

# Macroeconomics

**Canadian Edition**

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**PEARSON**

Toronto

## Dedication

For Constance, Raph, and Will  
—*R. Glenn Hubbard*

For Lucy  
—*Anthony Patrick O'Brien*

For Sacha  
—*Matthew Rafferty*

For Joanna, Magda, Matt, and Adam  
—*Jerzy (Jurek) Konieczny*

**Editor-in-Chief:** Claudine O'Donnell

**Marketing Manager:** Claire Varley

**Program Manager:** Joel Gladstone

**Project Manager:** Kimberley Blakey

**Developmental Editors:** Mary Wat/Martina van de Velde

**Production Services:** Cenveo® Publisher Services

**Permissions Project Manager:** Joanne Tang

**Photo and Permissions Research:** Lumina Datamatics

**Text Permissions Research:** Lumina Datamatics

**Art Director:** Zena Denchik

**Cover Design:** Anthony Leung

**Interior Design:** Anthony Leung

**Cover Image:** © Martin Sundberg/Corbis

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

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### Library and Archives Canada Cataloguing in Publication

Hubbard, R. Glenn, author

Macroeconomics / R. Glenn Hubbard, Columbia University, Anthony Patrick O'Brien, Lehigh University, Matthew Rafferty, Quinnipiac University, Jerzy Konieczny, Wilfrid Laurier University.—First edition.

Includes bibliographical references and index.

ISBN 978-0-13-334919-1 (bound)

I. Macroeconomics—Textbooks. I. O'Brien, Anthony Patrick, author  
II. Rafferty, Matthew, author III. Konieczny, Jerzy D., author IV. Title.

HB172.5.H82 2014

339

C2014-904802-5

**PEARSON**

ISBN 13: 978-0-13-334919-1

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# Preface

The students enrolled in today's intermediate macroeconomics courses are likely to become entrepreneurs, managers, bankers, stock brokers, accountants, lawyers, or government officials. Few of these students will pursue a Ph.D. in economics. Given this student profile, we believe it is important for the course to move from emphasizing models for their own sake to using theory to understand real-world, relevant examples and current policies that are in today's news headlines.

We believe that short-run macroeconomic policy plays too small a role in current texts. There was a time when it seemed self-evident that policy should be the focus of a course in intermediate macroeconomics. The extraordinary macroeconomic events surrounding the Great Depression, World War II, and the immediate postwar era naturally focused the attention of economists on short-run policy measures. But by the 1970s, the conventional Keynesian–neoclassical synthesis of Samuelson, Hansen, and Hicks had come to be viewed as inadequately grounded in microeconomic foundations and as paying insufficient attention to long-run considerations.

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

## Our Approach to Intermediate Macroeconomics

While in many ways we agree with the focus on the long run and on microfoundations, we have found ourselves in our own courses increasingly obliged to supplement existing texts with additional material, especially when discussing short-term macroeconomic policy, and especially since the Great Recession and the global financial crisis.

The Great Recession has changed how economists, students, and policymakers think about the economy. Many economists view the Great Recession and its aftermath as a watershed in macroeconomics, second only to the Great Depression. The financial crisis that precipitated the recession showed the importance of the financial system and financial regulation to macroeconomic theory and policy. The global nature of the crisis demonstrated that countries have become more connected economically and financially. The Canadian experience underscored the importance, at a time of crisis, of a well-regulated banking system and sound fiscal and monetary policies. While these features of the Canadian economy could not prevent the transmission of the recession, they helped make it milder and shorter than it was in the United States. Going into 2015, the world economy is still feeling the aftermath of the Great Recession: Unemployment in Europe is at near record high levels; several European countries as well as Japan are on the brink of another recession; interest rates in developed countries are at record lows; many countries struggle with ballooning debts; and the Canadian economy, after a relatively quick recovery from the recession, is sluggish.

The events of the past few years required a new approach to teaching macroeconomics. The main lessons are as follows:

1. The financial crisis makes it critical for students to receive more background on the financial system.
2. There should be greater emphasis on short-term macroeconomic analysis and short-term policy.
3. Students will be interested in macroeconomic models when they see them applied to understanding real-world events and current policies that are in today's news headlines.

It is important to note that our aim is certainly not to revolutionize the teaching of the intermediate macroeconomics course. Rather, we would like to shift its emphasis. We elaborate on our approach in the next sections.

## Features of the Canadian Edition

The Canadian edition of the book benefits from the enthusiastic response of students and instructors who used the U.S. editions. The response confirmed our view that the market needed a text that provided more coverage of the financial system and presented a modern short-run model. The Canadian edition retains the key approach of the U.S. text while making several changes to address feedback from instructors and students and also to reflect our own classroom experiences.

### *The Great Recession and the Role of Current Events in the Study of Macroeconomics (Chapter 1)*

The Great Recession plays a central role in the book. The first chapter contains a concise, detailed description of the developments in financial markets that led to the Great Recession, the international transmission of the recession, and its effect on Canada. We link the discussion of the Great Recession to the content in the book by adding brief summaries of book chapters. For example, the discussion of monetary policy actions in the Great Recession is followed by a brief summary of Chapter 12, “Monetary Policy in the Short Run.” The discussion of the behaviour of GDP and its components during the Great Recession is followed by a brief summary of Chapter 16, “Consumption and Investment.” In our experience, discussing the Great Recession at the beginning of the course increases student interest and helps students’ understanding of the material. In addition, throughout the book, we focus on recent economic events. We provide numerous examples, both in the text and in special features.

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

In many intermediate texts, the  $IS-LM$  model holds centre stage. The  $IS-LM$  model provides a useful way for instructors to present the major points of the Keynesian model of how short-run GDP is determined. By the start of this decade, however, three pedagogical shortcomings of the  $IS-LM$  model have become evident:

- Most importantly, the assumption of a constant money supply used in constructing the LM curve no longer describes the policy approach of the Bank of Canada or central banks from many other developed countries. Central banks target interest rates rather than the money supply, and so the LM curve is no longer as useful as it once was in discussing monetary policy.
- The LM curve is based on the trade-off between holding money and interest-earning assets. With interest rates as low as they have been in recent years, motivating the LM curve is difficult. Students do not find compelling the trade-off between cash that yields zero interest and assets that earn 1%–2% per year.
- The Keynesians versus Monetarists debates, while substantively important, are now a part of the history of macroeconomics.

In place of the  $IS-LM$  model, we introduce the  $IS-MP$  model. It replaces the LM curve with the MP curve, which represents the monetary policy of a central bank using interest rates to conduct monetary policy. The result is similar to the  $IS-MP$  model first suggested by David Romer. The  $IS-MP$  model shifts the focus from the central bank’s targeting the money supply to the central bank’s targeting interest rates. This change results in a more realistic approach that allows students to tie what they learn in class to the discussions they hear on the news. Many students reading texts that use the traditional  $IS-LM$  model are surprised to learn that the Bank of Canada has no targets for M1 or M2 and that articles in the financial press rarely discuss the money supply. At some time during the course, the Bank of Canada will make a policy announcement and students will read that the decision was whether to change the interest rate, rather than adjust the money supply. They will find it easier to understand with the  $IS-MP$  model and its focus on interest rates than with the LM model and its focus on the money supply.



We cover the *IS–MP* model in Chapter 10, “*IS–MP: A Short-Run Macroeconomic Model*.” We include a full appendix on the *IS–LM* model at the end of the chapter for those who wish to cover that model. In Chapter 11, “*The IS–MP Model: Adding Inflation and the Open Economy*” we extend the model to include inflation and open economy considerations. We use the *IS–MP* model to analyze monetary policy in Chapter 12, “*Monetary Policy in the Short Run*,” and fiscal policy in Chapter 13, “*Fiscal Policy in the Short Run*.”

### ***Significant Coverage of Financial Markets, Beginning with Chapter 3***

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

### ***Integration of International Topics (Chapters 5, 11, 12, 13)***

When the crisis in subprime mortgages began in the United States, many policymakers thought it was not going to have major effects on the world economy. As it turned out, the U.S. subprime crisis devastated the economies of most of the developed world. That a problem in one part of one sector of one economy could cause a worldwide crisis is an indication that a textbook on macroeconomics must take seriously international economic linkages. We cover these linkages throughout the text, using data not just for Canada but for many other countries. We explore such issues as the dependence of the Canadian economy on the U.S. economy, the European sovereign debt crisis, and the increased coordination of monetary policy among central banks. We introduce international issues in Chapter 5, “*The Global Financial System and Exchange Rates*,” which stresses the importance of international linkages for the economy.

Unlike in most texts, which treat the open economy separately from the closed economy, we integrate the discussion of the open economy into the relevant chapters. In Chapter 11, “*The IS–MP Model: Adding Inflation and the Open Economy*,” we show how the equilibrium is determined in an open economy. In Chapter 12, “*Monetary Policy in the Short Run*,” and in Chapter 13, “*Fiscal Policy in the Short Run*,” we show how monetary and fiscal policies operate in the open economy. We also provide numerous international examples throughout the text, including the following:

- Hyperinflation in Zimbabwe (Chapter 4)
- Preventing Appreciation in China and Depreciation in Mexico (Chapter 5)
- Unemployment Rates around the World (Chapter 6)
- Comparison of GDP in China and Japan since 1952 (Chapter 7)
- What Explains Recent Economic Growth in India? (Chapter 8)
- Business Cycles around the World (Chapter 9)
- Deficits in G7 countries (Chapter 13)
- The European Debt Crisis: PIGS and FANGs (Chapter 15)
- Consumption and Investment around the world (Chapter 16)

### ***Early Discussion of Long-Run Growth (Chapters 7 and 8)***

Students need to be able to distinguish the macroeconomic forest—long-run growth—from the macroeconomic trees—short-run fluctuations in real GDP, employment, and the rate of inflation. Because many macroeconomic principles texts put a heavy emphasis on the short run, many students enter the intermediate macro course thinking that macroeconomics is exclusively concerned with short-run fluctuations. The extraordinary success of the market system

in raising the standard of living of the average person in Canada and other developed economies comes as surprising news to many students. Students know where we are today, but the economic explanation of how we got here is unfamiliar to many of them.

In addition, it makes sense to us for students to first understand both a basic model of long-run growth and the determination of GDP in a flexible-price model before moving on to the discussion of short-run fluctuations and short-run policy. In Chapter 7, “The Standard of Living over Time and across Countries,” we show the determination of GDP in a classical model and also discuss the difference between flexible-price models and fixed price models. We place this discussion in a broader context of the reallocation of resources. Chapter 8, “Long-Run Economic Growth,” provides a concise step-by-step introduction to the Solow growth model and to endogenous growth models, including the AK growth models. The chapter explains how policy affects the growth rate of the standard of living. Both chapters integrate information about China, India, and other developing countries to illustrate applications of the models we discuss.

### ***Modern Monetary Policy and Its Broadened Emphasis beyond Interest Rate Targeting (Chapters 4, 12, and 14)***

The developments of the Great Recession have demonstrated the need to move monetary policy beyond the focus on interest rates, which had dominated policy since 1980s. To understand the broader reach of monetary policy, students need to be introduced to material that is largely missing from competing texts, in particular the increased importance of investment banking and role of securitization in modern financial markets. In addition, monetary policy decisions during the Great Recession require extended discussion of issues of moral hazard. While these discussions are common in money and banking texts, they have been largely ignored in intermediate macro texts. We cover these topics in Chapter 4, “Money and Inflation,” Chapter 12, “Monetary Policy in the Short Run,” and Chapter 14, “Aggregate Demand, Aggregate Supply, and Monetary Policy.”

## **Flexible Chapter Organization**

We have written the text to provide instructors with considerable flexibility. Instructors who wish to emphasize the short run can begin by covering Chapters 1–5 (Part 1, “Introduction” and Part 2, “The Financial System”), and perhaps Chapter 6, “The Labour Market”, and then jump to Chapters 9–15 (Part 4, “Macroeconomics in the Short Run: Theory and Policy”), before covering Chapters 6–8 (Part 3, “Macroeconomics in the Long Run”). We have arranged content so that Chapters 9–15 can be taught without Chapters 6–8. If time is insufficient, the last two chapters can also be skipped.

**CHAPTER 9**

## Business Cycles

**Learning Objectives**

After studying this chapter, you should be able to:

- 9.1** Explain the difference between the short run and the long run in macroeconomics (pages 264–269)
- 9.2** Understand what happens during a business cycle (pages 269–279)
- 9.3** Explain how economists think about business cycles (pages 279–282)
- 9.4** Use the aggregate demand and aggregate supply model to explain the business cycle (pages 283–287)
- 9.A** Appendix: Derive the formula for the expenditure multiplier (page 292)

**How Do We Know the Economy Is in an Expansion or a Recession?**

Two consecutive quarters of decline in economic activity are often used as the indication that the economy is in a recession. But this is overly simplified. Recessions are complex phenomena with different causes and characteristics. How do we know that Canada is in a recession? Statistics Canada produces many statistics that make it possible to monitor the economy. Various government departments also produce statistical data. But neither Statistics Canada nor the federal government officially establish the dates of the beginning and end of recessions. In this book we use the dates established by the Business Cycle Council of the C.D. Howe Institute, an independent research organization in Toronto. The Council, set in 2012, consists of around ten economists from the academia, business, and think-tanks. The Council's first report in October 2012, written by Philip Cross and Philippe Bergeron, provided the dates of recessions going back to 1926. To establish the dates of recessions, three dimensions were considered: the duration of weak economic activity, amplitude—or how much activity declined,

## **Special Features**

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

## **Contemporary Opening Cases**

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

chapters to reinforce the link between macroeconomics and the real world. The introductory stories are

- “How Do We Know When We Are in a Recession?” (Chapter 2, “Measuring the Macroeconomy”)
- “Why Is the Canadian Banking System the Best in the World?” (Chapter 3, “The Canadian Financial System”)
- “Working for Peanuts?” (Chapter 4, “Money and Inflation”)
- “Why Are Prices Higher in Canada than in the United States?” (Chapter 5, “The Global Financial System and Exchange Rates”)
- “Firms Have Trouble Finding Workers; So Why Is the Unemployment Rate so High?” (Chapter 6, “The Labour Market”)
- “Who Is Number One?” (Chapter 7, “The Standard of Living over Time and across Countries”)
- “The Surprising Economic Rise of India” (Chapter 8, “Long-Run Economic Growth”)
- “How Do We Know the Economy Is in an Expansion or a Recession?” (Chapter 9, “Business Cycles”)
- “The Great Recession and the Policy Response” (Chapter 10, “Explaining Aggregate Demand: The *IS-MP* Model”)
- “Where’s the Inflation?” (Chapter 11, “The *IS-MP* Model: Adding Inflation and the Open Economy”)
- “Why Didn’t the Federal Reserve and the Bank of Canada Avoid the Great Recession?” (Chapter 12, “Monetary Policy in the Short Run”)
- “How Canada Eliminated the Deficit” (Chapter 13, “Fiscal Policy in the Short Run”)
- “Did Central Banks Create and Kill the Great Moderation?” (Chapter 14, “Aggregate Demand, Aggregate Supply, and Monetary Policy”)
- “Drowning in a Sea of Debt?” (Chapter 15, “Fiscal Policy and the Government Budget in the Long Run”)
- “Are All Tax Cuts Created Equal?” (Chapter 16, “Consumption and Investment”)

### **Making the Connection Feature**

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

- Why Should Canada Worry about the “Euro Crisis”? (Chapter 1)
- Is the Inflation Rate around the World Going to Increase in the Near Future? (Chapter 4)
- Will China’s Standard of Living Ever Exceed that of Canada? (Chapter 8)
- Can There Be Too Much R&D? (Chapter 8)
- How Big Is the Multiplier? Is it the Same in Recessions and Expansions? (Chapter 9)
- Can Nominal Interest Rates Be Negative? (Chapter 12)
- Bank Crises and the Severity of the Great Recession (Chapter 13)
- The European Debt Crisis: PIGS and FANGS (Chapter 15)
- Record Household Debt in Canada (Chapter 16)

### **Making the Connection**

#### **How Expensive Gold Really Is**

Gold has been used as money for a long time. The main reason is that it is very valuable. Indeed, it is so valuable that to describe something that is very expensive (or metaphorically invaluable), we can say it is “worth its weight in gold.”

Just how valuable is gold? Disregarding antiques and jewellery, at the mid-2014 average price of US\$1300 per troy ounce (31.1 grams), few things are literally worth their weight in gold. The most expensive iPhone 6 (129 grams, US\$849) costs about 1/6<sup>th</sup>, and Google Glass (50 grams, \$1500) costs 3/4 of its weight in gold.

The value of gold is, however, often exaggerated. In the 1995 movie *Die Hard with Vengeance*, the bad guys steal \$140 billion dollars worth of gold from the vault of the Federal Reserve Bank of New York. There is, indeed, a lot of gold in the vault of the Federal Reserve Bank of New York. The bank belongs to the Federal Reserve System, the U.S. central bank. On behalf of the Fed it provides custodial services for gold owned by other central banks. In 2012 it held 6700 tonnes of gold. So far so good: If you are wondering where a huge amount of gold can be stolen from, the Federal Reserve Bank of New York is a prime candidate. (Note, however, that breaking into their vault may be difficult. Their security is described here: [www.newyorkfed.org/aboutthefed/goldvault.html](http://www.newyorkfed.org/aboutthefed/goldvault.html).)

In the movie the bad guys steal US\$140 billion worth of gold and transport the gold in 14 dump trucks. Would that be possible, or is it a Hollywood exaggeration? Let us check. In 1995 the average price of gold was about US\$385<sup>4</sup> per troy ounce or US\$12 380 per kilogram. (An ounce equals 31.1 grams or 0.0311 kg; a kilogram of gold cost US\$385/0.0311 = US\$12 380.) The amount of gold stolen would have weighed approximately 11 309 tonnes (i.e., US\$140 billion/(US\$12 380/kg) = 11 309 091 kg = 11 309 tonnes). If it was divided equally among 14 trucks, each would have to transport over 800 tonnes. This is three times more than the capacity of the biggest truck in the world and about 50 times as much as a standard dump truck can carry. Gold is valuable but not *that* valuable.

See related problem 1.6 at the end of the chapter.

**Solved Problem 5.3**

**Making a Financial Killing by Buying Chilean Bonds?**

In September 2013 the interest rate on Canadian 1-year bonds was 1.09%; the interest rate on Chilean 1-year bonds was 4.93%. Could you make money by borrowing

Canada and putting the proceeds in Chilean bonds? Evaluate this investment strategy.

**Solving the Problem**

**Step 1** Review the chapter material. This problem is about the role exchange rates play in explaining differences in interest rates across countries, so you may want to review the section “The Interest Parity Condition,” which begins on page 126.

**Step 2** Answer the question by using the interest parity condition to explain the relationship between expected changes in exchange rates and differences in interest rates across countries. If the interest parity condition holds, then a 3.84-percentage-point gap between the interest rate on a Canadian and Chilean government bond means that investors must be expecting that the value of the Canadian dollar will appreciate against the peso by 3.84%.

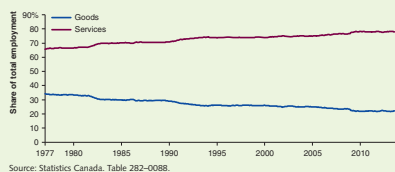
We can also mention a few real-world complications: Although the Canadian government can borrow money for one year at 1.09%, a private investor would have to pay a significantly higher interest rate to compensate lenders for the investor's higher default risk. Similarly, the interest parity condition holds only when investors see the two bonds being compared as having the same characteristics. In fact, investors will see the Chilean bond as having higher default risk and lower liquidity than Canadian bonds. So, a part of the gap between the two interest rates represents compensation for these characteristics of the Chilean bond rather than expectations of future changes in the exchange rate. In addition, by investing in Chile, a Canadian investor will be taking on exchange rate risk because the Canadian dollar could appreciate by more than the 3.84%, which would cause the investor to earn a lower return on Chilean bonds than on Canadian bonds.

So the short answer to the question is that, while the interest rate on Chilean bonds is higher than on Canadian bonds, the difference reflects expectations of changes in the exchange rate as well as other factors so that you are unlikely to make a killing by borrowing in Canada and putting the proceeds in Chilean bonds.

See related problems 3.8 at the end of the chapter.

**Macro Data: Is the Decline of Industries that Produce Goods a Recent Phenomenon?**

Industries that produce goods, such as cars, computers, and appliances, have become less important over time as a share of both GDP and total employment in Canada as well as in other high-income countries. At the same time, the share of services, such as haircuts or investment advice, has become more important.



The figure shows that in Canada the percentage of workers in goods-producing industries decreased from 35% of total employment in April 1976 to 22% in August 2013. Goods-producing industries have been in relative decline since the end of World War II in 1945, a trend that seems unlikely to be reversed. Although the relative share of employment in goods-producing industries has declined, the absolute number of workers employed in these industries has increased. Employment in goods-producing industries increased from 3.27 million workers in April 1976 to 3.92 million workers in August 2013. This increase, though, is much smaller than the increase in employment in services-producing industries, which grew from 6.36 million workers in April 1976 to 13.84 million workers in August 2013.

What explains the decline in the share of employment in goods-producing industries? Given that the decline dates back at least as far as the 1940s, recent developments, such as competition from China or other effects of globalization, cannot be the main cause. Instead, many economists believe that the decreasing importance of the goods-producing sector is likely due to productivity growth being much faster in goods-producing industries than in service-producing industries. For example, it still takes just as many members of an orchestra to play Beethoven's Ninth Symphony in 2013 as it did in 1976. However, each manufacturing worker is much more productive today than 40 years ago. As a result, they need for manufacturing workers has not grown as rapidly as the need for service workers.

The figure illustrates another important point: using employment as the measure, Canada has been a service economy for a long time. In fact, services employment in 1976 was actually greater than goods employment in 2013, despite the growth in the economy and the population over the intervening 37 years.

See related problem D6.1 at the end of the chapter.

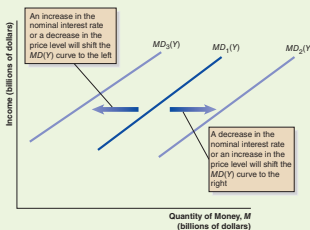
**Avoiding a Common Mistake: a Movement along or a Shift in the Curve**

Sometimes, when analyzing a model, students find it difficult to determine whether a change in a variable involves a movement along a curve, or a shift in the curve. This is actually easy to figure out as long as you remember what is on the axes. The rule is simple:

- if the variable that changes is on either axis, it is a movement along the curve
- if the variable that changes is not on either axis, it is a shift of the curve

We can use the rule to look at the money demand curve. A change in the nominal interest rate, or in the quantity of money, involves a movement along a given money demand curve. A change in any other variable, for example in income or the price level, involves a shift of the curve.

The reason students have problems is that sometimes we draw a similar curve with another variable on the axis. For example, we can draw the money demand curve to show quantity demanded as a function of income. It will be a positively sloped curve: The higher the level of income, the higher the quantity of money demanded. It is illustrated in the figure below. To avoid confusion, we denote the money demand curve drawn as a function of income as  $MD_Y(Y)$ .



With the money demand curve drawn this way, a change in income, or in the quantity of money, involve a movement along the curve; a change in the nominal interest rate or a change in the price level involves a shift in the curve, as illustrated in the figure.

So whether a change in a variable leads to a movement along a curve or a shift of the curve depends on the context, whether the variable is on the axis or not. As long as you remember the variables on the axes, you will not make a mistake!

**Useful Math 4.2 Calculating the percentage change of a product or a ratio**

There are simple and easy-to-remember formulas that relate variables to their percentage changes. We denote percentage change in variable  $X$  as  $\% \Delta X$ .

1. The percentage change of the product of two variables is equal to the sum of their percentage changes:  $\% \Delta(XY) = \% \Delta X + \% \Delta Y$ .
2. The percentage change of a ratio is equal to the difference of percentage changes:  $\% \Delta \left( \frac{X}{Y} \right) = \% \Delta X - \% \Delta Y$ .

These simple equations are often useful in assessing economic or business performance. For example, in 2012 nominal GDP in Canada grew by 3.1% ( $\% \Delta(P \cdot Y) = 3.1\%$ ) while prices (GDP deflator) increased by 1.3% ( $\% \Delta P = 1.3\%$ ). Nominal GDP =  $P \cdot Y$  so, using the first formula,  $\% \Delta(\text{Nominal GDP}) = \% \Delta P + \% \Delta Y$ . Substituting the values, we obtain  $3.1\% = 1.3\% + \% \Delta Y$  and so  $\% \Delta Y = 1.8\%$ : real GDP increased 1.8%.

For another example consider Tim Hortons. It is a multi-franchise company that can grow by increasing the sales per franchise or by increasing the number of franchises. Increasing sales per franchise (called intensive

growth) is preferred to increasing the number of franchises (extensive growth). Last year, total sales increased by 2%. Is it a good result? It depends on what happened with the number of franchises. The number of franchises increased by 3%. Denote the average sales per franchise by  $S$ , total sales by  $T$ , and the number of franchises by  $N$ . Since  $S = T/N$ , so, using the second equation,  $\% \Delta S = \% \Delta T - \% \Delta N = 2\% - 3\% = -1\%$ . While total sales grew by 2%, this was the result of extensive growth. Sales per franchise fell by 1%, not a good thing.

**Practice Question**

As we will see in Chapter 5, the real exchange rate is equal to the nominal exchange rate multiplied by the domestic price level and divided by the foreign price level. We denote the nominal exchange rate as  $e$ . Using symbols, real exchange rate =  $E \cdot \text{price}_{\text{domestic}} / \text{price}_{\text{foreign}}$ .

- (a) Calculate the rate of change of the real exchange rate.
- (b) If the real exchange rate is constant, the nominal exchange rate appreciates 2% per year and domestic inflation is 2% per year, what is foreign inflation?

**Solved Problem Feature**

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

- 1.1, “Do Rising Imports Lead to a Permanent Reduction in Canadian Employment?”
- 2.1, “Calculating Real GDP”
- 3.1, “Interest Rates and Bond Prices”
- 6.2, “How Many Jobs Does the Canadian Economy Create Every Month?”
- 7.1, “Calculating the Marginal Product of Labour and the Marginal Product of Capital”
- 8.1, “Finding the Steady-State Levels of the Capital, Output, Consumption, Investment, and Depreciation per Person”
- 10.2, “Using the *IS-MP* Model to Analyze the GST Tax Cut”
- 16.1, “Effects of a Temporary Tax Cut on Consumption”

**Macro Data Feature**

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

- Is the Decline of Industries that Produce Goods a Recent Phenomenon? (Chapter 6)
- Do High Rates of Saving and Investment Lead to High Levels of Income? (Chapter 8)
- Does the Bank of Canada Manage to Keep the Overnight Rate near the Target? (Chapter 12)
- Are Oil Supply Shocks Really That Important? (Chapter 14)
- Do Government Deficits Increase Real Interest Rates? (Chapter 15)

**Avoiding a Common Mistake and Useful Math Features**

After many years of teaching economics, we can identify some common mistakes that students make. There are different reasons for the mistakes: difficulty of economic concepts, misunderstanding of relationships between variables, or the fact that economic terms are not consistently used in popular media sources. While most students have few problems, alerting students to potential errors improves learning outcomes. We also added a few *Useful Math* features that help with understanding formula derivations. Examples of these features include the following:

- Interest Rates and Bond Prices Once Again (Chapter 3)
- A Movement along or a Shift in the Curve (Chapter 3)
- Calculating the Percentage Change of a Product or a Ratio (Chapter 4)
- Changes in the Actual Inflation Rate and the Fisher Effect (Chapter 4)
- Overvaluation, Devaluation, and Depreciation (Chapter 5)
- Calculating Bond Returns in Different Currencies (Chapter 5)

## End-of-Chapter Problems, Data Exercises, Learning Objectives, and the Award-Winning MyEconLab

Each chapter ends with a *Key Terms* list, *Review Questions*, *Problems and Applications*, and *Data Exercises*. The problems are written to be fully compatible with MyEconLab, an online course management, testing, and tutorial resource. Using MyEconLab, students can complete select end-of-chapter problems online, get tutorial help, and receive instant feedback and assistance on the exercises they answer incorrectly. Instructors can access sample tests, study plan exercises, tutorial resources, and an online Gradebook to keep track of student performance and time spent on the exercises. MyEconLab has been a successful component of the Hubbard and O'Brien *Economics and Money, Banking, and the Financial System* texts because it helps students improve their grades and helps instructors manage class time.

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

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

Each chapter ends with several data exercises which involve collecting and analyzing macroeconomic data. The exercises direct students to macroeconomic data sources from Statistics Canada, other statistical offices, and international organizations, including the International Monetary Fund, the OECD, and the World Bank. By doing data exercises students will become familiar with these data sources, providing a useful base for their future empirical courses.

## Supplements

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

## MyEconLab

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

- *Data Analysis Exercises* allow students and instructors to use the very latest data from FRED®, the online macroeconomic data bank from the Federal Reserve Bank of St. Louis.

**Key Terms and Problems**

**Key Terms**

Cyclical unemployment, p. 192	Job-finding rate, p. 192	Minimum wage, p. 198
Efficiency wage, p. 197	Job-separation rate, p. 193	Natural rate of unemployment, p. 192
Employment insurance, p. 190	Marginal product of labour (MPL), p. 182	Structural unemployment, p. 191
Frictional unemployment, p. 190		

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**6.1 The Labour Market**  
Use the model of demand and supply for labour to explain how wages and employment are determined.

**Review Questions**

- 1.1 Why is the demand curve for labour downward sloping?
- 1.2 How do the income and the substitution effects determine the slope of the labour supply curve?
- 1.3 What variables shift the labour demand curve? What variables shift the labour supply curve?

**Problems and Applications**

- 1.4 [Related to Solved Problem 6.1 on page 267] Draw a graph of the aggregate labour market in equilibrium and then consider each of the following situations. In each case, indicate whether the demand for labour, the supply of labour, or both will shift, and indicate what will happen to the equilibrium real wage and the equilibrium quantity of labour.
  - a. Worker preferences change so that the workers prefer consumption of market goods to consumption of leisure.
  - b. The government reduces payroll taxes that firms pay when they hire workers.
  - 1.5 According to Claudia Goldin of Harvard University, in the United States prior to 1940, most married women who worked had limited education and came from lower-income families. She argues, "Their decisions were made as secondary workers and their market work evaporated when family incomes rose sufficiently."
    - a. Discuss the likely relative sizes of the income and substitution effects for women during these years.
    - b. Given your answer to part (a), discuss the shape of the labour supply curve for women during these years.

**6.2 Categories of Unemployment**  
Define unemployment and explain the three categories of unemployment.

**Review Questions**

- 2.1 When the economy is at full employment, are all workers employed? Briefly explain.
- 2.2 Briefly describe the three categories of unemployment.
- 2.3 What is seasonal unemployment? Why does Statistics Canada report unemployment rates each month that are both seasonally adjusted and not seasonally adjusted?

**6.4 Why Does Unemployment Exist?**  
Explain how government policies affect the unemployment rate.

**Review Questions**

- 4.1 How does a real wage above the equilibrium wage cause unemployment?
- 4.2 Briefly explain the reasons the real wage may remain above the equilibrium wage for a period of time.

**Problems and Applications**

- 4.3 Suppose the equations for the demand and supply of labour are given by:

**6.3 The Natural Rate of Unemployment**  
Explain the natural rate of unemployment.

**Review Questions**

- 3.1 Define the natural rate of unemployment in terms of flows into and out of the labour market. Write the equation that expresses the natural rate of unemployment in terms of these flows.
- 3.2 What factors can cause the natural rate of unemployment to change?

**Problems and Applications**

- 3.3 Suppose that the rate of job separation is 2% and the job-finding rate is 18%.
  - a. What is the natural rate of unemployment?
  - b. If the job-finding rate doubles, what is the new natural rate of unemployment?
  - c. Return to the original scenario. If the rate of job separation is cut in half, what is the new natural rate of unemployment?
  - d. Which has a larger effect: a doubling of the job-finding rate or a halving of the job-separation rate? Does your result have any implications for government policy? Briefly explain.
- 3.4 Briefly explain the effect of each of the following factors on the natural rate of unemployment:
- 3.5 Increases in the generosity (percentage of wages replaced) and duration of unemployment benefits can be associated with increases in the natural rate of unemployment. Why do governments provide unemployment benefits if doing so might increase unemployment rates?
- 3.6 In an article about the effect of the Great Recession on the U.S. labour market, Bloomberg.com quotes Lawrence Mishel, president of the Economic Policy Institute in Washington, as saying: "People tend to think that when you come out of a recession you get the labour market you had when you entered it. This time you may get something quite different." Why might a prolonged recession cause changes in the natural rate of unemployment?  
Source: Matthew Benjamin and Rich Miller, "Great Recession Will Redefine Unemployment as Jobs Vanish," Bloomberg.com, May 3, 2009.
- 3.7 [Related to the Making the Connection on page 282] Some European companies have U.S. subsidiaries, and the labour practices they employ in the United States may be very different from those they employ in Europe. *Bloomberg Businessweek* reports "With more than 5 million Americans now employed by

**Data Exercises**

**D6.1:** [Related to Macro Data feature on page 271] The CIA *World Factbook* (<https://www.cia.gov/library/publications/the-world-factbook/>) gives for most countries the sectoral composition of GDP, that is, how production is divided up among agriculture, industry, and services.

- a. Examine the sectoral compositions for France, Japan, the United Kingdom, and the United States. Are they similar to or different from those of Canada?
- b. Examine the sectoral compositions for China, India, Bangladesh, and Kenya. How do these sectoral compositions compare to those you found in part (a)?
- c. What implications might the different sectoral compositions have for natural rates of unemployment?

**D6.2:** Under the World Bank's Labour and Social Protection data bank (see [data.worldbank.org/topic/labour-and-social-protection](http://data.worldbank.org/topic/labour-and-social-protection)), there is information on long-term unemployment by country.

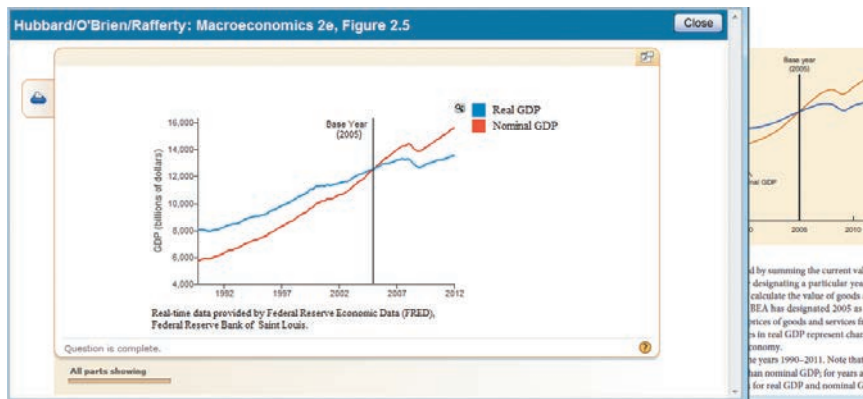
- a. In which of the following countries: Canada, the United States, France, Germany, Spain, and Italy, is the percentage of long-term unemployed individuals (as a percentage of total unemployed individuals) the highest? The lowest?
- b. Can you relate the differences in the duration of unemployment to differences in labour markets in these countries?

**D6.3:** Using data from Statistics Canada (<http://www5.statcan.gc.ca/cansim/a011lang=eng>), Table 282-0085, analyze unemployment rates.

- a. Download monthly data on the official unemployment rate (R4) from 2002 to the present.

By completing the exercises, students become familiar with a key data source, learn how to locate data, and develop skills to interpret data.

- In the eText available in MyEconLab, select figures are labelled.



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

Other features of MyEconLab include the following:

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

A more detailed walk-through of the student benefits and features of MyEconLab can be found on the inside front cover of this book. Visit [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com) for more information on and an online demonstration of instructor and student features.

Access to MyEconLab can be bundled with your printed text or purchased directly with or without the full eText at [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com).

### Instructor's Manual

The *Instructor's Manual* includes chapter-by-chapter summaries, key term definitions, teaching outlines with teaching tips, and solutions to all review questions and problems in the book. The *Instructor's Manual* is available for download from [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com).

### Test Item File

The Test Item File includes more than 1000 multiple-choice, short-answer, and essay questions. Test questions are annotated with the following information:

- **Difficulty:** 1 for straight recall, 2 for some analysis, and 3 for complex analysis
- **Type:** Multiple-choice, short-answer, and essay
- **Topic:** The term or concept that the question supports
- **Learning objective:** The major sections of the main text and its end-of-chapter questions and problems are organized by learning objective. The Test Item File questions continue with this organization to make it easy for instructors to assign questions based on the objective they wish to emphasize.
- **The Association to Advance Collegiate Schools of Business (AACSB) Assurance of Learning Standards:** Following the AACSB's learning objectives, these standards emphasize Communication; Ethical Reasoning; Analytic Skills; Use of Information Technology; Multicultural and Diversity; and Reflective Thinking.
- **Page number:** The page in the main text where the answer appears allows instructors to direct students to where supporting content appears.
- **Special feature in the main book:** Select questions support the chapter-opening vignette, the *Solved Problem*, *Making the Connection*, and *Macro Data*.

The Test Item File is available for download from [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com).

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

### PowerPoint Lecture Presentation

Instructors can use the PowerPoint slides for class presentations, and students can use them for lecture preview or review. These slides include all the graphs, tables, and equations from the textbook.

Student versions of the PowerPoint slides are available as PDF files in MyEconLab. These files allow students to print the slides and bring them to class for note taking. Instructors can download these PowerPoint presentations from [www.pearsonmylabandmastering.com](http://www.pearsonmylabandmastering.com).



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## Reviewers and Other Contributors

The guidance and recommendations of the following instructors helped us to revise the content and organization of this text:

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

## A Word of Thanks

We benefited greatly from the dedication and professionalism of the Pearson Economics team. Editor-in-Chief Claudine O'Donnell is an enthusiastic proponent of modernizing the intermediate course. Claudine's energy was contagious and she provided support and encouragement at every stage of the process. Developmental Editors Maurice Esses, Mary Wat, and Martina van de Velde provided excellent help in organization and coordination. Program Manager Joel Gladstone and Project Manager Kimberley Blakey complemented the outstanding Pearson Economics team. Freelance editor Cat Haggert worked tirelessly to improve the clarity and eliminate errors. Ioan Ilea provided excellent and efficient research assistance. Finally, a good part of the burden of a project of this magnitude is borne by our families, and we appreciate their patience, support, and encouragement.