

SEVENTEENTH CANADIAN EDITION

RAGAN

MACROECONOMICS



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RAGAN

MACROECONOMICS

CHRISTOPHER T.S. RAGAN

McGILL UNIVERSITY



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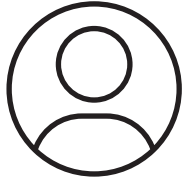
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Preface

Economics is a living discipline, changing and evolving in response to developments in the world economy and in response to the research of many thousands of economists throughout the world. Through seventeen editions, *Macroeconomics* has evolved with the discipline. Our purpose in this edition, as in the previous sixteen, is to provide students with an introduction to the major issues facing the world's economies, to the methods that economists use to study those issues, and to the policy problems that those issues create. Our treatment is everywhere guided by three important principles:

1. Economics is *scientific*, in the sense that it progresses through the systematic confrontation of theory by evidence. Neither theory nor data alone can tell us much about the world, but combined they tell us a great deal.
2. Economics is *relevant* and it should be seen by students to be so. An understanding of economic theory combined with knowledge about the economy produces many important insights about economic policy. Although we stress these insights, we are also careful to point out cases in which too little is known to support strong statements about public policy. Appreciating what is not known is as important as learning what is known.
3. We strive always to be *honest* with our readers. Although we know that economics is not always easy, we do not approve of glossing over difficult bits of analysis without letting readers see what is happening and what has been assumed. We take whatever space is needed to explain why economists draw their conclusions, rather than just asserting the conclusions. We also take pains to avoid simplifying matters so much that students would have to unlearn what they have been taught if they continue their study beyond the introductory course. In short, we have tried to follow Albert Einstein's advice:

Everything should be made as simple as possible, but not simpler.

CURRENT ECONOMIC ISSUES

In writing the seventeenth edition of *Macroeconomics*, we have tried to reflect the major economic issues that we face in the early twenty-first century.

Living Standards and Economic Growth

One of the most fundamental economic issues is the determination of overall living standards. Adam Smith wondered why some countries become wealthy while others remain poor. Though we have learned much about this topic in the 245 years since Adam Smith's landmark work, economists recognize that there is still much we do not know.

Technological change plays a central role in our discussion of long-run economic growth in Chapter 10. We explore not only the traditional channels of saving, investment, and population growth, but also the more recent economic theories that emphasize the importance of increasing returns and endogenous growth.

We are convinced that no other introductory economics textbook places as much emphasis on technological change and economic growth as we do in this book. Given the importance of continuing growth in living standards and understanding where that growth comes from, we believe this emphasis is appropriate. We hope you agree.

Financial Crisis and Recession

The collapse of U.S. housing prices in 2007 led to a global financial crisis the likes of which had not been witnessed in a century, and perhaps longer. A deep recession, experienced in many countries, followed quickly on its heels. These dramatic events reawakened many people to two essential facts about economics. First, modern economies *can and do* go into recession. This essential fact had perhaps been forgotten by many who had become complacent after more than two decades of economic prosperity. Second, financial markets are crucial to the operation of modern economies. Like an electricity system, the details of financial markets are a mystery to most people, and the system itself is often ignored when it is functioning properly. But when financial markets cease to work smoothly and interest rates rise while credit flows decline, we are all reminded of their importance. In this sense, the financial crisis of 2007–2008 was like a global power failure for the world economy.

The financial crisis had important macro consequences. It affected the Canadian banking system, as discussed in Chapter 11, and led to some aggressive actions by the Bank of Canada, as discussed in Chapter 13. Moreover, as the global financial crisis led to a deep recession worldwide, Canadian fiscal policy was forced

to respond, as we review in Chapters 9 and 16. Finally, as has happened several times throughout history, the recession raised the threat of protectionist policies, as we examine in Chapter 18.

Global COVID-19 Pandemic

The COVID-19 pandemic that began in early 2020 was both a health crisis and an economic crisis in most countries. The health crisis involved trying to prevent people from contracting the deadly virus and caring for those who became sick. The economic crisis was the widespread loss of jobs and income that resulted as countries went into various states of “lockdown” to prevent the spread of the virus. In most advanced countries like Canada, governments provided significant financial support to individuals and businesses whose incomes declined or disappeared altogether. By mid-2021, most of the world’s advanced countries were providing effective vaccines to their populations, and their economies were beginning solid recoveries. The COVID-19 pandemic affected virtually all aspects of the economy, and it is discussed in many places throughout this book.

Globalization

Enormous changes have occurred throughout the world over the last few decades. Flows of trade and investment between countries have risen so dramatically that it is now common to speak of the “globalization” of the world economy. Today it is no longer possible to study any economy without taking into account developments in the rest of the world.

Throughout its history, Canada has been a trading nation, and our policies relating to international trade have often been at the centre of political debates. International trade shows up in many parts of this textbook, but it is the exclusive focus of two chapters. Chapter 17 discusses the theory of the gains from trade; Chapter 18 explores trade policy, with an emphasis on NAFTA (now renamed the USMCA).

With globalization and the international trade of goods and assets come fluctuations in exchange rates. In recent years there have been substantial changes in the Canada–U.S. exchange rate—a 15 percent depreciation followed the Asian economic crisis in 1997–1998 and also the 2014–2015 period, which saw a major decline in the world price of oil. An even greater appreciation occurred in the 2002–2008 period. Such volatility in exchange rates complicates the conduct of economic policy. In Chapters 12 and 13 we explore how the exchange rate fits into the design and operation of

Canada’s monetary policy. In Chapter 19 we examine the debate between fixed and flexible exchange rates.

The forces of globalization are with us to stay. In this seventeenth edition of *Macroeconomics*, we have done our best to ensure that students are made aware of the world outside Canada and how events elsewhere in the world affect the Canadian economy.

The Role of Government

Between 1980 and 2008, the political winds shifted in Canada, the United States, and many other countries. Political parties that previously advocated a greater role for government in the economy began to argue the benefits of limited government. But the political winds shifted again with the arrival of the 2008 financial crisis and even more with the COVID-19 pandemic that began in 2020. Both events led governments to take unprecedented actions. Many soon argued that we were observing the “end of laissez-faire” and witnessing the return of “big government.” But is that really true?

Has the *fundamental* role of government changed significantly over the past 40 years? In order to understand the role of government in the economy, students must understand the benefits of free markets as well as the situations that cause markets to fail. They must also understand that governments often intervene in the economy for reasons related more to equity than to efficiency.

In this seventeenth edition of *Macroeconomics*, we continue to incorporate the discussion of government policy as often as possible. Here are but a few of the many examples that we explore:

- Fiscal policy (in Chapters 7 and 9)
- Policies related to the economy’s long-run growth rate (in Chapter 10)
- Monetary policy (in Chapters 12, 13, and 14)
- Policies that affect the economy’s long-run unemployment rate (in Chapter 15)
- The importance of debt and deficits (in Chapter 16)
- Trade policies and the threat of “tariff wars” (in Chapter 18)
- The causes and effects of fluctuations in the exchange rate (in Chapter 19)

OUR APPROACH

Economic growth, financial crises, pandemics, globalization, and the role of government are pressing issues of the day. Much of our study of economic principles and the Canadian economy has been shaped by these issues. In addition to specific coverage of growth and internationally oriented topics, growth and globalization

appear naturally throughout the book in the treatment of many topics once thought to be entirely “domestic.”

Most chapters of *Macroeconomics* contain some discussion of economic policy. We have two main goals in mind when we present these discussions:

1. We aim to give students practice in using economic theory, because applying theory is both a wonderfully effective teaching method and a reliable test of students’ grasp of theory.
2. We want to introduce students to the major policy issues of the day and to let them discover that few policy debates are as “black and white” as they often appear in the press.

Both goals reflect our view that students should see economics as relevant and useful in helping us to understand and deal with the world around us.

Structure and Coverage

Our treatment of macroeconomics is divided into seven parts. We make a clear distinction between the economy in the short run and the economy in the long run, and we get quickly to the material on long-run economic growth. Students are confronted with issues of long-run economic growth *before* they are introduced to issues of money and banking. Given the importance of economic growth in driving overall living standards, we believe this is an appropriate ordering of the material, but for those who prefer to discuss money before thinking about economic growth, the order can be easily switched without any loss of continuity.

Part 1 of the book offers a three-chapter microeconomics introduction. Scarcity and choice, positive and normative statements, and economic systems are covered in Chapter 1. Chapter 2 examines how economic theories are built and tested, and also presents some basics about index numbers and graphing. Chapter 3 presents the basic model of demand and supply in micro markets.

Part 2 begins the presentation of macroeconomics. Chapter 4 introduces readers to the central macro variables, what they mean, and why they are important. The discussion of national income accounting in Chapter 5 provides a thorough treatment of the distinction between real and nominal GDP, the GDP deflator, and a discussion of what measures of national income *do not measure* and whether these omissions really matter.

Part 3 develops the core short-run model of the macro economy, beginning with the fixed-price (Keynesian Cross) model in Chapters 6 and 7 and then moving on to the *AD/AS* model in Chapter 8. Chapter 6 uses a closed economy model with no government to

explain the process of national-income determination and the nature of the multiplier. Chapter 7 extends the setting to include international trade and government spending and taxation. Chapter 8 rounds out our discussion of the short run with the *AD/AS* framework, discussing the importance of both aggregate demand and aggregate supply shocks. We place the Keynesian Cross before the *AD/AS* model to show that there is no mystery about where the *AD* curve comes from and why it is downward sloping; the *AD* curve is derived directly from the Keynesian Cross model. In contrast, books that begin their analysis with the *AD/AS* model are inevitably less clear about where the model comes from. We lament the growing tendency to omit the Keynesian Cross from introductory macroeconomics textbooks; we believe the model has much to offer students in terms of economic insights.

Part 4 begins in Chapter 9 by showing how the short-run model evolves toward the long run through the adjustment of factor prices—what we often call the Phillips curve. We introduce potential output as an “anchor” to which real GDP returns following *AD* or *AS* shocks. This chapter also addresses issues in fiscal policy, including the important distinction between automatic stabilizers and discretionary fiscal stabilization policy. Our treatment of long-run growth in Chapter 10, which we regard as one of the most important issues facing Canada and the world today, goes well beyond the treatment in most introductory texts.

Part 5 focuses on the role of money and financial systems. Chapter 11 discusses the nature of money, various components of the money supply, the commercial banking system, and the Bank of Canada. In Chapter 12 we offer a detailed discussion of the link between the money market and other economic variables such as interest rates, the exchange rate, national income, and the price level. In Chapter 13 we discuss the Bank of Canada’s monetary policy, including a detailed discussion of inflation targeting. The chapter ends with a review of Canadian monetary policy over the past 40 years.

Part 6 deals with some of today’s most pressing macroeconomic policy issues. It contains separate chapters on inflation, unemployment, and government budget deficits. Chapter 14 on inflation examines the central role of expectations in determining inflation and the importance of credibility on the part of the central bank. Chapter 15 on unemployment examines the determinants of frictional and structural unemployment and discusses likely reasons for changes in the NAIRU. Chapter 16 on budget deficits stresses the importance of a country’s debt-to-GDP ratio and also the effect of budget deficits on long-term economic growth.

Virtually every macroeconomic chapter contains at least some discussion of international issues. However,

the final part of *Macroeconomics* focuses primarily on international economics. Chapter 17 gives the basic treatment of international trade, developing both the traditional theory of static comparative advantage and newer theories based on imperfect competition and dynamic comparative advantage. Chapter 18 discusses both the positive and normative aspects of trade policy, as well as the WTO and NAFTA. Chapter 19 introduces the balance of payments and examines exchange-rate determination. Here we also discuss three important policy issues: the desirability of current account deficits or surpluses, whether there is a “right” value for the Canadian exchange rate, and the costs and benefits of Canada’s adopting a fixed exchange rate.

We hope you find this menu both attractive and challenging; we hope students find the material stimulating and enlightening. Many of the messages of economics are complex—if economic understanding were only a matter of common sense and simple observation, there would be no need for professional economists and no need for textbooks like this one. To understand economics, one must work hard. Working at this book should help readers gain a better understanding of the world around them and of the policy problems faced by all levels of government. Furthermore, in today’s globalized world, the return to education is large. We like to think that we have contributed in some small part to the understanding that increased investment in human capital by the next generation is necessary to restore incomes to the rapid growth paths that so benefited our parents and our peers. Perhaps we may even contribute to some income-enhancing accumulation of human capital by some of our readers.

WHAT’S NEW

We have revised and updated the entire text with guidance from feedback from both users and nonusers of the previous editions of this book. We have strived very hard to improve the teachability and readability of the book. We have focused the discussions so that each major point is emphasized as clearly as possible, without distracting the reader with nonessential points. As in recent editions, we have kept all core material in the main part of the text. Three types of boxes (*Applying Economic Concepts*, *Lessons from History*, and *Extensions in Theory*) are used to show examples or extensions that can be skipped without fear of missing an essential concept. But we think it would be a shame to skip too many of them, as there are many interesting examples and policy discussions in these boxes.

What follows is a brief listing of the main changes that we have made to the textbook.

Microeconomics Introduction

Part 1: What Is Economics?

In Chapter 1, we have added the COVID-19 pandemic and rising government debt as two major themes in the chapter opener. Toward the end of the chapter, we have added a new box on why economics needs the other social sciences in order to provide a richer and more comprehensive assessment of the phenomena that we study. In Chapter 2, where we examine how economists test their theories, we have added a new box on the growing use of randomized controlled trials (RCTs), and some of their limitations. In Chapter 3, where we discuss demand and supply shocks, we have added a new box on some of the shocks that occurred as a result of the COVID-19 pandemic.

Macroeconomics

Part 2: An Introduction to Macroeconomics

Chapter 4 offers a brief introduction to the key macroeconomic variables: what they are, how they have changed over the past few decades, and why they matter. In Chapter 5, which discusses national income accounting, we have reworked and clarified the discussion of net versus gross investment and depreciation. In our sections on the key omissions from GDP, we have added a discussion of free products in the digital world as a good example of where “value” to consumers is not always the same thing as price. We have also added another example of an “economic bad”—the social problems that many now believe are generated by some behaviour on digital platforms.

Part 3: The Economy in the Short Run

Chapter 6 builds the simplest possible macro model. We have significantly trimmed the boxed discussion of the theory of the consumption function, and we have improved the initial discussion of desired investment and the real interest rate. We now use numerical examples to better explain the role of “changes in sales” as a determinant of investment and have added mention of Keynes and “animal spirits” to the discussion of confidence and business investment. Finally, we have added a new discussion to explain why desired investment is assumed to be autonomous with respect to GDP. In Chapter 8, which develops the *AD/AS* model, we have clarified the explanation of why the *AD* curve slopes downward and have also re-worked the discussion of why the *AS* curve shifts. Near the end of the chapter, we have added a new box using the *AD/AS* model to analyze the 2020 pandemic recession. We emphasize that the pandemic recession was both a demand and a supply shock—and was very different from normal recessions.

Part 4: The Economy in the Long Run

Chapter 9 develops the relationship between output gaps and factor prices, and there are no significant changes here. In Chapter 10, when we introduce the discussion of the sources of long-term growth, we have added a discussion of how this is an age-old question, dating back as far as Adam Smith. We have also significantly amended the box on economic growth and climate change.

Part 5: Money, Banking, and Monetary Policy

In our introductory discussion of money in Chapter 11, we have added a discussion of how money need not be a physical entity, which then motivates a box on cryptocurrencies. In our discussion of the Bank of Canada's balance sheet, we show the data from 2019 but add a new subsection on how the balance sheet grew dramatically during the 2020 pandemic. In Chapter 12, we have added a short discussion of how changes in the perceived riskiness of assets can lead to a change in money demand. Chapter 13 examines the Bank of Canada's monetary policy. We have rewritten the lead-in to this chapter, and at several points throughout the chapter have added discussions of how the Bank's large-scale bond purchases during the 2020 pandemic represented a deviation from normal operating procedures. We have rewritten the section on inflation targeting as stabilizing policy, and now mention the "divine coincidence." In the chapter's final section, on 40 years of Canadian monetary policy, we have added a substantial discussion of the quantitative easing (QE) implemented by the Bank of Canada during the 2020 pandemic.

Part 6: Macroeconomic Problems and Policies

In Chapter 14 on inflation and disinflation, we have improved the boxed discussion of the potential problems associated with deflation. We have improved the discussion of the potential for a wage-price spiral to be created after a validated supply shock. We have improved the concluding discussion about whether inflation is still a threat in a world of globalization and ongoing technological improvements. In Chapter 15, which examines unemployment and the NAIRU, we have added examples of technological change and the COVID-19 pandemic as two separate causes for structural unemployment. In the chapter's final section on reducing unemployment, we have added a new box examining unemployment during the pandemic recession. The box shows how the 2020 pandemic recession displayed very different employment and unemployment dynamics than "normal" recessions. Government budget deficits and debt are the topic of Chapter 16. We have rewritten the lead-in to this chapter, motivated by the massive

spending and budget deficits as a result of the 2020 pandemic. The discussion of actual and structural budget deficits ends with a mention of 2020, and that it is not yet clear how much of the massive deficits will end up being structural. We have expanded our explanation for the crowding out of investment by government spending, and we have improved our discussion of the potential long-term burden of government debt, providing examples where there is likely no burden and others where there likely is. To conclude our section on the problems of long-term public debt, we have added a new box that explains why some economists argue that current low interest rates make historically high debt ratios manageable.

Part 7: Canada in the Global Economy

In Chapter 17, during our discussion of comparative advantage, we now explain why specialization in this direction is like a global productivity improvement, even though productivity does not actually change within any given sector. In the discussion of how policy can influence comparative advantage, we have added the example of policies that supported the Canadian wine industry during the late 1990s. Chapter 18 examines many details about trade policy. We have reduced the emphasis on former U.S. President Donald Trump, although there is still a clear discussion (and a box) about mercantilism. We have introduced border carbon adjustments as an example illustrating how trade policy confronts climate policy. The new USMCA as a replacement for NAFTA is included, as is mention of the potentially important change to the agreement's dispute-resolution system. Chapter 19 examines exchange rates and the balance of payments. In our discussion of fixed exchange rates, we have added a detailed explanation of how this policy leads to changes in foreign-exchange reserves and the domestic money supply.

If you are moved to write to us (and we hope that you will be!), please do. You can send any comments or questions regarding the text (or any of the supplementary material, such as the *Instructor's Solutions Manual*, the *TestGen*, or the web-based MyLab Economics) to

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ACKNOWLEDGMENTS

It would be impossible to acknowledge here by name all the teachers, colleagues, and students who contributed to the development and improvement of this book over its previous sixteen editions. Hundreds of users have written to us with specific suggestions, and much of the credit for the improvement of the book over the years belongs to them. We can no longer list them individually, but we thank them all sincerely.

For the development of this seventeenth edition, we are grateful to the many people who offered informal suggestions.

We would like to express our thanks to the many people at Pearson Canada involved in the development and production of this textbook. We would especially like to thank four individuals with whom we worked closely. Kimberley Veevers (Executive Portfolio Manager), Toni Chahley (Content Developer), Söğüt Y. Güleç (Content Manager), and Leanne Rancourt (Production Editor) all showed their professionalism, dedication, and enthusiasm in guiding this book through the publication and marketing processes. We would also like to thank the many sales representatives who work to bring this book to professors across the country. These individuals have been a pleasure to work with each step along the way, and we are deeply grateful for their presence and their participation and are delighted to consider them friends as well as professional colleagues.

Our thanks also to the many people at Pearson with whom we work less closely but who nonetheless toil behind the scenes to produce this book, including Steve Lee, Minjin Song, and Vinay Agnihotri.

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In short, we realize that there is a great deal more involved in producing a book than *just* the writing. Without the efforts of all of these dedicated professionals, this textbook simply would not exist. Our sincere thanks to all of you.

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Finally, Ingrid Kristjanson and I have been partners in life for over 30 years and partners in this textbook venture since we began work on the ninth edition in 1995. Without her participation, the quality and efficiency of this project would suffer greatly. With her involvement, the lengthy revision of the textbook and its supplements continues to be an enriching and pleasant experience.

Christopher Ragan

ABOUT THE AUTHOR

Chris Ragan received his B.A. in economics from the University of Victoria, his M.A. from Queen's University, and his Ph.D. from the Massachusetts Institute of Technology in Cambridge, Massachusetts, in 1990. He then joined the Department of Economics at McGill University in Montreal, where he has taught graduate courses in macroeconomics and international finance and undergraduate courses in macroeconomic theory and policy, current economic issues, and financial crises. Over the years he has also taught principles of economics (micro and macro) to thousands of students at McGill and maintains a reputation on campus as being “super-excited” about economics. In 2007, Chris Ragan was

awarded the Noel Fieldhouse Teaching Award from McGill for teaching excellence. In 2017, he was became the inaugural Director of McGill's Max Bell School of Public Policy.

Chris Ragan's research focuses mainly on the design and implementation of macroeconomic policy in Canada. He has been privileged to serve the federal government in Ottawa as Special Advisor to the Governor of the Bank of Canada, the Clifford Clark Visiting Economist at the Department of Finance, and most recently as a member of the Advisory Council on Economic Growth. From 2014 to 2019, he was the chair of Canada's Ecofiscal Commission, a six-year project of independent economists and advisors to promote the greater use of pollution pricing in the Canadian economy.

Chris Ragan used the third edition of this textbook as an undergraduate student in 1981 and joined Richard Lipsey as a co-author for the book's ninth edition, which was published in 1997. For several editions, Lipsey and Ragan worked diligently to maintain the book's reputation as the clearest and most comprehensive introductory economics textbook in Canada. Although Chris Ragan is now the sole listed author, this seventeenth edition still owes much to the dedication of previous authors, including Richard Lipsey, Douglas Purvis, and Gordon Sparks.

Common Abbreviations



<i>AD</i>	Aggregate Demand
<i>AS</i>	Aggregate Supply
<i>AE</i>	(Desired) Aggregate Expenditure
<i>C</i>	Consumption
<i>CPI</i>	Consumer Price Index
<i>d</i>	Debt-to-GDP Ratio
<i>e</i>	Exchange Rate
<i>g</i>	growth rate of real GDP
<i>G</i>	Government Purchases
<i>GDP</i>	Gross Domestic Product
<i>i</i>	Nominal Interest Rate
<i>I</i>	Aggregate Investment Expenditure
<i>IM</i>	Imports of Goods and Services
<i>M_S, M_D</i>	Money Supply/Money Demand
<i>M1, M2, M2+</i>	Measures of Money Supply
<i>P</i>	Price Level
<i>r</i>	Real Interest Rate
<i>S</i>	Private Saving
<i>t</i>	Net Tax Rate
<i>T</i>	Government Tax Revenues (Net of Transfers)
<i>U</i>	Unemployment Rate
<i>U*</i>	NAIRU (Natural Rate of Unemployment)
<i>x</i>	Primary Budget Deficit as Percentage of GDP
<i>X</i>	Exports of Goods and Services
<i>X-IM or NX</i>	Net Exports of Goods and Services
\dot{W}	Rate of Change of Nominal Wages
<i>Y</i>	Real GDP (National Income)
<i>Y*</i>	Potential GDP
<i>Y_D</i>	Disposable Income

PART 1: WHAT IS ECONOMICS?

1 Economic Issues and Concepts

CHAPTER OUTLINE

LEARNING OBJECTIVES (LO)

1.1 WHAT IS ECONOMICS?

1.2 THE COMPLEXITY OF MODERN ECONOMIES

1.3 IS THERE AN ALTERNATIVE TO THE MARKET ECONOMY?

After studying this chapter you will be able to

- 1 explain the importance of scarcity, choice, and opportunity cost, and how each is illustrated by the production possibilities boundary.
- 2 view the market economy as self-organizing in the sense that order emerges from a large number of decentralized decisions.
- 3 explain how specialization gives rise to the need for trade and how trade is facilitated by money.
- 4 explain the importance of maximizing and marginal decisions.
- 5 describe how all actual economies are mixed economies, having elements of free markets, tradition, and government intervention.

MANY of the challenges we face in Canada and around the world are primarily economic. Others that appear to be mainly environmental, social, or political usually have a significant economic dimension. Wars and civil unrest often have economic roots, with antagonists competing for control over vital resources. Global climate change is a scientific and environmental issue, but the economic implications of both the problem and its solutions are tremendous. Population aging in Canada and other developed countries will have significant economic effects on pensions, healthcare

costs, and the labour force. The existence of poverty, whether in Canada or in the much poorer nations of the world, most certainly has economic causes and consequences. And the global COVID-19 pandemic that began in 2020 is a public-health crisis with enormous economic implications.

We begin by discussing several issues that are currently of pressing concern, both inside and outside of Canada. Then, we'll move on to acquiring the knowledge and tools we need to better understand these and many other issues.

COVID-19 Pandemic The COVID-19 pandemic that began in early 2020 led countries around the world to shut down social and economic activity in varying degrees in an effort to stop the spread of a virus. The health implications have been enormous but so, too, are the economic effects of this public-health emergency. While many job losses were temporary, with workers returning to their positions after several months of isolating at home, many others were permanent as businesses were not able to survive the disruption. Governments around the world spent massively to support their citizens and their economies, which in turn has led to a steep increase in government debt.

Population Aging The average age of the Canadian population is steadily rising, due both to a long-term decline in fertility and to an increase in average life expectancy. This population aging has two important economic effects. First, since people eventually retire as they approach their “golden years,” there will be a decline in the growth rate of Canada’s labour force. As a result, some firms and industries will find it more difficult to find workers and wages will likely rise. Second, since our publicly funded healthcare system tends to spend much more on seniors than it does on younger Canadians, there will be a significant increase in public healthcare spending that will put difficult demands on governments’ fiscal positions. This same demographic problem is being encountered in most developed countries.

Climate Change The long-term increase in the emission of greenhouse gases—caused largely from the burning of fossil fuels such as oil, coal, and natural gas—has led to an accumulation of these gases in the atmosphere and is contributing to a long-term increase in Earth’s average temperature. The rise in temperature is leading to the melting of polar ice caps, a slow increase in sea level, a creeping expansion of the world’s great deserts, reductions in agricultural productivity, and significant changes in global weather patterns—including a greater frequency of extreme events such as floods, droughts, and hurricanes. Global climate change presents a challenge for the design of better economic and environmental policy, aimed at reducing greenhouse-gas emissions without unduly slowing the growth of material living standards. Climate change also presents a long-term challenge as to how we will adapt to the changes already happening.

Productivity Growth Productivity growth lies at the heart of the long-term increase in average living standards. Productivity is a measure of how much output (or income) is produced by one hour of work effort, and it has been rising gradually over the past century. In recent years, however, productivity growth has been slowing in Canada, and economists have been examining the cause of the slowdown and also examining what policies, if any, might reverse this trend. If your living standards are to improve over your lifetime as much as your grandparents’ did over theirs, Canada’s rate of productivity growth will need to increase significantly.

Accelerating Technological Change Over the past half century, the digitization of information has created revolutionary changes in technology, from the evolution of hand-held computers with enormous capabilities to the development of artificial intelligence whereby machines are able to learn. Such technological change is an important driver of our long-run prosperity—but it also creates enormous disruptions in product markets and labour markets. Some businesses will find it difficult to compete against rivals with more advanced technology and will be forced to adapt or go out of business. Some workers may find their jobs replaced by machines and will be forced to retrain to

find a new job. These “disruptive technologies” also create challenges for government policy: How can we reap the benefits of these new developments while ensuring that our citizens continue to have satisfying work at thriving businesses?

Rising Protectionism Canada is a small nation that relies on trade with the rest of the world for much of its prosperity. We sell lumber and oil and beef to the world, as we do engineering and legal and financial services. As consumers we buy many products from beyond our borders, including coffee, leather shoes, and wine; our firms buy many inputs from abroad, including machine tools, software, and specialized raw materials. In short, international trade has long been crucial to Canada’s economic prosperity. In recent years, however, “protectionism” has been rising around the world—meaning that many countries are less willing to open their domestic markets to other countries’ products. History has shown that protectionism tends to lead to less international trade and also less global production and income. Small, trade-reliant countries like Canada have much to fear from rising protectionism elsewhere.

Growing Income Inequality Income inequality has been rising in Canada and most other developed countries over the past 40 years. Particularly dramatic has been the increase in the share of national income going to the richest 1 percent of individuals, while the incomes of those in the “middle classes” have grown very slowly. The causes of this rising inequality are hotly debated among economists, but most agree that the nature and pace of technological change and the growing ability of firms to locate their production facilities in lower-wage developing countries are contributing factors. There is also considerable debate regarding what government actions could be taken to reduce income inequality, and whether the benefits of those actions would be justified by the associated costs.

Government Debt and Priorities Confronted with the need for their populations to isolate at home to slow the spread of the COVID-19 virus, governments in many countries massively increased their spending to provide financial relief to their citizenry. This spending was financed by government borrowing. In 2020 alone, government debt in the G-20 countries increased by approximately 20 percentage points of national income, a “spike” in public debt previously only experienced during wartime. Both the pandemic and the ensuing increase in debt will likely push governments over the coming years to rethink their priorities, re-evaluating the importance of specific spending programs as well as the tax revenues required to pay for them.

These eight issues are a small sample of the many economic issues that confront Canada and other countries. To understand any of them it is necessary to have a basic understanding of economics—how markets work, how prices are determined, in what sense markets sometimes fail to work well, and how government policy can be used to improve outcomes. These are the main topics of this book. There is a lot to learn, and not many weeks in your college or university course. So, let’s get started at the very beginning.

1.1 What Is Economics?

The issues described in the introduction would not matter much if we lived in an economy of such plenty that there was always enough to fully satisfy everyone’s wants. If we could always get all the things we wanted, it wouldn’t be so important to be more productive in

our work. Rapid growth in healthcare spending would not be such a problem if governments had no limits on what they could spend. Rising protectionism would not be so threatening if Canada did not rely on the income earned by selling our exports to other countries. But such an economy with unlimited products and income is impossible. Why?

The short answer is because we live in a world of *scarcity*. Compared with our desires for better food, clothing, housing, education, clean water and healthcare, the existing supplies of resources are clearly inadequate. They are sufficient to produce only a small fraction of the goods and services that we desire. This scarcity gives rise to the basic economic problem of choice. If we cannot have everything we want, we must choose what we will and will not have.

One definition of *economics* comes from the great economist Alfred Marshall (1842–1924), who we will encounter at several points in this book: “Economics is a study of mankind in the ordinary business of life.” A more informative definition is:

Economics is the study of the use of scarce resources to satisfy unlimited human wants.

Scarcity is inevitable and is central to all economies and all economic problems. What are society’s resources? Why is scarcity inevitable? What are the consequences of scarcity?

Resources

A society’s resources are often divided into the three broad categories of land, labour, and capital. *Land* includes all natural endowments, such as arable land, forests, lakes, crude oil, and minerals. *Labour* includes all mental and physical human resources, including entrepreneurial capacity and management skills. *Capital* includes all manufactured aids to production, such as tools, machinery, and buildings. Economists call such resources **factors of production** because they are used to produce the things that people desire. We divide what is produced into goods and services. **Goods** are tangible (e.g., cars, steel, and clothing), and **services** are intangible (e.g., legal advice, internet access, and education). People use goods and services to satisfy their wants. The act of making them is called **production**, and the act of using them is called **consumption**.

Scarcity and Choice

For almost all of the world’s 7.8 billion people, scarcity is real and ever-present. As we said earlier, relative to our desires, existing resources are inadequate; there are enough to produce only a fraction of the goods and services that we want.

But aren’t the developed nations rich enough that scarcity is no longer a problem? After all, they are “affluent” societies. Whatever affluence may mean, however, it does not mean the end of the problem of scarcity. Canadian families that earn \$87 000 per year, approximately the median after-tax income for a Canadian family in 2019 but a princely amount by *world* standards, have no trouble spending it on things that seem useful to them, and they would certainly have no trouble convincing you that their resources are scarce relative to their desires.

Because resources are scarce, all societies face the problem of deciding what to produce and how much each person will consume. Societies differ in who makes the choices and how they are made, but the need to choose is common to all. Just as scarcity implies

factors of production

Resources used to produce goods and services; frequently divided into the basic categories of land, labour, and capital.

goods Tangible products, such as cars or shoes.

services Intangible products, such as legal services and education.

production The act of making goods or services.

consumption The act of using goods or services to satisfy wants.

the need for choice, so choice implies the existence of cost. A decision to have more of one thing is necessarily a decision to have less of some other thing. The *cost* of the more of one thing is the amount of the other thing we must give up in order to get it.

Scarcity implies that choices must be made, and making choices implies the existence of costs.

Opportunity Cost

To see how choice implies cost, we look first at an example of a single decision maker and then at an example for the country as a whole. Both examples involve precisely the same fundamental principles.

Consider Susan, a senior planner who works for a small Canadian city. She is allocated a budget of \$12 million for the year and must decide how to allocate it between two activities—repairing existing roads and building new bicycle paths. Repairing roads costs \$1 million per kilometre repaired; new bicycle paths cost \$500 000 per kilometre to build.

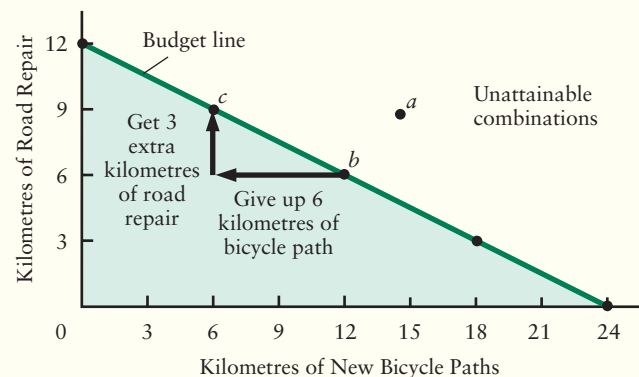
The choices that Susan and her planning department face are illustrated in Figure 1-1. The amount of new bicycle path is shown in kilometres along the horizontal axis. The kilometres of road repair is shown along the vertical axis. The downward-sloping line is Susan's *budget line*—it shows the various combinations of the two activities that use up the full budget of \$12 million. Since it is possible to build fractions of a kilometre of bicycle path as well as repair fractions of a kilometre of road, all points along the budget line are *attainable* combinations of the two activities. Any combination outside the budget line—such as point *a*—is *unattainable*; the total cost of this combination requires more than the available budget.

In this setting, Susan and her colleagues need to make a difficult decision. How should the available funds be allocated between the two alternatives? To decide, they will need to compare the benefits of road repair to the benefits from building new bicycle paths. But they will also need to think about costs. For this discussion, we will focus only on the issue of costs.

What is the cost of an extra kilometre of road repair in this situation? One simple answer is that the cost is \$1 million. An alternative and more revealing answer is that the cost of an extra kilometre of road repair is the two kilometres of new bicycle path that must be given up to get it. In fact, in this case we say that two kilometres of bicycle path is the *opportunity cost* of one kilometre of road repair.

Every time a choice is made, opportunity costs are incurred.

FIGURE 1-1 Choosing Between Road Repair and New Bicycle Paths



Scarce resources force a choice among competing alternatives. Given a total budget of \$12 million that must be split between road repair (\$1 million per kilometre) and new bicycle paths (\$500 000 per kilometre), some points are unattainable. The green line is the budget line and shows all of the combinations of the two alternatives that fully use the budget. The slope of the budget line reflects opportunity costs. The opportunity cost of one extra kilometre of road repair is two kilometres of new bicycle paths. The opportunity cost of 1 kilometre of new bicycle path is 0.5 kilometres of road repair.

opportunity cost The value of the next best alternative that is forgone when one alternative is chosen.

Opportunity Cost Is a Ratio The idea of opportunity cost is one of the central insights of economics. Here is a precise definition: The **opportunity cost** of choosing any one alternative is the value of the next best alternative that is given up. That is, it is the cost measured in terms of other goods and services that could have been obtained instead. This concept of cost involves a simple ratio, as we can see in our example in Figure 1-1. Suppose Susan had initially determined that the best use of her full budget was to choose point *b*—12 kilometres of new bicycle path and 6 kilometres of road repair. After new information regarding the dire state of some roads is considered, however, the decision is made to choose point *c*—with more road repair and fewer kilometres of bicycle path. The movement from point *b* to point *c* involves a cost: six kilometres of bicycle path must be given up in order to get three extra kilometres of road repair. We can also calculate the cost of one additional unit of road repair in terms of the units of bicycle path that must be given up: Each extra kilometre of road repair “costs” two kilometres of new bicycle path ($6 \div 3 = 2$).

Notice that the opportunity costs of the two activities are *inverses* of one another. From Figure 1-1 we see that the opportunity cost of one extra kilometre of road repair is two kilometres of new bicycle path. It is also true that the opportunity cost of one extra kilometre of bicycle path is 0.5 kilometre of road repair. Each extra kilometre of bicycle path “costs” one half kilometre of road repair ($3 \div 6 = 0.5$). Note that 0.5 is the slope of the green budget line.

The concept of opportunity cost is pervasive in economics. Whenever choices are limited by scarce resources, the decision to have more of one thing implies that we must give up something else. See *Applying Economic Concepts 1-1* for an example of opportunity cost that should seem quite familiar to you: the opportunity cost of getting a university degree. As we see there, some of the costs are the obvious ones that you incur directly; others are a little more subtle.

The nature of Susan’s planning decision to allocate a set budget between two activities seems relatively straightforward—although we should not underestimate how tough such decisions actually are in practice. But now consider a bigger problem, one where scarcity and choice still play a central role. Instead of a situation where a single decision maker is allocating dollars of spending, our next situation relates to how a country as a whole allocates its scarce resources—its land, labour, and capital—between the production of various goods and services.

Production Possibilities Boundary

In particular, consider the choice that any country must face between producing goods for final consumption (such as food and clothing) and goods for investment purposes used to increase future production (such as machines and factories). If resources are fully and efficiently employed it is not possible to have more of *both* consumption and investment goods. As the country devotes more resources to producing consumption goods it must take resources away from producing investment goods. The opportunity cost of the extra consumption goods is the value of the investment goods forgone.

The choice is illustrated in Figure 1-2. Because resources are scarce, some combinations—those that would require more than the total available supply of resources for their production—cannot be attained. The negatively sloped curve on the graph divides the combinations that can be attained from those that cannot. Points above and to the right of this curve cannot be attained because there are not enough resources, points below and to the left of the curve can be attained without using all of the



APPLYING ECONOMIC CONCEPTS 1-1

The High Opportunity Cost of Your University Degree

The opportunity cost of choosing one thing is what must be given up as the best alternative. Computing the opportunity cost of a college or university education is a good example to illustrate which factors are included in the computation of opportunity cost. You may also be surprised to learn how expensive your university degree really is!*

Suppose that a bachelor's degree requires four years of study and that each year you spend \$6 500 for tuition fees—approximately the average at Canadian universities in 2021—and a further \$1 500 per year for books and materials. Does this mean that the cost of a university education is only \$32 000? Unfortunately not; the true cost of a university degree to a student is much higher.

The key point is that the opportunity cost of a university education does not include just the out-of-pocket expenses on tuition and books. You must also take into consideration *what you are forced to give up* by choosing to attend university. Of course, if you were not studying you could have done any one of a number of things, but the relevant one is *the one you would have chosen instead*—your best alternative to attending university.

Suppose your best alternative to attending university was to get a job as a server in a restaurant. In this case, the opportunity cost of your university degree must include the earnings that you would have received had you taken that job. Suppose your (after-tax) annual earnings would have been \$25 000 per year, for a total of \$100 000 if you had stayed at that job for four years. To the direct expenses of \$32 000, we must therefore add

\$100 000 for the earnings that you gave up by not taking a job. This brings the true cost of your university degree—the opportunity cost—up to \$132 000.

Notice that the cost of food, lodging, clothing, and other living expenses did not enter the calculation of the opportunity cost in this example. The living expenses must be incurred in either case—whether you attend university or get a job.

If the opportunity cost of a degree is so high, why do students choose to go to university? Maybe students simply enjoy learning and are prepared to incur the high cost to be in the university environment. Or maybe they believe that a university degree will significantly increase their future earning potential. In this case, they are giving up four years of earnings at one salary so that they can invest in building their skills in the hope of enjoying many more years in the future at a considerably higher salary.

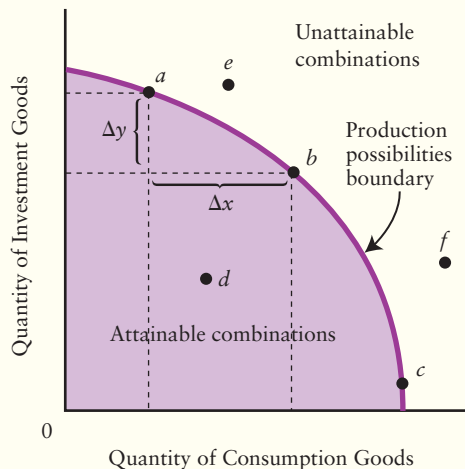
Whatever the reason for attending college or university, the recognition that a post-secondary degree is very costly should convince students to make the best use of their time while they are there.

*This box considers only the cost *to the student* of a university degree. For reasons that will be discussed in detail in Part 6 of this book, provincial governments heavily subsidize post-secondary education in Canada. Because of this subsidy, the cost *to society* of a university degree is generally much higher than the cost to an individual student.

available resources, and points on the curve can be attained only if all the available resources are used efficiently. The curve is called the **production possibilities boundary**. (Sometimes “boundary” is replaced with “curve” or “frontier.”) It has a negative slope because when all resources are being used efficiently, producing more of one good requires producing less of others.

A production possibilities boundary illustrates three concepts: scarcity, choice, and opportunity cost. Scarcity is indicated by the unattainable combinations outside the boundary; choice, by the need to choose among the alternative attainable points along the boundary; and opportunity cost, by the negative slope of the boundary.

production possibilities boundary A curve showing which alternative combinations of output can be attained if all available resources are used efficiently; it is the boundary between attainable and unattainable output combinations.

FIGURE 1-2 A Production Possibilities Boundary

The negatively sloped boundary shows the combinations that are **attainable when all resources are used efficiently**. The production possibilities boundary separates the attainable combinations of goods, such as *a*, *b*, *c*, and *d*, from unattainable combinations, such as *e* and *f*. Points *a*, *b*, and *c* represent full and efficient use of society's resources. Point *d* represents either inefficient use of resources or failure to use all the available resources. If production changes from point *a* to point *b*, an opportunity cost is involved. The opportunity cost of producing Δx more consumption goods is the necessary reduction in the production of investment goods equal to Δy .

The shape of the production possibilities boundary in Figure 1-2 implies that an increasing amount of consumption goods must be given up to achieve equal successive increases in the production of investment goods. This shape, referred to as *concave* to the origin, indicates that the opportunity cost of either good increases as we increase the amount of it that is produced. A straight-line boundary would indicate that the opportunity cost of one good stays constant, no matter how much of it is produced.

The concave shape in Figure 1-2 is the way economists usually draw a country's production possibilities boundary. The shape occurs because each factor of production is not equally useful in producing all goods. To see why differences among factors of production are so important, suppose we begin at point *c* in Figure 1-2, where most resources are devoted to the production of consumption goods, and then consider gradually shifting more and more resources toward the production of investment goods. We might begin by shifting the use of iron ore and other raw materials. These resources may not be very well suited to producing consumption goods (like food) but may be essential for producing tools, machinery, and factories. This shift of resources will therefore lead to

only a small reduction in the output of consumption goods but a substantial increase in the output of investment goods. Thus, the opportunity cost of producing more units of investment goods, which is equal to the forgone consumption goods, is small. But as we shift more and more resources toward the production of investment goods, and therefore move along the production possibilities boundary toward point *a*, we must shift more and more resources that are actually quite well suited to the production of consumption goods, like arable agricultural land. As we produce more and more investment goods (by devoting more and more resources to producing them), the amount of consumption goods that must be forgone to produce one *extra* unit of investment goods rises. That is, the opportunity cost of producing investment goods rises as more of them are produced.

Four Key Economic Problems

Modern economies involve millions of complex production and consumption activities. Despite this complexity, the basic decisions that must be made are not very different from those that were made in ancient and primitive economies in which people worked with few tools and bartered with their neighbours. In all cases, scarcity, choice, and opportunity cost play crucial roles. Whatever the economic system, whether modern or ancient or complex or primitive, there are four key economic problems.

1. What Is Produced and How? This question concerns the *allocation* of scarce resources among alternative uses. This *resource allocation* determines the quantities of various goods that are produced. For example, the choice to produce 3 bridges, 16 airplanes, and 2 million bushels of wheat means choosing a particular allocation of resources among the industries or regions producing the goods. What determines which goods are produced and which ones are not?

Is there some combination of the production of goods that is “better” than others? If so, should governments try to alter the pattern of production in this direction?

2. What Is Consumed and by Whom? Economists seek to understand what determines the distribution of a nation’s total output among its people. Who gets a lot, who gets a little, and why? Should governments care about this *distribution* of consumption and, if so, what tools do they have to alter it?

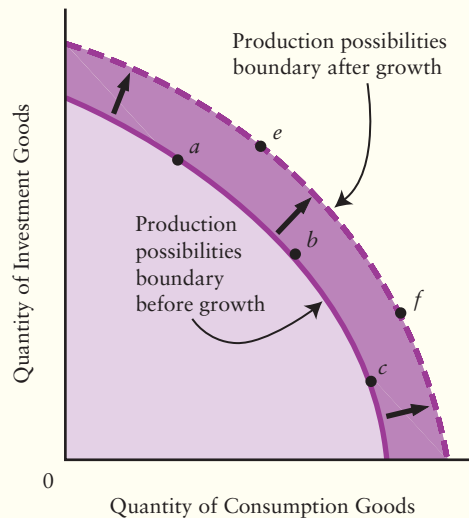
If production takes place on the country’s production possibilities boundary, then what about consumption? Will the economy consume exactly the same goods that it produces? Or will this country trade with other countries and thereby be able to consume a different combination of goods?

3. Why Are Resources Sometimes Idle? Sometimes large numbers of workers are unemployed. At the same time, the managers and owners of businesses and factories could choose to produce more goods and services. For some reason, however, these resources—land, labour, and capital—lie idle. Thus, in terms of Figure 1-2, the economy sometimes operates inside its production possibilities boundary.

Why are resources sometimes idle? Should governments worry about such idle resources, or is there some reason to believe that such occasional idleness is necessary for a well-functioning economy?

4. Is Productive Capacity Growing? The capacity to produce goods and services grows rapidly in some countries, grows slowly in others, and actually declines in others. Growth in a country’s productive capacity can be represented by an outward shift of the production possibilities boundary, as shown in Figure 1-3. If an economy’s capacity to produce goods and services is growing, some combinations that are unattainable today will become attainable in the future. What are the determinants of such growth and can governments do anything to influence them?

FIGURE 1-3 The Effect of Economic Growth on the Production Possibilities Boundary



Economic growth shifts the boundary outward and makes it possible to produce more of all products. Before growth in productive capacity, points *a*, *b*, and *c* were on the production possibilities boundary and points *e* and *f* were unattainable. After growth, points *e* and *f* and many other previously unattainable combinations are attainable.

resource allocation

The allocation of an economy’s scarce resources among alternative uses.

Microeconomics and Macroeconomics

Questions relating to what is produced and how, and what is consumed and by whom, fall within the realm of microeconomics. **Microeconomics** is the study of the determination of the prices and quantities of specific products and factors of production.

microeconomics The study of the determination of the prices and quantities of specific products and factors of production.

macroeconomics The study of the determination of economic aggregates such as total output, employment, and growth.

Questions relating to the idleness of resources and the growth of the economy's productive capacity fall within the realm of macroeconomics. **Macroeconomics** is the study of the determination of economic aggregates, such as total output, total employment, and the rate of economic growth.

Economics and Government Policy

The design and effectiveness of government policy matter for each of our four key economic problems. When asking what combination of goods and services is produced in the economy (Question 1), and whether some combinations might be better than others, government policy enters the discussion. In microeconomics economists examine situations called *market failures*, which arise when free markets lead to too much of some goods being produced (like pollution) and too little of others (like basic research). Government policy can be used to alter the allocation of the economy's resources to correct these market failures.

When asking who gets to consume the economy's output (Question 2), it is natural to discuss the *fairness* regarding the distribution of consumption across individuals. Do free markets lead to fair outcomes? Can we even decide objectively what is fair and what is unfair? We will see throughout this book that many government policies are designed with fairness in mind. We will also encounter an ongoing debate about how much the government should try to improve the fairness of market outcomes. Some argue that it is reasonable to do so; others argue that attempts to improve fairness often lead to reductions in market efficiency that impose large costs on society.

Government policy is also part of the discussion of why a nation's resources are sometimes idle and what can be done to reduce such idleness (Question 3). For example, when the COVID-19 global pandemic began in early 2020, governments around the world increased their spending by making payments to millions of individuals who had lost their incomes due to the lockdowns imposed to slow the spread of the virus. In this case, the increase in unemployed labour was *encouraged* by the government on public-health grounds. A decade earlier, however, the onset of the global financial crisis led the same governments to sharply increase their spending to encourage businesses to increase their hiring and reduce unemployment. What explains the different perspectives regarding idle resources and the different government actions in both cases? These are issues on which economists have much to say when they discuss macroeconomics.

Finally, government policy also figures prominently in discussions about the determinants of economic growth (Question 4). Can specific policies lead to an increase in the availability of resources or to the more efficient use of our existing resources? If so, are the benefits in terms of greater production and consumption worth the costs of the resources inevitably involved in the implementation of the policies? Economists have much to say about the determinants of economic growth.

1.2 The Complexity of Modern Economies

If you want a litre of milk, you go to your local grocery store and buy it. When the grocer needs more milk, they order it from the wholesaler, who in turn gets it from the dairy, which in turn gets it from the dairy farmer. The dairy farmer buys cattle feed and electric milking machines, and gets power to run all their equipment by putting a plug into a wall outlet where the electricity is supplied as needed. The milking machines are made from parts manufactured in several different places in Canada, the United

States, and overseas. The parts themselves are made from materials produced in a dozen or more countries.

As it is with the milk you drink, so it is with everything else that you buy. When you go to a store or shop online, what you want is normally available. Those who make these products find that all the required components and materials are available when they need them—even though these things typically come from many different parts of the world and are made by many people who have no direct dealings with one another.

Your own transactions are only a tiny fraction of the remarkably complex set of transactions that takes place every day in a modern economy. Shipments arrive daily at our ports, railway terminals, and airports. These shipments include raw materials, such as iron ore, logs, and oil; parts, such as automobile engines, transistors, and circuit boards; tools, such as screwdrivers, lathes, and digging equipment; perishables, such as fresh flowers, coffee beans, and fruit; and all kinds of manufactured goods, such as washing machines, computers, and smartphones. Trains and trucks move these goods among thousands of different destinations within Canada. Some go directly to consumers. Others are used by local firms to manufacture their products—some of which will be sold domestically and others exported to other countries. Remarkably, no one is actually *organizing* all of this economic activity.

The Nature of Market Economies

An *economy* is a system in which scarce resources—labour, land, and capital—are allocated among competing uses. Let's consider how this all happens in a market economy.

Self-Organizing Early in the development of modern economics, thoughtful observers wondered how such a complex set of decisions and transactions gets organized. Who coordinates the whole set of efforts? Who makes sure that all the activities fit together, providing jobs to produce the things that people want and delivering those things to where they are wanted? The answer, as we said above, is nobody!

A great insight of early economists was that an economy based on free-market transactions is *self-organizing*.

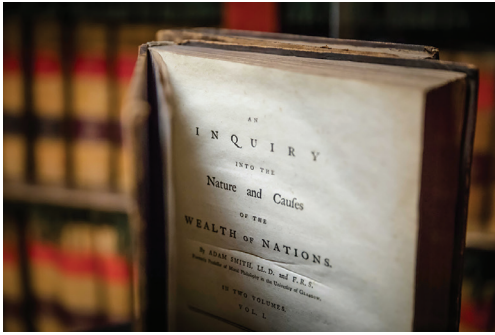
A market economy is self-organizing in the sense that when individual consumers and producers act independently to pursue their own self-interests, the collective outcome is coordinated—there is a “spontaneous economic order.” In that order, millions of transactions and activities fit together to produce the things that people want within the constraints set by the resources that are available to the nation.

The great Scottish political and moral philosopher Adam Smith (1723–1790),¹ who was the first to develop this insight fully, put it this way:

*It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.*²

¹ Throughout this book, we encounter many great thinkers from the past whose ideas shaped the discipline of economics. At the back of the book you will find a timeline that begins in the 1600s. It contains brief discussions of many of these thinkers and places them in their historical context.

² *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Volume 1.



Adam Smith wrote *An Inquiry into the Nature and Causes of the Wealth of Nations* in 1776. Now referred to by most people simply as *The Wealth of Nations*, it is considered to be the beginning of modern economics.

Smith is not saying that benevolence is unimportant. Indeed, he praises it in many other passages of his book. He is saying, however, that the massive number of economic interactions that characterize a modern economy are not all motivated by benevolence. Although benevolence does motivate some of our actions, often the very dramatic ones, the vast majority of our everyday actions are motivated by self-interest. Self-interest is therefore the foundation of economic order.

Efficiency Another great insight, which was hinted at by Smith and fully developed over the next century and a half, was that this spontaneously generated economic order is relatively *efficient*. Loosely speaking, efficiency means that the resources available to the nation are organized so as to produce the various goods and services that people want to purchase and to produce them with the least possible amount of resources.

An economy organized by free markets behaves almost as if it were guided by “an invisible hand,” in Smith’s now-famous words. This does not literally mean that a supernatural presence runs a market economy. Instead it refers to the relatively efficient order that emerges spontaneously out of the many independent decisions made by those who produce, sell, and buy goods and services. The key to explaining this market behaviour is that these decision makers all respond to the same set of prices, which are determined in markets that respond to overall conditions of scarcity or abundance. Much of this book is devoted to a detailed elaboration of how this market order is generated and how efficiently that job is done.

That free markets usually generate relatively efficient outcomes does not mean that they are *always* efficient or that everyone views the outcomes as desirable or even *fair*. Free markets sometimes fail to produce efficient outcomes, and these failures often provide a motivation for government intervention. In addition, many market outcomes may be efficient but perceived by many to be quite unfair. For example, we will see that an efficiently operating labour market may nonetheless lead to large differentials in wages, with some individuals receiving low incomes while others receive enormous incomes. So, while a central aspect of economics is the study of how markets allocate resources efficiently, much emphasis is also placed on what happens when markets produce socially undesirable outcomes.

Self-Interest and Incentives Lying at the heart of modern economies are *self-interest* and *incentives*. Individuals generally pursue their own self-interest, buying and selling what seems best for them and their families. They purchase products they want rather than those they dislike, and they buy them when it makes sense given their time and financial constraints. Similarly, they sell products, including their own labour services, in an attempt to improve their own economic situation.

When making decisions about what to buy or sell and at what prices, people respond to incentives. Sellers usually want to sell more when prices are high because by doing so they will receive higher earnings and thus be able to afford more of the things they want. Similarly, buyers usually want to buy more when prices are low because by doing so they are better able to use their scarce resources to acquire the many things they desire.

With self-interested buyers and sellers responding to incentives when determining what they want to buy and sell, the overall market prices and quantities are determined by their collective interactions. These market prices and quantities will fluctuate up and down as buyers change their preferences and sellers change their abilities to produce.

Of course, individuals are not motivated *only* by self-interest. For most people, love, faith, compassion, and generosity play important roles in their lives, especially at certain times. Behavioural economists devote their research to better understanding how these motivations influence individuals' economic behaviour. However, none of this detracts from the importance of understanding the crucial role played in a modern economy by incentives and self-interest.

The Decision Makers and Their Choices

Three types of decision makers operate in any economy. The first is *consumers*. Sometimes we think of consumers as being individuals and sometimes we think in terms of families or households. Consumers purchase various kinds of goods and services with their income; they usually earn their income by selling their labour services to their employers.

The second type of decision maker is *producers*. Producers may be firms that are interested in earning profits or they may be non-profit or charitable organizations. In any case, producers hire workers, purchase or rent various kinds of material inputs and supplies, and then produce and sell their products. In the cases of charitable organizations, their products are often distributed for free.

The third type of decision maker is *government*. Like producers, governments hire workers, purchase or rent material and supplies, and produce goods and services. Unlike most producers, however, governments usually provide their goods and services at no direct cost to the final user; their operations are financed not by revenue from the sale of their products but instead by the taxes they collect from individual consumers and producers. In addition to producing and providing many goods and services, governments create and enforce laws and design and implement regulations that must be followed by consumers and producers.

How Are Decisions Made? How do consumers, producers, and governments make decisions? We will be examining how and why governments make decisions in detail throughout this book, so we will leave that until later. For now, let's focus on how consumers and producers make their decisions. Economists usually assume that consumers' and producers' decisions are both "maximizing" and "marginal." What does this mean?

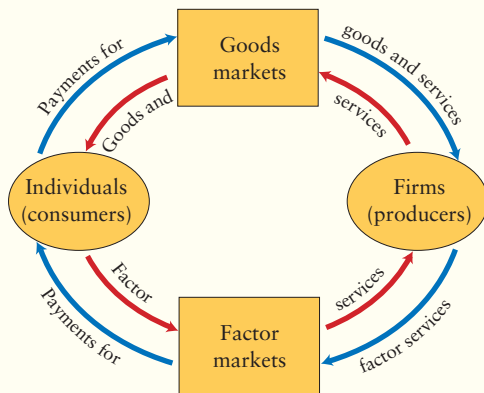
Maximizing Decisions. Economists usually assume that consumers and producers make their decisions in an attempt to do as well as possible for themselves—this is what we mean by self-interest. In the jargon of economics, people are assumed to be *maximizers*. When individuals decide how much of their labour services to sell to producers and how many products to buy from them, they are assumed to make choices designed to maximize their well-being, or *utility*. When producers decide how much labour to hire and how many goods to produce, they are assumed to make choices designed to maximize their *profits*. We explore the details of utility maximization and profit maximization in later chapters.

Marginal Decisions. Firms and consumers who are trying to maximize usually need to weigh the costs and benefits of their decisions *at the margin*. For example, when you consider buying a new shirt, you know the *marginal cost* of the shirt—that is, how much you must pay to get that one extra shirt. And you need to compare that marginal cost to the *marginal benefit* you will receive—the *extra* satisfaction you get from having that shirt. If you are trying to maximize your utility, you will buy the new shirt only if you think the benefit to you in terms of extra utility exceeds the extra cost. In other words, you buy the shirt only if you think the *marginal benefit* exceeds the *marginal cost*.

Similarly, a producer attempting to maximize its profits and considering whether to hire an extra worker must determine the *marginal cost* of the worker—the extra wages that must be paid—and compare it to the *marginal benefit* of the worker—the increase in sales revenues the extra worker will generate. A producer interested in maximizing its profit will hire the extra worker only if the benefit in terms of extra revenue exceeds the cost in terms of extra wages.

Maximizing consumers and producers make marginal decisions to achieve their objectives; they decide whether they will be made better off by buying or selling a little more or a little less of any given product.

FIGURE 1-4 The Circular Flow of Income and Expenditure



The red line shows the flow of goods and services; the blue line shows the payments made to purchase these. Factor services flow from individuals who own the factors (including their own labour) through factor markets to firms that use them to make goods and services. These goods and services then flow through goods markets to those who consume them. Money payments flow from firms to individuals through factor markets. These payments become the income of individuals. When they spend this income buying goods and services, money flows through goods markets to generate income for producers.

The Circular Flow of Income and Expenditure Figure 1-4 shows the basic decision makers and the flows of income and expenditure they set up. Individual consumers own factors of production. They sell the services of these factors to producers and receive payments in return. These are their incomes. Producers use the factor services they buy to make goods and services. They sell these to individuals, receiving payments in return. These are the incomes of producers. These basic flows of income and expenditure pass through markets. Consumers sell the services of the factor they own in what are collectively called *factor markets*. When you get a part-time job during university, you are participating in the factor market—in this case, a market for labour. Producers sell their outputs of goods and services in what are collectively called *goods markets*. When you purchase a haircut, an airplane ticket, or a new pair of shoes, for example, you are participating as a consumer in the goods market.

The prices that are determined in these markets determine the incomes that are earned. People who get high prices for their factor services earn high incomes; those who get low prices earn low incomes. The *distribution of income* refers to how the nation's total income is distributed among its citizens. This is largely determined by the price that each type of factor service receives in factor markets.

Production and Trade

Each producer decides which goods to produce and how to produce them. Production is a very complex process in any modern economy. For example, a typical car manufacturer assembles a product out of thousands of individual parts. It makes some of these parts itself. Most are subcontracted to parts manufacturers, and many of the major parts manufacturers subcontract some of their work to smaller firms. The same is true for most other products you can imagine purchasing. Such complex production displays two characteristics noted long ago by Adam Smith—*specialization* and the *division of labour*.

Specialization In ancient hunter–gatherer societies and in modern subsistence economies, most people make most of the things they need for themselves. However, from the time that people first engaged in settled agriculture and then began to live in towns, people have specialized in doing particular jobs. Artisan, soldier, priest, and government official were some of the earliest specialized occupations. Economists call this allocation of different jobs to different people the **specialization of labour**. There are two fundamental reasons why specialization is extraordinarily efficient compared with universal self-sufficiency.

specialization of labour

The specialization of individual workers in the production of particular goods or services.

First, individual abilities differ, and specialization allows individuals to do what they can do relatively well while leaving everything else to be done by others. The economy’s total production is greater when people specialize than when they all try to be self-sufficient. This is true for individuals, but it is also true for entire countries, and it is one of the most fundamental principles in economics: the principle of *comparative advantage*.

The second reason why specialization is more efficient than self-sufficiency concerns improvements in people’s abilities that occur *because* they specialize. A person who concentrates on one activity becomes better at it as they gain experience through their own successes and failures. If you watch an experienced electrician or plumber at work, you will see that they are much better at their jobs than a “handyman” who only does this kind of work occasionally. This is due to their *learning by doing* and it is an important form of knowledge acquisition.

The Division of Labour Throughout most of history each artisan who specialized in making some product made the whole of that product. But over the last several hundred years, technical advances have made it efficient to organize production methods into large-scale firms organized around what is called the **division of labour**. This term refers to specialization *within* the production process of a particular product. For example, in mass-production car manufacturing facilities, work is divided into highly specialized tasks by using specialized machinery and robotics. Each worker repeatedly does one or a few small tasks that represents only a small fraction of those necessary to produce any one product.

division of labour The breaking up of a production process into a series of specialized tasks, each done by a different worker.

Money and Trade People who specialize in doing only one thing must satisfy most of their wants by consuming things made by other people. In early societies the exchange of goods and services took place by simple mutual agreement among neighbours. Over time, however, trading became centred on particular gathering places called markets. For example, the French markets or trade fairs of Champagne were known throughout

Europe as early as the eleventh century. Even now, many small towns in Canada have regular market days. Today, however, the term “market” has a much broader meaning, referring to any institutions that allow buyers and sellers to transact with each other, which could be by meeting physically or by trading over the Internet. Also, we use the term “market economy” to refer to a society in which people specialize in productive activities and meet most of their material wants through voluntary market transactions with other people.

Specialization must be accompanied by trade. People who produce only a few things must trade with other people to obtain all the other things they want.

barter An economic system in which goods and services are traded directly for other goods and services.

Early trading was by means of **barter**, the trading of goods directly for other goods. But barter is costly in terms of time spent searching for satisfactory exchanges. If a farmer has wheat but wants a hammer, they must find someone who has a hammer and wants wheat. A successful barter transaction thus requires what is called a *double coincidence of wants*.

Money eliminates the cumbersome system of barter by separating the transactions involved in the exchange of products. If a farmer has wheat and wants a hammer, they merely have to find someone who wants wheat. The farmer takes money in exchange. Then they find a person who wants to sell a hammer and give up the money for the hammer.

Money greatly facilitates trade, which itself facilitates specialization.

Money now seems like such a simple and obvious thing, but its creation was an enormously important development in human history. By facilitating trade and specialization, money has played a central role in driving economic growth and prosperity over hundreds of years. We will have much to say about money later in this textbook, including how the commercial banking system and the central bank can influence the amount of money circulating in the economy.



The revolution in shipping and in computer technology has drastically reduced communication and transportation costs. This reduction in costs lies at the heart of globalization.

Globalization Market economies constantly change, largely as a result of the development of new technologies and the new patterns of production and trade that result. Over the past several decades, many of these changes have come under the heading of *globalization*, a term often used loosely to mean the increased importance of international trade.

Though international trade dates back thousands of years, what is new in the last several decades is the globalization of manufacturing. Assembly of a product may take place in the most industrialized countries, but the hundreds of component parts are manufactured in dozens of different countries and delivered to the assembly plant “just in time” for assembly.

Two major causes of globalization are the rapid reduction in transportation costs and the revolution in information technology that have occurred in the past 50 years. The cost of moving products around the world fell greatly over the last half of the twentieth century because of containerization and the increasing size of ships. For example, the OECD estimates that the cost of shipping freight in 2005 was only 20 percent of the costs in 1930. Our ability to transmit and analyze data

increased even more dramatically, while the costs of doing so fell sharply. For example, today \$1 000 buys an ultra-slim tablet or laptop computer that has the same computing power as a “mainframe” computer that in 1970 cost \$10 million and filled a large room. And a 3-minute transatlantic telephone call, which cost over \$60 in 1960, today costs only a few cents. This revolution in information and communication technology has made it possible to coordinate economic transactions around the world in ways that were difficult and costly 50 years ago and quite impossible 100 years ago.

Through the ongoing process of globalization, national economies are ever more linked to the global economy.

Globalization comes with challenges, however. As Canadian firms relocate production facilities to countries where costs are lower, domestic workers are laid off and must search for new jobs, perhaps needing retraining in the process. The location of production facilities in countries with lower environmental or human-rights records raises difficult questions about the standards that should be followed by Canadian-owned firms in foreign lands. And firms often use the threat of relocation in an attempt to extract financial assistance from governments, placing those governments in difficult positions. These concerns have led in recent years to “anti-globalization protests” that have raised awareness of some of the costs associated with the process of globalization. The same concerns have also led to the rise of protectionist policies in some countries, as we mentioned in the introduction to this chapter. We have more to say about these issues in the chapters that cover international trade.

1.3 Is There an Alternative to the Market Economy?

In this chapter we have discussed the elements of an economy based on free-market transactions—what we call a *market economy*. Are there alternatives to this type of economy? To answer this question we first need to identify various types of economic systems.

Types of Economic Systems

It is helpful to distinguish three pure types of economies, called *traditional*, *command*, and *free-market economies*. These economies differ in the way in which economic decisions are coordinated. But no actual economy fits neatly into one of these three categories—all real economies contain some elements of each type.

Traditional Economies A **traditional economy** is one in which behaviour is based primarily on tradition, custom, and habit. Young men follow their fathers’ occupations. Women do what their mothers did. There is little change in the pattern of goods produced from year to year, other than those imposed by the vagaries of nature. The techniques of production also follow traditional patterns, except when the effects of an occasional new invention are felt. Finally, production is allocated among the members according to long-established traditions.

Such a system works best in an unchanging environment. Under such static conditions, a system that does not continually require people to make choices can prove effective in meeting economic and social needs.

traditional economy

An economy in which behaviour is based mostly on tradition.

Traditional systems were common in earlier times. The feudal system, under which most people in medieval Europe lived, was a largely traditional society. Peasants, artisans, and most others living in villages inherited their positions in that society. They also usually inherited their specific jobs, which they handled in traditional ways.

Command Economies In command economies, economic behaviour is determined by some central authority, usually the government, or perhaps a dictator, which makes most of the necessary decisions on what to produce, how to produce it, and who gets to consume which products and in what quantities. Such economies are characterized by the *centralization* of decision making. Because centralized decision makers usually create elaborate and complex plans for the behaviour that they want to impose, the terms **command economy** and *centrally planned economy* are usually used synonymously.

command economy

An economy in which most economic decisions are made by a central planning authority.

The sheer quantity of data required for the central planning of an entire modern economy is enormous, and the task of analyzing it to produce a fully integrated plan can hardly be exaggerated. Moreover, the plan must be continually modified to take account not only of current data but also of future trends in labour and resource supplies and technological developments. This is a notoriously difficult exercise, not least because of the unavailability of all essential, accurate, and up-to-date information.

Until about 40 years ago, more than one-third of the world's population lived in countries that relied heavily on central planning. Today, after the collapse of the Soviet Union and the rapid expansion of markets in China, the number of such countries is small. Even in countries in which central planning is the proclaimed system, as in Cuba and North Korea, increasing amounts of market determination are gradually being permitted.

Free-Market Economies In the third type of economic system, the decisions about resource allocation are made without any central direction. Instead, they result from innumerable independent decisions made by individual producers and consumers. Such a system is known as a **free-market economy** or, more simply, a *market economy*. In such an economy, decisions relating to the basic economic issues are *decentralized*. Despite the absence of a central plan, these many decentralized decisions are nonetheless coordinated. The main coordinating device is the set of market-determined prices—which is why free-market systems are often called *price systems*.

free-market economy

An economy in which most economic decisions are made by private households and firms.

In a pure market economy, all these decisions are made by buyers and sellers acting through unhindered markets. The government provides the background of defining property rights and protecting citizens against foreign and domestic enemies but, beyond that, markets determine all resource allocation and income distribution.

Mixed Economies Economies that are fully traditional or fully centrally planned or wholly free market are pure types that are useful for studying basic principles. When we look in detail at any actual economy, however, we discover that its economic behaviour is the result of some mixture of central control and market determination, with a certain amount of traditional behaviour as well.

mixed economy An economy in which some economic decisions are made by firms and households and some by the government.

In practice, every economy is a mixed economy in the sense that it combines significant elements of all three systems in determining economic behaviour.

Furthermore, within any economy, the degree of the mix varies from sector to sector. For example, in some planned economies, the command principle was used more often to determine behaviour in heavy-goods industries, such as steel, than in agriculture. Farmers were often given substantial freedom to produce and sell what they wanted in response to varying market prices.

When economists speak of a particular economy as being centrally planned, we mean only that the degree of the mix is weighted heavily toward the command principle. When we speak of one as being a market economy, we mean only that the degree of the mix is weighted heavily toward decentralized decision making.

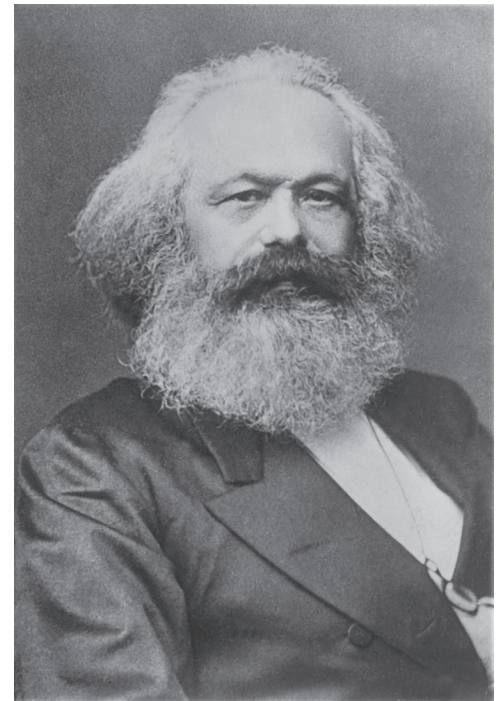
Although no country offers an example of either system working alone, some economies, such as those of Canada, the United States, France, and Japan, rely much more heavily on market decisions than others, such as the economies of China, North Korea, and Cuba. Yet even in Canada, the command principle has some sway. Crown corporations, legislated minimum wages, rules and regulations for environmental protection, quotas on some agricultural outputs, and restrictions on the import of some items are just a few examples of how the government plays an active role in the economy.

The Great Debate

As we saw earlier, in 1776 Adam Smith was one of the first people to analyze the operation of markets, and he stressed the relative efficiency of free-market economies. A century later, another great political philosopher, Karl Marx (1818–1883), argued that although free-market economies would indeed be successful in producing high levels of output, they could not be relied on to ensure that this output would be fairly distributed among citizens. He argued the benefits of a centrally planned system in which the government could ensure a more equitable distribution of output.

Beginning with the Soviet Union in the early 1920s, many nations adopted systems in which conscious government central planning replaced the operation of the free market. A great debate then raged on the relative merits of command economies versus market economies. Along with the Soviet Union, the countries of Eastern Europe and China were command economies for much of the twentieth century. Canada, the United States, and most of the countries of Western Europe were, and still are, primarily market economies. The apparent successes of the Soviet Union and China in the 1950s and 1960s, including the ability to mobilize considerable resources into heavy industries, suggested to many observers that the command principle was at least as good for organizing economic behaviour as the market principle. Over the long run, however, planned economies proved to be a failure of such disastrous proportions that they seriously depressed the living standards of their citizens.

During the last decade of the twentieth century, most of the world's centrally planned economies began the difficult transition back toward freer markets. These transitions occurred at different paces in different countries, but in most cases the initial few years were characterized by significant declines in output and employment. Thirty years later, however, most of the “transition” economies are



Karl Marx argued that free-market economies could not be relied on to ensure an equitable distribution of income. He advocated a system of central planning in which government owns most of the means of production.

experiencing growth rates above the ones they had in their final years as centrally planned economies. Living standards are on the rise.

The large-scale failure of central planning suggests the superiority of decentralized markets over centrally planned ones as mechanisms for allocating an economy's scarce resources. Put another way, it demonstrates the superiority of mixed economies with substantial elements of market determination over fully planned command economies. However, it does *not* demonstrate, as some observers have asserted, the superiority of completely free-market economies over mixed economies.

There is no guarantee that completely free markets would, on their own, handle such urgent matters as controlling pollution, providing public goods (like national defence), preventing a financial crisis, or addressing the severe health problems of a global pandemic. Indeed, as we will see in later chapters, much economic theory is devoted to explaining why free markets often *fail* to do these things. Mixed economies, with significant elements of government intervention, are needed to do these jobs.

Furthermore, acceptance of the free market over central planning does not provide an excuse to ignore a country's pressing social issues. Acceptance of the benefits of the free market still leaves plenty of scope to debate the most appropriate levels and types of government policies directed at achieving specific social goals. It follows that there is still considerable room for disagreement about the degree of the mix of market and government determination in any modern mixed economy—room enough to accommodate such divergent views as could be expressed by conservative, liberal, and modern social democratic parties.

So, the first answer to the question about the existence of an alternative to the market economy is no: There is no *practical* alternative to a mixed system with major reliance on markets but some government presence in most aspects of the economy. The second answer is yes: Within the framework of a mixed economy there are substantial alternatives among many different and complex mixes of free-market and government determination of economic life.

Economics in the Social Sciences

Economics is a discipline that aims to answer questions about the real world—how individuals behave, what drives the actions of producers, and how governments make the decisions they do. In all this enquiry, economics is always related to other aspects of society, such as politics, history, philosophy, law, and sociology. Though economists specialize in their analyses and theories by focusing on economic phenomena, they recognize that economic insights and explanations are only one piece of the larger puzzle of understanding human behaviour.

See *Applying Economic Concepts 1-2* for a brief explanation of how economics first emerged in the late 1700s, was referred to as “political economy” for the next two centuries, and then began in the middle of the twentieth century to specialize itself away from the other social sciences. In more recent years, however, it has begun to adopt a more comprehensive perspective.

Government in the Modern Mixed Economy

Market economies in today's advanced industrial countries are based primarily on voluntary transactions between individual buyers and sellers. Private individuals have the right to buy and sell what they want, to accept or refuse work that is offered to them,



APPLYING ECONOMIC CONCEPTS 1-2

Economics Needs the Other Social Sciences

The formal study of economics dates from the 1700s, when the events of the Industrial Revolution led to many changes in production, trade, wages, and prices—all of which demanded explanations.

In the traditional economies during the previous few centuries, there was not as much need for explanations, as children largely followed in their parents' footsteps, wages and prices were relatively stable, and technology was not changing dramatically. The Industrial Revolution, however, introduced massive changes in technology in a short period of time, which led to enormous economic changes. Living through these changes, Adam Smith was the first person to assemble a systematic view of how markets played a crucial organizing role for society.*

Despite being considered the “father of modern economics,” Adam Smith was not trained as an economist: he was a moral philosopher. And many of the pioneers in the development of economic thought, from the mid-1700s to the early 1900s, were prominent philosophers, historians, political observers, and sociologists. Indeed, it was not until the late 1800s that the discipline of “political economy” existed in universities, and not until the 1960s that universities specialized by having separate “political science” and “economics” departments.

The rise of economics as a specialized discipline distinct from the other social sciences had both benefits and costs. The benefit was that economic theories became more rigorous, and the discipline made many theoretical and empirical advances (many of which will be discussed in this book). The cost was that the discipline became narrower in its scope, intentionally avoiding the examination of many issues complicated by the considerations of politics or philosophy. The result was that economics

lost some of the richness that comes from a fuller integration with the other social sciences.

A study of modern economics continues to yield countless valuable insights about how markets work, how wages and prices are determined, how incomes are generated, and the need for and the effect of various kinds of government policies.

It is difficult, however, to underestimate the additional value that is gained from recognizing the lessons from history, the interaction of economic policy with the political process, the philosophical quandaries that exist in many economic situations, and the need for economics to be viewed as part of society, not separate from it. For this reason, many economists are now beginning to think more about how to better integrate their economic theories with those from the other social sciences—all in an effort to gain a richer understanding of the world around them.

This textbook is focused on the study of economics, not the other social sciences. We are seeking to reap the benefits of specialization that Adam Smith emphasized. But we nonetheless have many boxes that draw important lessons from history, have many discussions about policy that recognize the importance of the political process, and try to situate the economy and economic outcomes within a broader context of society. We hope our chosen combination provides you with a richer understanding of the subject.

*Robert Heilbroner's classic work, *The Worldly Philosophers* (Touchstone, 1999), is a highly readable book about the evolution of economic thought, beginning with Adam Smith in the late 1700s and ending with more modern thinkers in the middle of the twentieth century.

and to move where they want when they want. However, some of the most important institutions in our societies govern the transactions between buyers and sellers.

Key institutions are private property and freedom of contract, both of which must be maintained by active government policies. The government creates laws of ownership and contract and then provides the institutions, such as police and courts, to enforce these laws.

In modern mixed economies, governments go well beyond these important basic functions. They intervene in market transactions to correct what economists call *market failures*. These are well-defined situations in which free markets do not work well. Some products, called *public goods*, are usually not provided at all by markets because

their use cannot usually be restricted to those who pay for them. Defence and police protection are examples of public goods. In other cases, private producers or consumers impose costs called *externalities* on those who have no say in the transaction. Externalities exist when factories pollute the air and rivers. The public is harmed but plays no part in the transaction. In yet other cases, financial institutions, such as banks, mortgage companies, and investment houses, may indulge in risky activities that threaten the health of the entire economic system. These market failures explain why governments sometimes intervene to alter the allocation of resources.

Also, important issues of *equity* arise from letting free markets determine people's incomes. Some people lose their jobs because firms are reorganizing to become more efficient in the face of new technologies. Others keep their jobs, but the market places so little value on their services that they face economic deprivation. The old and the chronically ill may suffer if their past circumstances did not allow them to save enough to support themselves. For many reasons of this sort, almost everyone accepts some government intervention to redistribute income toward individuals or families with fewer resources.

These are some of the reasons all modern economies are mixed economies. Throughout most of the twentieth century in advanced industrial societies the mix had been shifting toward more and more government participation in decisions about the allocation of resources and the distribution of income. Starting in the early 1980s, a worldwide movement began to reduce the degree of government participation in economies. Following the global financial crisis in 2008, however, there was movement back toward a greater involvement of government in the economy. These shifts in the market/government mix, and the reasons for them, are some of the major issues that will be studied in this book.

SUMMARY

1.1 What Is Economics?

LO 1

- Scarcity is a fundamental problem faced by all economies. Not enough resources are available to produce all the goods and services that people would like to consume.
- Scarcity makes it necessary to choose. All societies must have a mechanism for choosing what goods and services will be produced and in what quantities.
- The concept of opportunity cost emphasizes the problem of scarcity and choice by measuring the cost of obtaining a unit of one product in terms of the number of units of other products that could have been obtained instead.
- A production possibilities boundary shows all the combinations of goods that can be produced by an economy whose resources are fully and efficiently employed. Movement from one point to another along the boundary requires a reallocation of resources.
- Four basic questions must be answered in all economies: What is produced and how? What is consumed and by whom? Why are resources sometimes idle? Is productive capacity growing?
- Issues of government policy enter into discussions of all four questions.

1.2 The Complexity of Modern Economies

LO 2, 3, 4

- A market economy is self-organizing in the sense that when individual consumers and producers act independently to pursue their own self-interest, the collective outcome is coordinated.
- Incentives and self-interest play a central role for all groups of decision makers: consumers, producers, and governments.

- Individual consumers are assumed to make their decisions in an effort to maximize their well-being or utility. Producers' decisions are assumed to be designed to maximize their profits.
- The interaction of consumers and producers through goods and factor markets is illustrated by the circular flow of income and expenditure.
- Modern economies are based on specialization and the division of labour, which necessitate the exchange (trading) of goods and services. Exchange takes place in markets and is facilitated by the use of money.
- Driven by the ongoing revolution in transportation and communications technology, the world economy has been rapidly globalizing for several decades.

1.3 Is There an Alternative to the Market Economy?

LO 5

- We can distinguish three pure types of economies: traditional, command, and free market. In practice, all economies are mixed economies.
- By the late 1980s, most countries with centrally planned economies had failed to produce minimally acceptable living standards for their citizens. These countries moved toward greater market determination and less state command in their economies.
- Governments play an important role in modern mixed economies. They create and enforce important background institutions such as private property and freedom of contract. They intervene to correct market failures. They also redistribute income in the interests of equity.

KEY CONCEPTS

Resources

Scarcity and the need for choice

Choice and opportunity cost

Production possibilities boundary

The self-organizing economy

Incentives and self-interest

Maximizing and marginal decisions

Specialization

The division of labour

Trade and money

Globalization

Traditional economies

Command economies

Free-market economies

Mixed economies

STUDY EXERCISES

MyLab Economics Make the grade with MyLab Economics: All end-of-chapter questions can be found on MyLab Economics. You can practise them as often as you want, and most feature step-by-step guided instructions to help you find the right answer.

FILL-IN-THE-BLANK

- Fill in the blanks to make the following statements correct.
 - The three general categories of any economy's resources are _____, _____, and _____. Economists refer to these resources as the _____ of production.
 - When we use any resource, the benefit given up by not using it in its best alternative way is known as the _____ of that resource.
 - The concepts of scarcity, choice, and opportunity cost can be illustrated by a curve known as the _____.
 - When looking at a production possibilities boundary, any point that is outside the boundary demonstrates _____. The _____ slope of the production possibilities boundary demonstrates _____.
 - A straight-line production possibilities boundary (PPB) indicates that the opportunity cost of each good is _____, no matter how much of that good is produced. A PPB that is concave to the origin indicates that a(n) _____ amount of one good must be given up to produce more of the other good.
 - Consider an economy producing two goods, A and B, with a PPB that is concave to the origin. As the economy produces more of good A and less of good B, its opportunity cost of producing A _____.

- 2 Fill in the blanks to make the following statements correct.
- An important insight by early economists was that an economy based on free-market transactions is _____-organizing. Adam Smith developed the idea that _____, not benevolence, is the foundation of economic order.
 - Self-interested buyers and sellers respond to _____ created by market prices.
 - The three types of decision makers in any economy are _____, _____, and _____.
 - Consumers are assumed to make decisions that will _____ their utility. Producers are assumed to make decisions that will _____ their profit.
 - Consumers and producers are assumed to weigh the costs and benefits of their decisions at the _____. For example, for a consumer, the benefit of buying “one more” unit of a good must outweigh the _____ of buying that unit.
- 3 Fill in the blanks to make the following statements correct.
- The allocation of different jobs to different people is referred to as the _____ of labour. The specialization within the production process of a particular product is referred to as the _____ of labour.
 - When people specialize in their activities, it becomes necessary for them to _____ to obtain most of the things they need or want.
 - Trade is facilitated by _____ because it eliminates the cumbersome system of barter.
 - The rapid reduction in both transportation and communication costs has greatly contributed to the _____ of the world economy.

REVIEW

- Explain the three economic concepts illustrated by the production possibilities boundary.
- Explain why a technological improvement in the production of one good means that a country can now produce more of *other* goods than it did previously. Hint: Draw a country’s production possibilities boundary to help answer this question.
- In this chapter we used a simple idea of a production possibilities boundary to illustrate the concepts of scarcity, choice, and opportunity cost. We assumed there were only two goods—call them X and Y. But we all know that any economy produces many more than just two goods. Explain why the insights illustrated in Figure 1-2 are more general, and why the assumption of only two goods is a useful one.
- Imagine a hypothetical world in which *all* Canadian families had \$80 000 of after-tax income.

- In such a world, would poverty exist in Canada?
 - In such a world, would scarcity exist in Canada?
 - Explain the difference between poverty and scarcity.
- What is the difference between microeconomics and macroeconomics?
 - For each of the following situations, explain how a change in the stated “price” is likely to affect your incentives regarding the stated decision.
 - the price of ski-lift tickets; your decision to purchase a ski-lift ticket
 - the hourly wage for your weekend job; the decision to not work and go skiing on the weekend instead
 - the fine for speeding; your decision to speed on the highway
 - the weight of your course grade attached to an assignment; your decision to work hard on that assignment
 - the level of tuition fees at your college or university; your decision to attend that college or university
 - State and explain two reasons why the specialization of labour is more efficient than universal self-sufficiency.
 - Consider the market for doctors’ services. In what way has this market taken advantage of the specialization of labour?
 - List the four main types of economic systems and their main attributes.
 - Comment on the following statement: “One of the mysteries of semantics is why the government-managed economies ever came to be called planned and the market economies unplanned. It is the former that are in chronic chaos, in which buyers stand in line hoping to buy some toilet paper or soap. It is the latter that are in reasonable equilibrium—where if you want a bar of soap or a steak or a shirt or a car, you can go to the store and find that the item is magically there for you to buy. It is the liberal economies that reflect a highly sophisticated planning system, and the government-managed economies that are primitive and unplanned.”

PROBLEMS

- Consider your decision whether to go skiing for the weekend. Suppose transportation, lift tickets, and accommodation for the weekend cost \$300. Suppose also that restaurant food for the weekend will cost \$75. Finally, suppose you have a weekend job that you will have to miss if you go skiing, which pays you \$120 (after tax) for the one weekend day that you work. What is the opportunity cost of going skiing? Do you need any other information before computing the opportunity cost?

- 15 Suppose you own an outdoor recreation company and you want to purchase all-terrain vehicles (ATVs) for your summer business and snowmobiles for your winter business. Your budget for new vehicles this year is \$240 000. ATVs cost \$8 000 each and snowmobiles cost \$12 000 each.
- Draw the budget line for your purchase of new vehicles.
 - What is the opportunity cost of one ATV?
 - What is the opportunity cost of one snowmobile?
 - Does the opportunity cost of one ATV depend on how many you purchase? Why or why not?

- 16 Suppose one factory produces residential windows and doors. The following scenarios describe various straight-line production possibilities boundaries for this factory. Each scenario describes the numbers of doors that could be produced in one day if all the factory's resources were devoted to producing doors and the number of windows that could be produced in one day if all the factory's resources were devoted to producing windows. For each scenario, calculate the opportunity cost to the factory owner of producing one extra door.

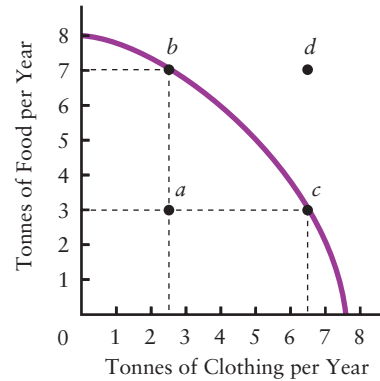
- 1000 windows; 250 doors
- 500 windows; 500 doors
- 1200 windows; 400 doors
- 942 windows; 697 doors
- 450 doors; 600 windows

- 17 Suppose you and a friend are stranded on an island and must gather firewood and catch fish to survive. Through experience, you know that if each of you spends an entire day on either activity, the result is given in the following table:

	Fish	Firewood (bundles)
You	6	3
Your friend	8	2

- What is the opportunity cost for you to gather an additional bundle of firewood? What is your friend's opportunity cost of gathering an extra bundle of firewood?
- Assuming that you and your friend specialize, what allocation of tasks maximizes total output for your one day of joint effort?
- Suppose you both decide to work for two days according to the allocation in part (b). What is the total amount of output? What would it have been had you chosen the reverse allocation of tasks?

- 18 Consider an economy that produces only food and clothing. Its production possibilities boundary is shown below.



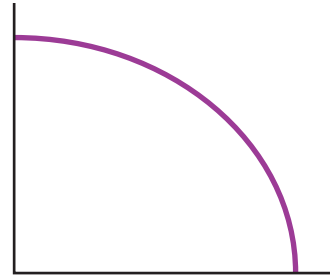
- If the economy is at point *a*, how many tonnes of clothing and how many tonnes of food are being produced? At point *b*? At point *c*?
- What do we know about the use of resources when the economy is at point *a*? At point *b*? At point *c*?
- If the economy is at point *b*, what is the opportunity cost of producing one more tonne of food? What is the opportunity cost of producing one more tonne of clothing?
- What do we know about the use of resources at point *d*? How would it be possible for the economy to produce at point *d*?

- 19 Consider an economy called Choiceland that has 250 workers and produces only two goods, X and Y. Labour is the only factor of production, but some workers are better suited to producing X than Y (and vice versa). The table below shows the maximum levels of output of each good possible from various levels of labour input.

Number of Workers Producing X	Annual Production of X	Number of Workers Producing Y	Annual Production of Y
0	0	250	1300
50	20	200	1200
100	45	150	900
150	60	100	600
200	70	50	350
250	75	0	0

- Draw the production possibilities boundary for Choiceland on a scale diagram, with the production of X on the horizontal axis and the production of Y on the vertical axis.

- b. Compute the opportunity cost of producing an extra 15 units of X if the economy is initially producing 45 units of X and 900 units of Y . How does this compare to the opportunity cost if the economy were initially producing 60 units of X and 600 units of Y ?
- c. If Choiceland is producing 40 units of X and 600 units of Y , what is the opportunity cost of producing an extra 20 units of X ?
- d. Suppose now that the technology associated with producing good Y improves, so that the maximum level of Y that can be produced from any given level of labour input increases by 10 percent. Explain (or show in a diagram) what happens to the production possibilities curve.
- 20 For each of the following events, describe the likely effect on the country's production possibilities boundary (PPB). Start with a PPB like the one shown and draw the likely change. In each case, specify the appropriate labels for both axes in the diagram.



- a. Suppose the country has a 10-year civil war that destroys much of its infrastructure.
- b. Suppose a small country produces only food and clothing. A new agricultural technology is then introduced that doubles the amount of food that can be produced per year.
- c. Suppose a small country produces only food and clothing. An earthquake destroys many of the clothing factories, but the ability to produce food is unaffected.
- d. The country admits approximately 250 000 immigrants *each year*, many of whom join the labour force.

2 Economic Theories, Data, and Graphs

CHAPTER OUTLINE

2.1 POSITIVE AND NORMATIVE STATEMENTS

2.2 BUILDING AND TESTING ECONOMIC THEORIES

2.3 ECONOMIC DATA

2.4 GRAPHING ECONOMIC THEORIES

LEARNING OBJECTIVES (LO)

After studying this chapter, you will be able to

- 1 distinguish between positive and normative statements.
- 2 explain why and how economists use theories to help them understand the economy.
- 3 understand the interaction between economic theories and empirical observation.
- 4 identify several types of economic data, including index numbers, time-series and cross-sectional data, and scatter diagrams.
- 5 recognize the slope of a line on a graph relating two variables as the “marginal response” of one variable to a change in the other.

IF you follow the news, you are likely to hear the views of economists being discussed—about rising house prices, unemployment, income inequality, attempts to reform the healthcare system, environmental policy, changes to income-tax rates, rising government debt, or a myriad of other issues. Where do economists’ opinions come from? Are they supported by hard evidence, and if so, why do economists sometimes disagree with each other over important issues?

Economics is a social science, and in this chapter we explore what it means to be “scientific” in the study of economics. Along the way we will learn much about theories, predictions, data, testing, and graphing—economists use all of these tools and techniques in their attempt to understand the economic world. We begin with the important distinction between positive and normative statements.

2.1 Positive and Normative Statements

Economists give two broad types of advice, called *normative* and *positive*. For example, they sometimes advise that the government ought to try harder to reduce unemployment. When they say such things, they are giving normative advice; in this case, they are making judgments about the importance of unemployment and the value in the government addressing it. Advice that depends on a value judgment is normative—it tells others what they *ought* to do.

Another type of advice is illustrated by the statement “If the government wants to reduce unemployment, reducing employment insurance benefits is an effective way of doing so.” This is positive advice. It does not rely on a judgment about the value of reducing unemployment. Instead, the expert is saying, “If this is what you want to do, here is a way to do it.”

Normative statements depend on value judgments and cannot be evaluated solely by a recourse to facts. In contrast, **positive statements** do not involve value judgments. They are statements about matters of fact, and so disagreements about them are appropriately dealt with by an appeal to evidence. The distinction between positive and normative is fundamental to scientific progress. Much of the success of modern science depends on the ability of scientists to separate their views on *what does happen* in the world from their views on *what they would like to happen*. For example, until the eighteenth century almost everyone believed that Earth was only a few thousand years old. Evidence then began to accumulate that Earth was billions of years old. This evidence was hard for most people to accept, since it ran counter to a literal reading of many religious texts. Many did not want to believe the evidence. Nevertheless, scientists, many of whom were religious, continued their research because they refused to allow their feelings about what they wanted to believe to affect their scientific search for the truth. Eventually, all scientists and most members of the public came to accept that Earth is about 4.5 billion years old.

normative statement

A statement about what ought to be; it is based on a value judgment.

positive statement A statement about what actually is, was, or will be; it is not based on a value judgment.

Distinguishing what is actually true from what we would like to be true requires distinguishing between positive and normative statements.

Examples of both types of statements are given in Table 2-1. All five positive statements in the table are assertions about the nature of the world in which we live. In contrast, the five normative statements involve value judgments. Notice two things about the positive/normative distinction. First, positive statements need not be true. Statement C is almost certainly false, and yet it is positive, not normative. Second, the inclusion of a value judgment in a statement does not necessarily make the statement itself normative. Statement D is a positive statement about the value judgments that people hold. We could conduct a survey to check if people really do prefer low unemployment to low inflation. We could ask them and we could observe how they voted. There is no need for the economist to rely on a value judgment to check the validity of the statement itself.

We leave you to analyze the remaining eight statements to decide precisely why each is either positive or normative. Remember to apply the two tests. First, is the statement only about actual or alleged facts? If so, it is a positive one. Second, are value judgments necessary to assess the truth of the statement? If so, it is normative.

TABLE 2-1 Positive and Normative Statements

Positive	Normative
A Raising interest rates encourages people to save.	F People should be encouraged to save.
B High rates of income tax encourage people to evade paying taxes.	G Governments should design taxes so that people cannot avoid paying them.
C Increasing the price of cigarettes leads people to smoke less.	H The government should raise the tax on cigarettes to discourage people from smoking.
D Most people would prefer a policy that reduced unemployment to one that reduced inflation.	I Unemployment is a more important social problem than inflation.
E Government financial assistance to commercial banks is ineffective at preventing job losses.	J Government should not spend taxpayers' money on supporting commercial banks.

Disagreements Among Economists

Economists often disagree with one another in public discussions, frequently because of poor communication. They often fail to define their terms or their points of reference clearly, and so they end up “arguing past” each other, with the only certain result being that the audience is left confused.

Another source of disagreement stems from some economists' failure to acknowledge the full state of their ignorance. There are many points on which the evidence is far from conclusive. In such cases, a responsible economist makes clear the extent to which their view is based on judgments about the relevant (and uncertain) facts.

Many other public disagreements are based on the positive/normative distinction. Different economists have different values, and these normative views play a large part in most discussions of public policy. For example, many economists stress the importance of individual responsibility and argue that lower employment insurance benefits would be desirable because people would have a greater incentive to search for a job. Other economists stress the need for a generous “social safety net” and argue that higher employment insurance benefits are desirable because human hardship would be reduced. In such debates, and there are many in economics, it is the responsibility of the economist to state clearly what part of the proffered advice is normative and what part is positive.

Because the world is complex and because few issues can be settled beyond any doubt, economists rarely agree unanimously on an issue. Nevertheless, there is an impressive amount of agreement on many aspects of how the economy works and what happens when governments intervene to alter its workings. A survey published several years ago in the *American Economic Review*, perhaps the most influential economics journal, showed strong agreement among economists on many propositions, including



Economists often disagree with one another in the media or at conferences, but their debates are more often about normative issues than positive ones.



APPLYING ECONOMIC CONCEPTS 2-1

Where Economists Work

This chapter discusses the theoretical and empirical tools that economists use. After reading this material, you might wonder where economists find jobs and what kind of work they actually do. The skills of economists are demanded in many parts of the economy by governments, private businesses and Crown corporations, non-profit organizations, and universities.

In Ottawa and the provincial and territorial capitals, economists are hired in most government departments to analyze the effects of government policies and to design ways to improve those policies. At Finance Canada, economists design and analyze the income-tax system and the effects of current spending programs. At Environment and Climate Change Canada, they help design and evaluate policies aimed at reducing greenhouse-gas emissions and water pollution. At Innovation, Science and Economic Development Canada, they study the sources of productivity growth and design policies to encourage innovation in the private sector. At the Bank of Canada, economists research the link between interest rates, the aggregate demand for goods and services, and the rate of increase in prices. They also monitor developments in the global economy and their effects on the Canadian economy. Statistics Canada employs many economists to design methods of collecting and analyzing data covering all aspects of Canadian society.

The analysis of economic policies also takes place in independent research organizations, often called “think tanks.” The C.D. Howe Institute in Toronto is one of Canada’s best-known think tanks, and it regularly publishes papers on topics ranging from monetary policy and the state of public pensions to the effects of immigration and the challenges in reforming Canada’s policies for foreign development assistance. Other think tanks include the Institute for Research on Public Policy, the Canadian Centre for Policy Alternatives, the Fraser

Institute, the Centre for the Study of Living Standards, and the Conference Board of Canada. All of these independent and non-profit organizations hire economists to study economic issues and then write and edit the economic publications that address them.

Private and public (Crown) corporations in many sectors of the economy also hire economists in a variety of positions. Economists at Canadian Pacific Railway monitor how changes in world commodity prices will lead to changes in Canadian resource production and thus to changes in the demand for their rail transport services. Economists at Manitoba Hydro study the link between economic growth and electricity demand to help the firm with its long-run investment decisions. Those at Export Development Canada examine how economic and political risks in various countries influence the demand for the products of Canadian exporters. Economists at Bombardier are hired to determine how ongoing negotiations within the World Trade Organization will affect tariff levels in various countries and how these changes will affect the demand for Bombardier jet aircraft.

Finally, many economists are hired by universities all over the world to teach students like you and to conduct research on a wide variety of economic topics. Some of this research is theoretical and some is empirical, using data to test economic theories. Other academic economists focus their research on the design and implementation of better economic policy, and often spend considerable time interacting with the economists employed by government departments.

Training in economics provides useful analytical skills that are valuable for learning about the workings of a complex economic world. There is no shortage of demand for people who can think clearly and analytically about economic issues. This course could well be the start of a great career for you.

“Rent control leads to a housing shortage” (85 percent yes), “Tariffs usually reduce economic welfare” (93 percent yes), and “A minimum wage increases unemployment among young workers” (79 percent yes). Notice that all these are positive rather than normative statements. Other examples of these areas of agreement will be found in many places throughout this book.

Whether they agree or disagree with one another, economists are in demand in many sectors of the economy. See *Applying Economic Concepts 2-1* for a discussion of the many organizations that employ economists.