Speculative Attacks ..... 492

**APPLICATION** The Foreign Exchange Crisis of September 1992..... 493  
 The Policy Trilemma ..... 494

**APPLICATION** How Did China Accumulate \$4 Trillion of International Reserves? ..... 496

**Global** Will the Euro Survive? 497  
 Monetary Unions..... 497  
 Managed Float ..... 497

**Capital Controls .....498**  
 Controls on Capital Outflows ..... 498  
 Controls on Capital Inflows..... 498

**The Role of the IMF .....499**  
 Should the IMF Act as an International Lender of Last Resort?..... 499

**International Considerations and Monetary Policy .....500**  
 Direct Effects of the Foreign Exchange Market on Monetary Policy..... 500  
 Balance-of-Payments Considerations..... 501  
 Exchange Rate Considerations ..... 501

**To Peg or not to Peg: Exchange-Rate Targeting as an Alternative Monetary Policy Strategy .....501**  
 Advantages of Exchange-Rate Targeting ..... 502  
 Disadvantages of Exchange-Rate Targeting..... 502  
 When Is Exchange-Rate Targeting Desirable for Industrialized Countries?..... 504  
 When Is Exchange-Rate Targeting Desirable for Emerging Market Countries? ..... 505  
 Currency Boards..... 505

**Global** Argentina’s Currency Board 506  
 Dollarization..... 507  
 Summary 507 • Key Terms 508 • Questions 509 • Applied Problems 510 • Data Analysis Problems 510 • Web Exercises 511 • Web References 511

**PART 7 MONETARY THEORY 512**

**CHAPTER 20**

**Quantity Theory, Inflation, and the Demand for Money 513**

**Quantity Theory of Money..... 513**  
 Velocity of Money and Equation of Exchange ..... 513  
 From the Equation of Exchange to the Quantity Theory of Money ..... 515  
 Quantity Theory and the Price Level..... 515  
 Quantity Theory and Inflation ..... 516

**APPLICATION** Testing the Quantity Theory of Money ..... 516

**Budget Deficits and Inflation..... 519**  
 Government Budget Constraint ..... 519  
 Hyperinflation..... 520

**APPLICATION** The Zimbabwean Hyperinflation..... 520

**Keynesian Theories of Money Demand .....521**  
 Transactions Motive ..... 521  
 Precautionary Motive ..... 521  
 Speculative Motive..... 522  
 Putting the Three Motives Together ..... 522

**Portfolio Theories of Money Demand..... 523**  
 Theory of Portfolio Choice and Keynesian Liquidity Preference..... 523  
 Other Factors That Affect the Demand for Money ..... 523  
 Summary..... 524

**Empirical Evidence for the Demand for Money .....524**  
 Interest Rates and Money Demand..... 525  
 Stability of Money Demand ..... 525

Summary 526 • Key Terms 526 • Questions 527 • Applied Problems 528 • Data Analysis Problems 528 • Web Exercises 529 • Web References 529

**CHAPTER 20 WEB APPENDIX 1  
 The Baumol-Tobin and the Tobin Mean-Variance Models of the Demand for Money**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 20 WEB APPENDIX 2  
 Empirical Evidence on the Demand for Money**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 21**

**The IS Curve 530**

**Planned Expenditure and Aggregate Demand** ..... 530

**The Components of Aggregate Demand**..... 531

Consumption Expenditure ..... 531

**FYI** Meaning of the Word *Investment* 532

Planned Investment Spending..... 532

Net Exports ..... 534

Government Purchases and Taxes ..... 535

**Goods Market Equilibrium** ..... 536

Solving for Goods Market Equilibrium ..... 536

Deriving the IS Curve ..... 537

**Understanding the IS Curve** ..... 537

What the IS Curve Tells Us: Intuition..... 537

What the IS Curve Tells Us: Numerical Example ..... 537

Why the Economy Heads Toward Equilibrium ..... 539

**Factors that Shift the IS Curve** ..... 539

Changes in Government Purchases ..... 539

**APPLICATION** The Vietnam War Buildup, 1964–1969..... 540

Changes in Taxes ..... 541

**APPLICATION** The Fiscal Stimulus

Package of 2009..... 543

Changes in Autonomous Spending ..... 543

Changes in Financial Frictions..... 545

Summary of Factors That Shift the IS Curve..... 545

Summary 545 • Key Terms 546 • Questions 546 •

Applied Problems 547 • Data Analysis Problems 548 •

Web Exercises 549 • Web References 549

**CHAPTER 22**

**The Monetary Policy and Aggregate Demand Curves 550**

**The Bank of Canada and Monetary Policy**..... 550

**The Monetary Policy Curve**..... 551

The Taylor Principle: Why the Monetary Policy

Curve Has an Upward Slope..... 551

Shifts in the MP Curve ..... 553

Movements Along Versus Shifts in the MP Curve ..... 554

**APPLICATION** Shift in the MP Curve: Autonomous

Monetary Easing at the Onset of the

Global Financial Crisis..... 554

**The Aggregate Demand Curve** ..... 555

Deriving the Aggregate Demand Curve

Graphically ..... 555

Factors That Shift the Aggregate

Demand Curve ..... 557

**FYI** Deriving the Aggregate Demand Curve Algebraically 557

Summary 561 • Key Terms 561 • Questions 562 •

Applied Problems 562 • Data Analysis Problems 563 •

Web Exercises 564 • Web References 564

**CHAPTER 23**

**Aggregate Demand and Supply Analysis 565**

**Aggregate Demand**..... 565

**Following the Financial News** Aggregate Output,

Unemployment, and Inflation 566

Deriving the Aggregate Demand Curve ..... 566

Factors That Shift the Aggregate

Demand Curve ..... 567

**FYI** What Does *Autonomous* Mean? 569

**Aggregate Supply**..... 571

Long-Run Aggregate Supply Curve ..... 571

Short-Run Aggregate Supply Curve..... 571

Price Stickiness and the Short-Run Aggregate

Supply Curve..... 573

**Shifts in the Aggregate Supply Curves**..... 573

Shifts in the Long-Run Aggregate Supply Curve..... 573

Shifts in the Short-Run Aggregate Supply Curve ..... 574

**Equilibrium in Aggregate Demand and Supply**

**Analysis** ..... 578

Short-Run Equilibrium ..... 578

How the Short-Run Equilibrium Moves to the

Long-Run Equilibrium over Time ..... 579

Self-Correcting Mechanism ..... 581

**Changes in Equilibrium: Aggregate Demand**

**Shocks**..... 581

**APPLICATION** The Bank of Canada Disinflation,

1981–1985..... 582

**APPLICATION** Negative Demand Shocks in the

United States, 2001–2004..... 584

**Changes in Equilibrium: Aggregate Supply**

**(Inflation) Shocks** ..... 584

Temporary Supply Shocks ..... 584

**APPLICATION** Negative Supply Shocks, 1973–1975

and 1978–1980..... 587

Permanent Supply Shocks and Real Business

Cycle Theory ..... 587

**APPLICATION** Positive Supply Shocks,

1995–1999..... 590

Conclusions ..... 591

**AD/AS Analysis of Foreign Business Cycle**

**Episodes** ..... 591

**APPLICATION** The United States and the 2007–2009

Financial Crisis ..... 591

**APPLICATION** The United Kingdom and the

2007–2009 Financial Crisis ..... 593

**APPLICATION** China and the 2007–2009

Financial Crisis ..... 593

Summary 596 • Key Terms 596 • Questions 597 •

Applied Problems 597 • Data Analysis Problems 598 •

Web Exercises 598 • Web References 598

**APPENDIX TO CHAPTER 23**  
**The Phillips Curve and the Short-Run Aggregate Supply Curve 599**

**The Phillips Curve**..... 599  
 Phillips Curve Analysis in the 1960s..... 599

**FYI** The Phillips Curve Tradeoff and Macroeconomic Policy in the 1960s 601

The Friedman-Phelps Phillips Curve Analysis..... 601  
 The Phillips Curve After the 1960s ..... 603  
 The Modern Phillips Curve..... 603  
 The Modern Phillips Curve with Adaptive (Backward-Looking) Expectations ..... 604

**The Short-Run Aggregate Supply Curve** ..... 605

**CHAPTER 23 WEB APPENDIX 1**  
**The Effects of Macroeconomic Shocks on Asset Prices**  
 Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 23 WEB APPENDIX 2**  
**Aggregate Demand and Supply: A Numerical Example**  
 Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 23 WEB APPENDIX 3**  
**The Algebra of the Aggregate Demand and Supply Model**  
 Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 23 WEB APPENDIX 4**  
**The Taylor Principle and Inflation Stability**  
 Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**CHAPTER 24**  
**Monetary Policy Theory 607**

**Response of Monetary Policy to Shocks**..... 607  
 Response to an Aggregate Demand Shock..... 608  
 Response to a Permanent Supply Shock..... 610  
 Response to a Temporary Supply Shock..... 612  
 The Bottom Line: The Relationship Between Stabilizing Inflation and Stabilizing Economic Activity..... 615

**How Actively Should Policymakers Try to Stabilize Economic Activity?**..... 615  
 Lags and Policy Implementation ..... 615

**FYI** The Activist/Nonactivist Debate Over the Obama Fiscal Stimulus Package in the United States 616

**Inflation: Always and Everywhere a Monetary Phenomenon**..... 617

**Causes of Inflationary Monetary Policy** ..... 618  
 High Employment Targets and Inflation ..... 618  
**Monetary Policy at the Zero Lower Bound**..... 621  
 Deriving the Aggregate Demand Curve with the Zero Lower Bound ..... 621  
 The Disappearance of the Self-Correcting Mechanism at the Zero Lower Bound..... 623

**APPLICATION** Nonconventional Monetary Policy and Quantitative Easing..... 624  
 Liquidity Provision ..... 625  
 Asset Purchases and Quantitative Easing..... 626  
 Management of Expectations ..... 627

**APPLICATION** Abenomics and the Shift in Japanese Monetary Policy in 2013 ..... 628

Summary 630 • Key Terms 631 • Questions 631 • Applied Problems 632 • Data Analysis Problems 632 • Web Exercises 633 • Web References 633

**CHAPTER 25**  
**The Role of Expectations in Monetary Policy 634**

**Lucas Critique of Policy Evaluation** ..... 634  
 Econometric Policy Evaluation..... 635

**APPLICATION** The Term Structure of Interest Rates ..... 635  
**Policy Conduct: Rules or Discretion?**..... 636  
 Discretion and the Time-Inconsistency Problem ..... 636  
 Types of Rules..... 637  
 The Case for Rules..... 637

**FYI** The Political Business Cycle and Richard Nixon 638  
 The Case for Discretion ..... 638

**Global** The Demise of Monetary Targeting in Switzerland 639  
 Constrained Discretion ..... 639

**The Role of Credibility and a Nominal Anchor**..... 640  
 Benefits of a Credible Nominal Anchor ..... 640  
 Credibility and Aggregate Demand Shocks ..... 640  
 Credibility and Aggregate Supply Shocks..... 643

**APPLICATION** A Tale of Three Oil Price Shocks ..... 644  
 Credibility and Anti-Inflation Policy ..... 646

**Global** Ending the Bolivian Hyperinflation: A Successful Anti-Inflation Program 647

**APPLICATION** Credibility and the Bank of Canada's Victory over Inflation..... 648

**Approaches to Establishing Central Bank Credibility** ..... 648  
 Nominal GDP Targeting..... 649  
 Appoint “Conservative” Central Bankers..... 649

Summary 650 • Key Terms 650 • Questions 651 • Applied Problems 652 • Data Analysis Problems 652 • Web Exercises 652

**CHAPTER 26**

**Transmission Mechanisms of Monetary Policy 653**

**Transmission Mechanisms of Monetary Policy..... 653**  
 Traditional Interest-Rate Channels ..... 654  
 Other Asset Price Channels..... 655  
 Credit View ..... 658

**FYI Consumers' Balance Sheets and the Great Depression 660**

Why Are Credit Channels Likely to Be Important?..... 661

**APPLICATION The Great Recession..... 661**

**Lessons for Monetary Policy..... 662**

**APPLICATION Applying the Monetary Policy Lessons to Japan's Two Lost Decades ..... 664**

Summary 665 • Key Terms 665 • Questions 665 • Applied Problems 666 • Data Analysis Problems 666 • Web Exercises 667 • Web References 667

**CHAPTER 26 WEB APPENDIX**

**Evaluating Empirical Evidence: The Debate Over the Importance of Money in Economic Fluctuations**

Go to MyEconLab at [www.myeconlab.com](http://www.myeconlab.com)

**Glossary.....G-1**

**Index.....I-1**

**CONTENTS ON THE WEB**

The following chapters are available on the MyEconLab at [www.myeconlab.com](http://www.myeconlab.com).

**WEB CHAPTER 1**

**Financial Crises in Emerging Market Economies W1-1**

**Dynamics of Financial Crises in Emerging Market Economies..... W1-1**

Stage One: Initial Phase ..... W1-1  
 Stage Two: Currency Crisis ..... W1-5  
 Stage Three: Full-Fledged Financial Crisis ..... W1-6

**APPLICATION Crisis in South Korea, 1997–1998 ..... W1-7**

Financial Liberalization and Globalization Mismatched ..... W1-7  
 Perversion of the Financial Liberalization and Globalization Process: Chaebols and the South Korean Crisis ..... W1-9  
 Stock Market Decline and Failure of Firms Increase Uncertainty ..... W1-10  
 Adverse Selection and Moral Hazard Problems Worsen, and the Economy Contracts..... W1-11  
 Currency Crisis Ensues..... W1-11

Final Stage: Currency Crisis Triggers Full-Fledged Financial Crisis ..... W1-11  
 Recovery Commences..... W1-12

**APPLICATION The Argentine Financial Crisis, 2001–2002..... W1-13**

Severe Fiscal Imbalances..... W1-13  
 Adverse Selection and Moral Hazard Problems Worsen ..... W1-14  
 Bank Panic Begins..... W1-14  
 Currency Crisis Ensues..... W1-14  
 Currency Crisis Triggers Full-Fledged Financial Crisis..... W1-15  
 Recovery Begins..... W1-18

**Global When an Advanced Economy Is Like an Emerging Market Economy: The Icelandic Financial Crisis of 2008 W1-18**

**Preventing Emerging Market Financial Crises..... W1-19**

Beef Up Prudential Regulation and Supervision of Banks. W1-19  
 Encourage Disclosure and Market-Based Discipline ..... W1-19  
 Limit Currency Mismatch..... W1-20  
 Sequence Financial Liberalization ..... W1-20

Summary W1-20 • Key Terms W1-21 • Questions W1-21

**WEB CHAPTER 2**

**The ISLM Model W2-1**

**Keynes's Fixed Price Level Assumption and the IS Curve ..... W2-1**  
 The LM Curve..... W2-1  
 Equilibrium in the Market for Money: The LM Curve..... W2-2

**ISLM Approach to Aggregate Output and Interest Rates ..... W2-4**

**Factors That Cause the LM Curve to Shift ..... W2-5**

**Changes in Equilibrium Level of the Interest Rate and Aggregate Output..... W2-7**  
 Response to a Change in Monetary Policy ..... W2-7  
 Response to a Change in Fiscal Policy ..... W2-8

**APPLICATION The Economic Stimulus Act of 2008 in the United States ..... W2-9**

**Effectiveness of Monetary Versus Fiscal Policy..... W2-11**  
 Monetary Policy Versus Fiscal Policy: The Case of Complete Crowding Out ..... W2-11

**APPLICATION Targeting Money Supply Versus Interest Rates ..... W2-13**

**ISLM Model in the Long Run ..... W2-16**

Summary W2-18 • Key Terms W2-19 • Questions and Applied Problems W2-19 • Web Exercises W2-20 • Web References W2-20

**APPENDIX TO WEB CHAPTER 2**

**Algebra of the ISLM Model W2-21**

**Basic Closed-Economy ISLM Model ..... W2-21**  
 IS and LM Curves ..... W2-22

Solution of the Model ..... W2-22  
 Implications..... W2-22  
**Open-Economy ISLM Model ..... W2-23**  
**Implications ..... W2-24**

**WEB CHAPTER 3**  
**Nonbank Finance W3-1**

**Insurance ..... W3-1**  
 Life Insurance..... W3-1  
 Property and Casualty Insurance ..... W3-3  
 The Competitive Threat from the Banking Industry..... W3-4  
 Credit Insurance..... W3-4  
**FYI** Credit Default Swaps on Greek Sovereign Debt W3-5  
**FYI** The AIG Blowup W3-5  
**FYI** The Global Financial Crisis and the Monoline Insurers W3-6  
 The New Legislative Framework..... W3-6  
**APPLICATION** Insurance Management..... W3-6  
 Screening..... W3-7  
 Risk-Based Premiums..... W3-7  
 Restrictive Provisions..... W3-8  
 Prevention of Fraud..... W3-8  
 Cancellation of Insurance ..... W3-8  
 Deductibles..... W3-8  
 Coinsurance ..... W3-9  
 Limits on the Amount of Insurance ..... W3-9  
 Summary..... W3-9

**Pension Funds ..... W3-10**  
 Private Pension Plans ..... W3-11  
 Public Pension Plans..... W3-11  
**FYI** Should Public Pension Plans Be Privatized? W3-12  
 Personal Pension Plans..... W3-13  
**Finance Companies..... W3-13**  
**Securities Market Operations ..... W3-14**  
 Investment Banking..... W3-14  
 Securities Brokers and Dealers ..... W3-15  
 Organized Exchanges..... W3-15  
**Mutual Funds..... W3-16**  
**FYI** Sovereign Wealth Funds: Are They a Danger? W3-17  
 Money Market Mutual Funds..... W3-18  
**Hedge Funds..... W3-18**  
**FYI** The Long-Term Capital Management Debacle W3-19  
**Private Equity and Venture Capital Funds..... W3-19**  
**Government Financial Intermediation ..... W3-20**  
 Crown Finance Companies..... W3-20  
 Government-Sponsored Enterprises in the  
 United States..... W3-21  
**FYI** The Global Financial Crisis and the Bailout of  
 Fannie Mae and Freddie Mac W3-22  
 Summary W3-22 • Key Terms W3-23 • Questions W3-24 •  
 Applied Problems W3-24 • Data Analysis Problems W3-25 •  
 Web Exercises W3-25 • Web References W3-25



# PREFACE

## HALLMARKS

Although this text has undergone a major revision, it retains the basic hallmarks that have made it the best-selling textbook on money and banking over the past five editions:

- A unifying, analytic framework that uses a few basic economic principles to organize students' thinking about the structure of financial markets, the foreign exchange markets, financial institution management, and the role of monetary policy in the economy
- A careful, step-by-step development of models (an approach found in the best principles of economics textbooks), which makes it easier for students to learn
- The complete integration of an international perspective throughout the text
- A thoroughly up-to-date treatment of the latest developments in monetary theory
- A special features called "Financial News," included to encourage reading of a financial newspaper
- An applications-oriented perspective with numerous applications and special-topic boxes that increase students' interest by showing them how to apply theory to real-world examples

## WHAT'S NEW IN THE SIXTH CANADIAN EDITION

In addition to the expected updating of all data through the end of 2014 whenever possible, there is major new material in every part of the text.

### **Pearson eText with Mini-Lecture Videos: A New Way of Learning**

The Pearson eText in MyEconLab for the sixth Canadian edition is available online from MyEconLab textbook resources. Instructors and students can highlight the text, bookmark, search the glossary, and take notes. More importantly, the enhanced Pearson eText provides a new way of learning that is particularly geared to today's students. Not only will students be able to read the material in the textbook, but by a simple click on an icon they will be able to watch over 80 mini-lecture videos presented by the authors for select figures in the text. For analytic figures, these mini-lectures build up each graph step-by-step and explain the intuition necessary to fully understand the theory behind the graph. For data figures, the mini-lectures highlight the key data points that are of greatest interest. The mini-lectures are an invaluable study tool for students who typically learn better when they see and hear economic analysis rather than read it.

### **Major Improvements and revisions in Part 3, Financial Institutions**

The global financial crisis of 2007–2009 has become a central topic in the teaching of money and banking. We have added the following new material to Part 3 of the text:

- A new FYI box on the tyranny of collateral (Chapter 8)
- A new section on the response of financial regulation to the global financial crisis (Chapter 9)

- A new section exploring what can be done about the too-big-to-fail problem (Chapter 9)
- A new section that provides more detail on securitization and the shadow banking system (Chapter 11)

## Nonconventional Monetary Policy and the Zero Lower Bound

Monetary policy entered a brave new world when policymakers had to resort to nonconventional measures when the policy interest rate—the overnight interest rate in Canada or the federal funds rate in the United States—hit a floor of zero, or the so-called “zero lower bound.” Because the policy rate cannot be driven lower than zero, under this condition conventional monetary policy becomes infeasible. Nonconventional monetary policy at the zero lower bound, such as quantitative easing, has become a very controversial topic that stimulates a lot of student interest. The sixth Canadian edition contains extensive discussion of this topic, including the following new material:

- A new Application on quantitative easing and the money supply from 2007 to 2014 (Chapter 15)
- An updated section on forward guidance and the commitment to future policy actions (Chapter 16)
- A new section on monetary policy at the zero lower bound that uses the aggregate demand and aggregate supply models to explain how the zero lower bound affects the conduct of monetary policy (Chapter 24)
- A new application on nonconventional monetary policy and quantitative easing (Chapter 24)
- A new application on Abenomics and the shift in Japanese monetary policy in 2013 (Chapter 24)

## The Euro Crisis

The Euro crisis has been a continuing drama since 2010, and so this edition includes the following new material:

- A new Global box on the European sovereign debt crisis (Chapter 9)
- A new section on monetary unions (Chapter 19)
- A new Global box on whether the Euro will survive (Chapter 19)

## Additional New Material

New developments in the money and banking field have prompted us to add the following new material that we feel is necessary to keep the text current:

- A new Application on whether Bitcoin will become the money of the future (Chapter 3)
- A new section on movements along, versus shifts in the  $MP$  curve, with a new Application that discusses the movement along the  $MP$  curve that occurred when the Bank of Canada raised the overnight interest rate target during the years 2004 to 2006 (Chapter 22)
- A new FYI box that describes the meaning of the word *autonomous* (Chapter 23)
- A new section on nominal GDP targeting (Chapter 24)

## FLEXIBILITY AND MODULARITY

In using previous editions, adopters, reviewers, and survey respondents have continually praised this text's flexibility and modularity—that is, the option to pick and choose which chapters to cover and in what order to cover them. Flexibility and modularity are especially important in the money and banking course, because there are as many ways to teach this course as there are instructors. To satisfy the diverse needs of instructors, the text achieves flexibility as follows:

- Core chapters provide the basic analysis used throughout the book, while other chapters or sections of chapters can be used or omitted according to instructor preferences. For example, Chapter 2 introduces the financial system and basic concepts such as transaction costs, adverse selection, and moral hazard. After covering Chapter 2, the instructor may decide to give more detailed coverage of financial structure by assigning Chapter 8 or may choose to skip Chapter 8 and take any of a number of different paths through the book.
- The text allows instructors to cover the most important issues in monetary theory even if they do not wish to present a detailed development of the *IS*, *MP*, and *AD* curves (provided in Chapters 21 and 22). Instructors who want to teach a more complete treatment of monetary theory can make use of these chapters.
- Part 6 on monetary theory can easily be taught before Part 4 of the text if the instructor wishes to give students a deeper understanding of the rationale behind monetary policy.
- Chapter 24, on the transmission mechanisms of monetary policy, can be taught at many different points in the course—either with Part 4, when monetary policy is discussed, or with Chapter 21 or Chapter 23, when the concept of aggregate demand is developed. Transmission mechanisms of monetary policy can also be taught as a special topic at the end of the course.
- The international approach of the text, accomplished through marked international sections within chapters as well as separate chapters on the foreign exchange market and the international monetary system, is comprehensive yet flexible. Although many instructors will teach all the international material, others will not. Instructors who wish to put less emphasis on international topics can easily skip Chapter 18 on the foreign exchange market and Chapter 19 on the international financial system and monetary policy. The international sections within chapters are self-contained and can be omitted with little loss of continuity.

To illustrate how this book can be used for courses with varying emphases, several course outlines are suggested for a semester teaching schedule. More detailed information about how the text can be used flexibly in your course is available in the Instructor's Manual.

- *General Money and Banking Course*: Chapters 1–5, 10–12, 16, 17, 23–24, with a choice of 6 of the remaining 14 chapters.
- *General Money and Banking Course with an International Emphasis*: Chapters 1–5, 10–12, 16–19, 23–24, with a choice of 4 of the remaining 12 chapters.
- *Financial Markets and Institutions Course*: Chapters 1–13, with a choice of 7 of the remaining 13 chapters.
- *Monetary Theory and Policy Course*: Chapters 1–5, 14–17, 20–25, with a choice of 4 of the remaining 11 chapters.

## PEDAGOGICAL AIDS

Whether teaching theory or its applications, a textbook must be a solid motivational tool. To this end, we have incorporated a wide variety of pedagogical features that will make the material easy to learn:

1. **Previews** at the beginning of each chapter tell students where the chapter is heading, why specific topics are important, and how these topics relate to other topics discussed in the book.
2. **Applications**, numbering over 50, demonstrate how the analysis presented in the book can be used to explain many important real-world situations.
3. **Financial News boxes** introduce students to relevant news articles and data that are reported daily in the press, and teach students how to interpret these data.
4. **Inside the Central Bank boxes** give students a feel for the operation and structure of central banks.
5. **Global boxes** present interesting material with an international focus.
6. **FYI boxes** highlight dramatic historical episodes, interesting ideas, and intriguing facts related to the subject matter.
7. **Summary tables** provide a useful study aid for reviewing material.
8. **Key statements** are important points set in boldface italic type so that students can easily find them for later reference.
9. **Graphs** with captions, numbering more than 120, help students clearly understand the interrelationships among the plotted variables and the principles of analysis.
10. A **Summary** at the end of each chapter lists the main points covered in the chapter.
11. **Key terms** are important words or phrases introduced in the chapter. They are set in boldface when they are defined for the first time, and listed by page number at the end of each chapter.
12. **End-of-chapter questions and applied problems**, numbering more than 600, help students learn the subject matter by applying economic concepts.
13. **Data analysis problems** ask students to apply actual data taken from the CANSIM database or the St. Louis Federal Reserve Bank's FRED database to specific problems, so that they can understand what is happening in the economy.
14. **Web exercises** encourage students to collect information from online sources or to use online resources to enhance their learning experience.
15. **Web sources** report the URL sources of the data used to create the many tables and charts.
16. **Web references** point students to websites that provide information or data that supplement the text material.
17. A **Glossary** at the back of the book provides definitions of all the key terms.

## AN EASIER WAY TO TEACH: SUPPLEMENTS TO ACCOMPANY THE SIXTH CANADIAN EDITION

*The Economics of Money, Banking, and Financial Markets*, sixth Canadian edition includes the most comprehensive program of supplements of any money, banking, and financial markets textbook. These items are available to qualified domestic adopters.

## MyEconLab

**MyEconLab** is the premier online assessment and tutorial system, pairing rich online content with innovative learning tools. The MyEconLab course for the sixth Canadian edition of *The Economics of Money, Banking, and Financial Markets* includes online versions of end-of-chapter Questions and Applied Problems from the text as well as additional questions for further study, which can be easily assigned and automatically graded.

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

After registering for MyEconLab, instructors have access to downloadable supplements such as an instructor's manual, PowerPoint lecture notes, and the test bank. The test bank can also be used within MyEconLab, giving instructors ample material from which they can create assignments.

Additional MyEconLab features include

- *New Mini-Lecture Videos* provide a step-by-step analysis of select data and analytic figures included in the text. The videos can be used in class or viewed by students on their own time.
- *Mishkin Interviewed on the Financial Crisis*. Watch video footage from a recent interview with one of the authors.
- *CANSIM Data*. CANSIM data are available for relevant text questions in the Resources section of MyEconLab.
- *Answers to Questions and Applied Problems*. Check your understanding of Questions and Applied Problems by viewing the solutions on MyEconLab.
- *Mini-Cases*. Online mini-cases are available for select chapters in the text. Each mini-case includes a unique Economics scenario and associated questions that provide real-life context for key chapter concepts.
- *Web Appendices*. Online appendices include additional information to supplement core chapter concepts and theories.
- *A Pearson eText* is available within the online course materials and off-line via iPad and Android apps. The Pearson eText enables instructors and students to highlight, bookmark, and take notes.

## Chapters and Appendices on MyEconLab

The online chapters for the sixth Canadian edition of *The Economics of Money, Banking, and Financial Markets* include:

Web Chapter 1:	Financial Crises in Emerging Market Economies
Web Chapter 2:	The ISLM Model
Web Chapter 3:	Nonbank Finance



The web appendices include:

Web Appendix to Chapter 4:	Measuring Interest-Rate Risk: Duration
Web Appendix 1 to Chapter 5:	Models of Asset Pricing
Web Appendix 2 to Chapter 5:	Applying the Asset Market Approach to a Commodity Market: The Case of Gold
Web Appendix 3 to Chapter 5:	Loanable Funds Framework
Web Appendix to Chapter 7:	Evidence on the Efficient Market Hypothesis
Web Appendix 1 to Chapter 10:	The 1980s Canadian Banking Crisis
Web Appendix 2 to Chapter 10:	Banking Crises Throughout the World
Web Appendix 1 to Chapter 12:	Duration Gap Analysis
Web Appendix 2 to Chapter 12:	Measuring Bank Performance
Web Appendix 1 to Chapter 15:	The Bank of Canada's Balance Sheet and the Monetary Base
Web Appendix 2 to Chapter 15:	The M2+ Money Multiplier
Web Appendix 3 to Chapter 15:	The Great Depression Bank Panics, 1930–1933, and the Money Supply in the United States
Web Appendix 1 to Chapter 17:	Monetary Targeting
Web Appendix 2 to Chapter 17:	A Brief History of Bank of Canada Policymaking
Web Appendix 1 to Chapter 20:	The Baumol-Tobin and the Tobin Mean-Variance Models of the Demand for Money
Web Appendix 2 to Chapter 20:	Empirical Evidence on the Demand for Money
Web Appendix 1 to Chapter 23:	The Effects of Macroeconomic Shocks on Asset Prices
Web Appendix 2 to Chapter 23:	Aggregate Demand and Supply: A Numerical Example
Web Appendix 3 to Chapter 23:	The Algebra of the Aggregate Demand and Supply Model
Web Appendix 4 to Chapter 23:	The Taylor Principle and Inflation Stability
Web Appendix to Chapter 26:	Evaluating Empirical Evidence: The Debate Over the Importance of Money in Economic Fluctuations

Instructors can either use these web chapters and appendices in class to supplement the material in the textbook, or recommend them to students who want to expand their knowledge of the money and banking field.

For more information and to register, please visit [www.myeconlab.com](http://www.myeconlab.com).

## Additional Instructor Resources

These instructor supplements are available for download from a password-protected section of Pearson Canada's online catalogue ([catalogue.pearsoned.ca](http://catalogue.pearsoned.ca)). Navigate to your book's catalogue page to view a list of those supplements that are available. See your local sales representative for details and access.

1. **Instructor's Manual** Prepared by the authors, the Instructor's Manual provides conventional elements such as sample course outlines, chapter outlines, and answers to questions and problems in the text.

2. **PowerPoint® Slides** A complete set of slides that are specifically designed for the textbook is available electronically.
3. **Computerized TestGen** The computerized test bank allows the instructor to produce exams efficiently. This product consists of multiple-choice and short-answer questions and offers editing capabilities. It is available in Windows and Macintosh versions.
4. **Test Item File in Word** This test bank includes all the questions from the TestGen version in Microsoft Word format.
5. **Image Library** This library contains .gif or .jpg versions of figures from the textbook.
6. **Learning Solutions Managers** Pearson's Learning Solutions Managers work with faculty and campus course designers to ensure that Pearson technology products, assessment tools, and online course materials are tailored to meet your specific needs. This highly qualified team is dedicated to helping schools take full advantage of a wide range of educational resources by assisting in the integration of a variety of instructional materials and media formats. Your local Pearson Education sales representative can provide you with more details on this service program.

## ACKNOWLEDGMENTS

This book is the result of efforts by many people. We are extremely grateful to Megan Farrell, Acquisitions Editor; Rebecca Ryoji, Developmental Editor; Patricia Ciardullo, Program Manager; Richard di Santo, Project Manager; and the many others at Pearson Canada who have contributed to the completion of this edition.

We are also grateful to all of the many people who commented on various chapters of the book, made valuable suggestions, and kindly provided us with data.

Although we have done our best to make this edition as complete and error free as possible, as most of you know, perfection is impossible. We would greatly appreciate any suggestions for improvement.

Please send your comments to [serletis@ucalgary.ca](mailto:serletis@ucalgary.ca).

*Frederic S. Mishkin  
Apostolos Serletis  
2016*

# ABOUT THE AUTHORS



**Frederic S. Mishkin** is the Alfred Lerner Professor of Banking and Financial Institutions at the Graduate School of Business, Columbia University. He is also a Research Associate at the National Bureau of Economic Research and past president of the Eastern Economics Association. Since receiving his Ph.D. from the Massachusetts Institute of Technology in 1976, he has taught at the University of Chicago, Northwestern University, Princeton University, and Columbia. He has also received an honorary professorship from the People's (Renmin) University of China. From 1994 to 1997, he was Executive Vice President and Director of Research at the Federal Reserve Bank of New York and an associate economist of the Federal Open Market Committee of the Federal Reserve System. From September 2006 to August 2008, he was a member (governor) of the Board of Governors of the Federal Reserve System.

Professor Mishkin's research focuses on monetary policy and its impact on financial markets and the aggregate economy. He is the author of more than 15 books, including *Financial Markets and Institutions*, sixth edition (Addison-Wesley, 2009); *Monetary Policy Strategy* (MIT Press, 2007); *The Next Great Globalization: How Disadvantaged Nations Can Harness Their Financial Systems to Get Rich* (Princeton University Press, 2006); *Inflation Targeting: Lessons from the International Experience* (Princeton University Press, 1999); *Money, Interest Rates, and Inflation* (Edward Elgar, 1993); and *A Rational Expectations Approach to Macroeconomics: Testing Policy Ineffectiveness and Efficient Markets Models* (University of Chicago Press, 1983). In addition, he has published more than 150 articles in such journals as *American Economic Review*, *Journal of Political Economy*, *Econometrica*, *Quarterly Journal of Economics*, *Journal of Finance*, and *Journal of Monetary Economics*.

Professor Mishkin has served on the editorial board of *American Economic Review* and has been an associate editor at *Journal of Business and Economic Statistics*, the *Journal of Applied Econometrics* and *Journal of Money, Credit and Banking*; he also served as the editor of the Federal Reserve Bank of New York's *Economic Policy Review*. He is currently an associate editor (member of the editorial board) at six academic journals, including *Macroeconomics and Monetary Economics Abstracts*; *Journal of International Money and Finance*; *International Finance*; *Finance India*; *Economic Policy Review*; and *Emerging Markets, Finance and Trade*. He has been a consultant to the Board of Governors of the Federal Reserve System, the World Bank, and the International Monetary Fund, as well as to many central banks throughout the world. He was also a member of the International Advisory Board to the Financial Supervisory Service of South Korea and an adviser to the Institute for Monetary and Economic Research at the Bank of Korea. Professor Mishkin was a Senior Fellow at the Federal Deposit Insurance Corporation's Center for Banking Research and was an academic consultant to and served on the Economic Advisory Panel of the Federal Reserve Bank of New York.



**Apostolos Serletis** is Professor of Economics and Finance at the University of Calgary. Since receiving his Ph.D. from McMaster University in 1984, he has held visiting appointments at the University of Texas at Austin, the Athens University of Economics and Business, and the Research Department of the Federal Reserve Bank of St. Louis.

Professor Serletis's teaching and research interests focus on monetary and financial economics, macroeconometrics, and nonlinear and complex dynamics. He is the author of eight books, including *Principles of Economics* (Canadian edition) with R. Glenn Hubbard, Anthony Patrick O. Brien, and Jason Childs (Pearson, 2015); *Macroeconomics: A Modern Approach* (Canadian edition) with Robert J. Barro (Nelson, 2010); *The Demand for Money: Theoretical and Empirical Approaches* (Springer, 2007); *Financial Markets*

*and Institutions: Canadian Edition*, with Frederic S. Mishkin and Stanley G. Eakins (Addison-Wesley, 2004); and *The Theory of Monetary Aggregation*, co-edited with William A. Barnett (Elsevier, 2000). In addition, he has published over 150 articles in such journals as *Journal of Economic Literature*; *Journal of Monetary Economics*; *Journal of Money, Credit, and Banking*; *Journal of Econometrics*; *Journal of Applied Econometrics*; *Journal of Business and Economic Statistics*; *Macroeconomic Dynamics*; *Journal of Banking and Finance*; *Journal of Economic Dynamics and Control*; *Economic Inquiry*; and the *Canadian Journal of Economics*.

Professor Serletis is Associate Editor of *Macroeconomic Dynamics*, *Energy Economics*, and the *Journal of Economic Asymmetries*. He is also a member of the editorial board of the *Journal of Economic Studies*. He is listed in a variety of directories, including *Who's Who in Economics* and *Who's Who in the World*.



# PART



## Introduction

**Chapter 1** Why Study Money, Banking, and Financial Markets?

**Chapter 2** An Overview of the Financial System

**Chapter 3** What Is Money?

### **Crisis and Response: Global Financial Crisis and Its Aftermath**

In August 2007, financial markets began to seize up, and over the next two years the world economy experienced its most severe financial crisis since the Great Depression years of the 1930s. The financial crisis started in the United States and was the result of a credit-driven, asset-price bubble in the U.S. housing market. When that bubble burst, housing prices in the United States plummeted, the stock market crashed, unemployment skyrocketed, and both businesses and households found they couldn't get credit. Not only did the central bank of the United States, the Federal Reserve, respond by sharply lowering interest rates and intervening in credit markets to provide them with massive amounts of liquidity, but governments around the world worked on full-scale banking bailouts and rescue packages adding up to trillions of dollars. However, even with these aggressive actions aimed at stabilizing the financial system and boosting the economy, eight years after the crisis, economies throughout the world are still experiencing problems and the finances of many governments are in tatters.

The global financial crisis and its aftermath demonstrate the importance of banks and financial systems to economic well-being, as well as the major role of money in the economy. Part 1 of this book provides an introduction to the study of money, banking, and financial markets. Chapter 1 outlines a road map of the book and discusses why it is so worthwhile to study money, banking, and financial markets. Chapter 2 provides a general overview of the financial system. Chapter 3 then explains what money is and how it is measured.

1.39

+4.08



# Why Study Money, Banking, and Financial Markets?

## Learning Objectives

After studying this chapter you should be able to

1. Recognize the importance of financial markets in the economy.
2. Describe how financial intermediation and financial innovation affect banking and the economy.
3. Identify the basic links among monetary policy, the business cycle, and economic variables.
4. Explain the importance of exchange rates in a global economy.

## PREVIEW

You have just heard on the evening news that the Bank of Canada is raising the overnight interest rate by one-half of a percentage point. What effect might this have on the interest rate of an automobile loan when you finance your purchase of a sleek new sports car? Does it mean that a house will be more or less affordable in the future? Will it make it easier or harder for you to get a job next year?

This book provides answers to these and other questions by examining how financial markets (such as those for bonds, stocks, and foreign exchanges) and financial institutions (banks, insurance companies, mutual funds, and other institutions) work and by exploring the role of money in the economy. Financial markets and institutions affect not only your everyday life but also the flow of billions of dollars of funds throughout our economy, which in turn affects business profits, the production of goods and services, and even the economic well-being of countries other than Canada. What happens to financial markets, financial institutions, and money is of great concern to politicians and can have a major impact on elections. The study of money, banking, and financial markets will reward you with an understanding of many exciting issues. In this chapter we provide a road map of this book by outlining these issues and exploring why they are worth studying.

## WHY STUDY FINANCIAL MARKETS?

**Financial markets** are markets in which funds are transferred from people who have an excess of available funds to people who have a shortage. Financial markets, such as bond and stock markets, are crucial to promoting greater economic efficiency by channeling funds from people who do not have a productive use for them to those who do. Indeed, well-functioning financial markets are a key factor in producing high economic growth, and poorly performing financial markets are one reason that many countries in the world remain desperately poor. Activities in financial markets also have a direct effect on personal wealth, the behaviour of businesses and consumers, and the cyclical performance of the economy. Part 2 of this book focuses on financial markets.



## The Bond Market and Interest Rates

A **security** (also called a *financial instrument*) is a claim on the issuer's future income or **assets** (any financial claim or piece of property that is subject to ownership). A **bond** is a debt security that promises to make payments periodically for a specified period of time.<sup>1</sup> The bond market is especially important to economic activity because it enables corporations and governments to borrow to finance their activities, and because it is where interest rates are determined. An **interest rate** is the cost of borrowing or the price paid for the rental of funds (usually expressed as a percentage of the rental of \$100 per year). Many types of interest rates are found in the economy—mortgage interest rates, car loan rates, and interest rates on many different types of bonds.

Interest rates are important on a number of levels. On a personal level, high interest rates could deter you from buying a house or a car because the cost of financing would be high. Conversely, high interest rates could encourage you to save because you can earn more interest income by putting aside some of your earnings as savings. On a more general level, interest rates have an impact on the overall health of the economy because they affect not only consumers' willingness to spend or save, but also businesses' investment decisions. High interest rates, for example, may cause a corporation to postpone building a new plant that would provide more jobs.

Because changes in interest rates affect individuals, financial institutions, businesses, and the overall economy, it is important to explain substantial fluctuations in interest rates over the past 35 years. For example, the interest rate on three-month Treasury bills peaked at over 20% in August 1981. This interest rate then fell to less than 3% in 1997, rose to near 5% in the late 1990s, fell to a low of 2% in the early 2000s, rose to above 4% by 2007, and fell to close to 1% from 2008 to 2014.

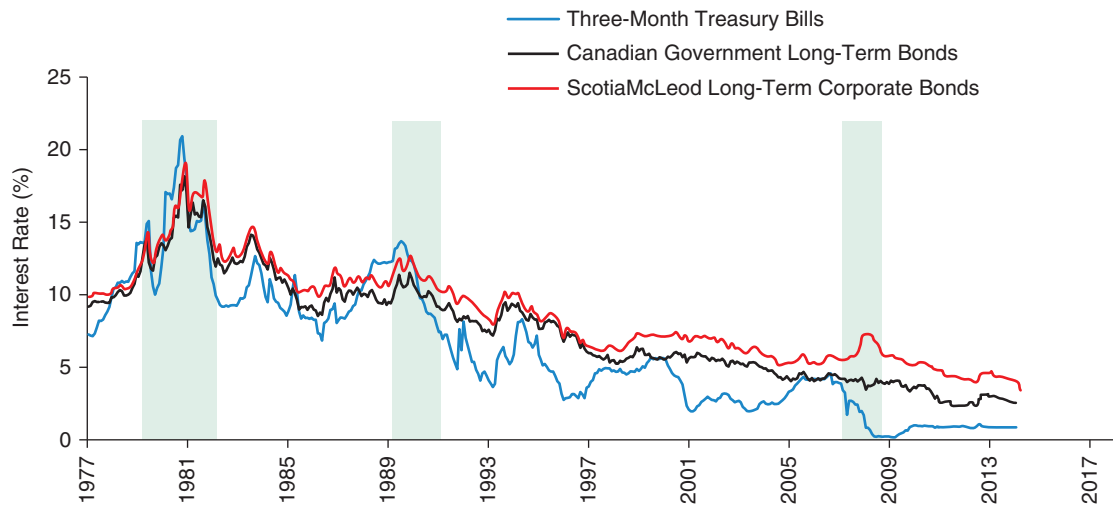
Because different interest rates have a tendency to move in unison, economists frequently lump interest rates together and refer to “the” interest rate. As Figure 1-1 shows, however, interest rates on different types of bonds can differ substantially. The interest rate on three-month Treasury bills, for example, fluctuates more than other types of interest rates, and is lower on average. The interest rate on long-term corporate bonds is higher on average than other interest rates, and the spread between it and the other rates fluctuates over time.

In Chapter 2 we study the role of bond markets in the economy, and in Chapters 4 through 6 we examine what an interest rate is, how the common movements in interest rates come about, and why the interest rates on different bonds vary.

## The Stock Market

A **common stock** (typically just called a **stock**) represents a share of ownership in a corporation. It is a security that is a claim on the earnings and assets of the corporation. Issuing stock and selling it to the public is a way for corporations to raise funds to finance their activities. The stock market, in which claims on the earnings of corporations (shares of stock) are traded, is the most widely followed financial market in almost every country that has one; that's why it is often called simply “the market.” A big swing in the prices of shares in the stock market is always a major story on the evening news.

<sup>1</sup>The definition of *bond* used throughout this book is the broad one in common use in academic settings, which covers short- and long-term debt instruments. However, some practitioners in financial markets use the word *bond* only to describe specific long-term debt instruments such as corporate bonds or government of Canada bonds.



**FIGURE 1-1 Interest Rates on Selected Bonds, 1977–2014**

Although different interest rates have a tendency to move in unison, they often differ substantially, and the spreads between them fluctuate.

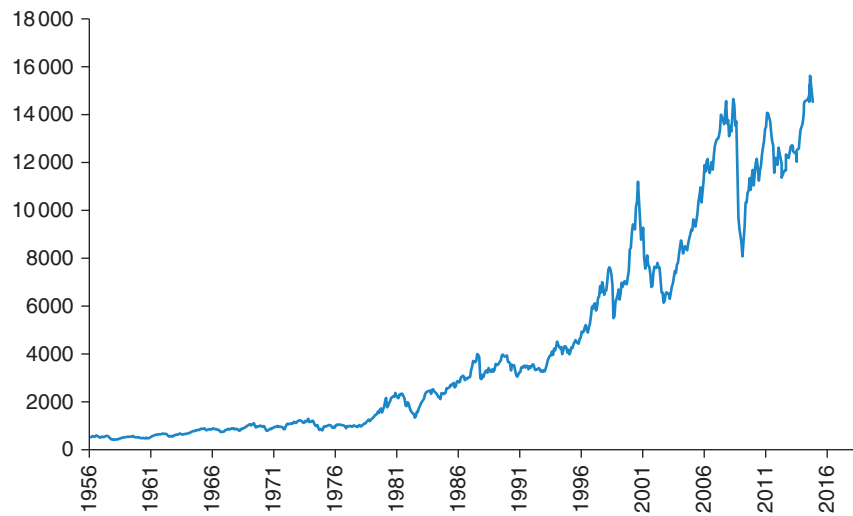
*Note:* Shaded areas represent recessions.

*Source:* Statistics Canada CANSIM series V122531, V122544, and V122518.

People often speculate on where the market is heading and get very excited when they can brag about their latest “big killing,” or become depressed when they suffer a big loss. The attention the market receives can probably be best explained by one simple fact: it is a place where people get rich—or poor—very quickly.

As Figure 1-2 indicates, stock prices are extremely volatile. After rising steadily during the 1980s, the market experienced the worst one-day drop in its entire history on October 19, 1987—“Black Monday”—with the S&P/TSX Composite Index (the Toronto Stock Exchange index of stock prices) falling by 11%. From then until 2000, the stock market experienced one of the greatest rises (often referred to as a “bull market”) in its history, with the S&P/TSX climbing to a peak of over 11 000. With the collapse of the high-tech bubble in 2000, the stock market again fell sharply, dropping by over 40% by late 2002. It then rose to an all-time high above the 14 000 level in early 2008, only to fall by over 50% of its value to a low of close to 8000 in early 2009. Another bull market then began, with the S&P/TSX reaching new highs of close to 16 000 by early 2014, only to fall again to below 14 000 by late 2014. These considerable fluctuations in stock prices affect the size of people’s wealth and, as a result, their willingness to spend.

The stock market is also an important factor in business investment decisions, because the price of shares affects the amount of funds that can be raised by selling newly issued stock to finance investment spending. A higher price for a firm’s shares



**FIGURE 1-2** Stock Prices as Measured by the S&P/TSX Composite Index, 1956–2014

Stock prices are extremely volatile.

Source: Statistics Canada CANSIM series V122620.

means that the firm can raise a larger amount of funds, which it can then use to buy production facilities and equipment. In Chapter 2 we examine the role that the stock market plays in the financial system, and in Chapter 7 we return to the issue of how stock prices behave and respond to information in the marketplace.

## WHY STUDY FINANCIAL INSTITUTIONS AND BANKING?

Banks and other financial institutions are what make financial markets work. Without them, financial markets would not be able to move funds from people who save to people who have productive investment opportunities. Thus financial institutions play a crucial role in the economy. Part 3 of this book focuses on financial institutions and the business of banking.

### Structure of the Financial System

The financial system is complex, comprising many different types of private sector financial institutions, including banks, insurance companies, mutual funds, finance companies, and investment banks, all of which are heavily regulated by the government. If an individual wanted to make a loan to Bombardier or BlackBerry, for example, he or she would not go directly to the president of the company and offer a loan. Instead, he or she would lend to such a company indirectly through **financial intermediaries**,

which are institutions that borrow funds from people who have saved and in turn make loans to people who need funds.

Why are financial intermediaries so crucial to well-functioning financial markets? Why do they extend credit to one party but not to another? Why do they usually write complicated legal documents when they extend loans? Why are they the most heavily regulated businesses in the economy?

We answer these questions in Chapter 8 by developing a coherent framework for analyzing financial structure in Canada and in the rest of the world.

## Banks and Other Financial Institutions

**Banks** are financial institutions that accept deposits and make loans. The term *banks* includes firms such as chartered banks, trust and loan companies, and credit unions and *caisses populaires*. Banks are the financial intermediaries that the average person interacts with most frequently. A person who needs a loan to buy a house or a car usually obtains it from a local bank. Most Canadians keep a large proportion of their financial wealth in banks in the form of chequing accounts, savings accounts, or other types of bank deposits. Because banks are the largest financial intermediaries in our economy, they deserve the most careful study. However, banks are not the only important financial institutions. Indeed, in recent years, other financial institutions, such as insurance companies, finance companies, pension funds, mutual funds, and investment banks, have been growing at the expense of banks, so we need to study them as well.

In Chapter 10, we extend the economic analysis in Chapter 8 to understand why financial regulation takes the form it does and what can go wrong in the regulatory process. In Chapter 11, we look at the banking industry and examine how the competitive environment has changed this industry. We also learn why some financial institutions have been growing at the expense of others. For a further discussion on the differences between banks and nonbank financial institutions and the regulation of nonbank financial institutions in the context of adverse selection and moral hazard problems, see Web chapter 3, “Nonbank Finance,” which can be found on MyEconLab.

In Chapter 12, we examine how banks and other financial institutions manage their assets and liabilities to make profits. Because the economic environment for banks and other financial institutions has become increasingly risky, these institutions must find ways to manage risk. How financial institutions manage risk with financial derivatives is the topic of Chapter 13.

## Financial Innovation

In Chapter 11, we study **financial innovation**, the development of new financial products and services. We will see why and how financial innovation takes place, with particular emphasis on how the dramatic improvements in information technology have led to new financial products and the ability to deliver financial services electronically through what has become known as **e-finance**. We also study financial innovation because it shows us how creative thinking on the part of financial institutions can lead to higher profits but can also sometimes result in financial disasters. By studying how financial institutions have been creative in the past, we obtain a better grasp of how they may be creative in the future. This knowledge provides us with useful clues about how the financial system may change over time.

## Financial Crises

At times, the financial system seizes up and produces financial crises, which are major disruptions in financial markets that are characterized by sharp declines in asset prices and the failures of many financial and nonfinancial firms. Financial crises have been a feature of capitalist economies for hundreds of years, and are typically followed by severe business cycle downturns. Starting in August 2007, the United States economy was hit by the worst financial crisis since the Great Depression. Defaults in subprime residential mortgages led to major losses in financial institutions, producing not only numerous bank failures but also the demise of Bear Stearns and Lehman Brothers, two of the largest investment banks in the United States. The crisis produced the worst economic downturn since the Great Depression, and as a result, it is now referred to as the “Great Recession.”

We discuss why these crises occur and why they do so much damage to the economy in Chapter 9.

## WHY STUDY MONEY AND MONETARY POLICY?

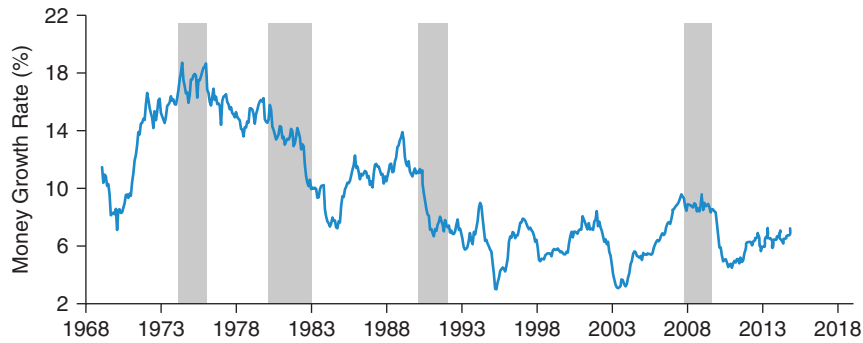
**Money**, also referred to as the **money supply**, is defined as anything that is generally accepted as payment for goods or services or in the repayment of debts. Money is linked to changes in economic variables that affect all of us and are important to the health of the economy. The final two parts of the book examine the role of money in the economy.

## Money and Business Cycles

During 1981–1982, the total production of goods and services (called **aggregate output**) in the Canadian economy fell and the **unemployment rate** (the percentage of the available labour force unemployed) rose to close to 12%. After 1982, the economy began to expand rapidly, and by 1989, the unemployment rate had declined to 7.5%. In 1990, that eight-year expansion came to an end, with unemployment rising to above 11%. The economy bottomed out in 1991, and the subsequent recovery was the longest in Canadian history, with the unemployment rate falling to around 6% in 2008 before rising to over 8% in early 2009 in the aftermath of the global financial crisis.

Why did the economy undergo such pronounced fluctuations? Evidence suggests that money plays an important role in generating **business cycles**, the upward and downward movement of aggregate output produced in the economy. Business cycles affect all of us in immediate and important ways. When output is rising, for example, it is easier to find a good job; when output is falling, finding a good job might be difficult. Figure 1-3 shows the movements of the rate of money growth from 1968 to 2014, with the shaded areas representing **recessions**, or periods of declining aggregate output. We see that the rate of money growth declined before most recessions, indicating that changes in money growth might be a driving force behind business cycle fluctuations. However, declines in the rate of money growth are often not followed by a recession.

We explore how money and monetary policy might affect aggregate output in Chapters 20 through 26 (Part 7) of this book, where when we study **monetary theory**, the theory that relates the quantity of money and monetary policy to changes in aggregate economic activity and inflation.



**FIGURE 1-3 Money Growth (M2++ (Gross) Annual Rate) and the Business Cycle in Canada, 1968–2014**

Although money growth has declined before almost every recession, not every decline in the rate of money growth is followed by a recession. Shaded areas represent recessions.

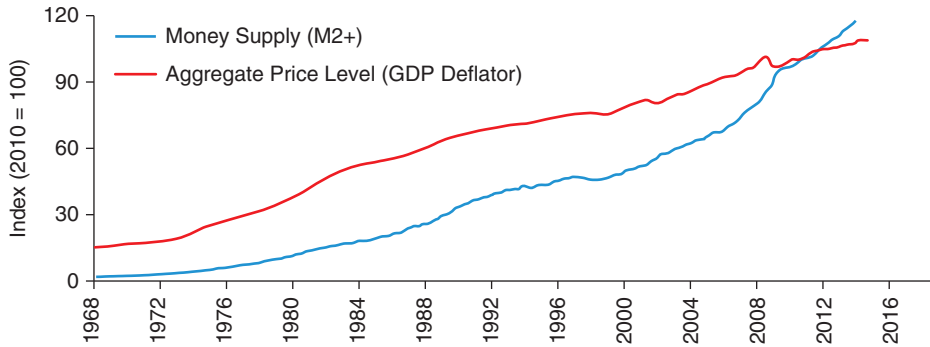
Source: Statistics Canada CANSIM series V41552801.

## Money and Inflation

The movie you paid \$13 to see last week would have set you back only a dollar or two thirty years ago. In fact, for \$13, you probably could have had dinner, seen the movie, and bought yourself a big bucket of hot buttered popcorn. As shown in Figure 1-4, which illustrates the movement of average prices in the Canadian economy from 1968 to 2014, the prices of most items are quite a bit higher now than they were then. The average price of goods and services in an economy is called the **aggregate price level** or, more simply, the *price level* (a more precise definition is found in the appendix to this chapter). From 1968 to 2014, the price level has increased more than sixfold. **Inflation**, a continual increase in the price level, affects individuals, businesses, and the government. It is generally regarded as an important problem to be solved and is often at the top of political and policy-making agendas. To solve the inflation problem, we need to know something about its causes.

What explains inflation? As we can see in Figure 1-4, the price level and the money supply generally rise together. These data seem to indicate that a continuing increase in the money supply might be an important factor in causing the continuing increase in the price level that we call inflation. Further evidence that inflation may be tied to continuing increases in the money supply is found in Figure 1-5, which plots the average **inflation rate** (the rate of change of the price level, usually measured as a percentage change per year) for a number of countries over the 10-year period 2003–2013 against the average rate of money growth over the same period. As you can see, a positive association exists between inflation and the growth rate of the money supply: the countries with the highest inflation rates are also the ones with the highest money growth rates. Turkey, Ukraine, and Zambia, for example, experienced high inflation



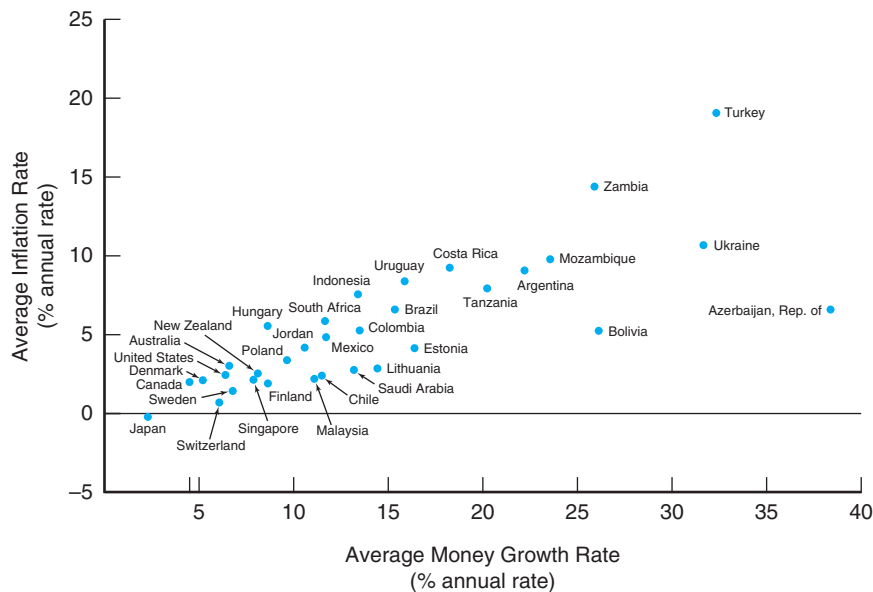


**FIGURE 1-4** Aggregate Price Level and the Money Supply in Canada, 1968–2014

From 1968 to 2014, the price level has increased more than sixfold.

Source: Federal Reserve Bank of St. Louis, FRED database: <http://research.stlouisfed.org/fred2/>.

MyEconLab Mini-lecture



**FIGURE 1-5** Average Inflation Rate Versus Average Rate of Money Growth for Selected Countries, 2003–2013

A positive association can be seen between the 10-year averages of inflation and the growth rate of the money supply: the countries with the highest inflation rates are also the ones with the highest money growth rates.

Source: International Financial Statistics. [www.imf.org/external/data.htm](http://www.imf.org/external/data.htm)