RAGAN

MICROECONOMICS

FOURTEENTH CANADIAN EDITION

MICROECONOMICS

FOURTEENTH CANADIAN EDITION

The moment you know

It's that inspired moment when something makes perfect sense.
MyEconLab for Ragan, *Microeconomics*, Fourteenth Edition

MyEconLab is a dynamic online tool that helps you reach that moment, time and again.

- Chapter tests generate your personal study plan and an assignment tool lets your instructor guide your learning toward those moments of true understanding.
- Practise problems created directly from the textbook's Study Exercises are available in your personal Study Plan with links to online learning resources.
- "Help-Me-Solve-This" breaks down a problem and guides you through the steps to solve it.
- Links to the eText guide you to revisit a concept or explanation when needed.
- Animated figures with audio explanations reinforce your reading.
- Additional topics provide opportunities for you to explore economics concepts that build on key chapter topics.
- Economics News provides regular news feed updates on key economics articles and events happening around the world.
- Economics Experiments provide unique opportunities for you to immerse yourself in key economics decisions and outcomes.
- The graphing tool enables you to build and manipulate graphs to understand how concepts, numbers, and graphs connect.
- Unlimited Practice: Hundreds of practice questions ensure that you get as much practice as you need, and as you work on each exercise, instant feedback helps you understand and apply the concepts.

ALWAYS LEARNING

PEARSON

MICROECONOMICS

FOURTEENTH CANADIAN EDITION

CHRISTOPHER T.S. RAGAN

McGILL UNIVERSITY

PEARSON

Toronto

Vice-President, Editorial Director: Gary Bennett
Editor-in-Chief: Nicole Lukach
Acquisitions Editor: Claudine O'Donnell
Marketing Manager: Leigh-Anne Graham
Developmental Editor: Suzanne Schaan
Project Manager: Andrea Falkenberg
Production Editor: Melinda Durham
Project Coordination and Editorial Services: Electronic Publishing Services Inc., NYC
Copy Editor: Linda Jenkins
Proofreader: Megan Smith-Creed
Compositor: Jouve
Photo Researcher: Marta Johnson
Permissions Researcher: Marnie Lamb
Art Director: Julia Hall
Interior Designer: Opushouse Inc./Sonya Thursby
Cover Designer: Miriam Blier
Cover Image: Steve McDonald

Credits and acknowledgments of material borrowed from other sources and reproduced, with permission, in this textbook appear on the appropriate page within the text and on p. C-1.

This edition is authorized for sale only in Canada.

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

---

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

Library and Archives Canada Cataloguing in Publication

Ragan, Christopher
Microeconomics / Christopher T.S. Ragan. — 14th Canadian ed.

Includes index.
ISBN 978-0-321-79487-1

1. Microeconomics—Textbooks. 2. Microeconomics—Canada—Textbooks. I. Title.

HB172.R35 2013 338.5 C2012-906726-1

PEARSON

ISBN 978-0-321-79487-1

Brief Contents

Contents

List of Boxes

Applying Economic Concepts

Lessons from History

Extensions in Theory

Additional Topics on MyEconLab (www.myeconlab.com)

CHAPTER 1	Challenges Facing the Developing Countries
CHAPTER 2	How Economists Choose Their Theories
	What the S&P/TSX Really Measures
	A Brief Introduction to Graphing
CHAPTER 3	Economic Data and the Identification Problem
	A Primer on the Market for Crude Oil
CHAPTER 4	Some Further Details About Demand Elasticity
	Who Really Pays for Payroll Taxes?
CHAPTER 5	Linkages Between Markets
	When Rent Controls Work and When They Don't
	Agriculture and the Farm Problem
CHAPTER 6	What Makes People Happy?
	Do Taxes Discourage Work Effort and Saving?
CHAPTER 7	Multinational Enterprises and Foreign Direct Investment
	Do Firms Really Maximize Profits?
CHAPTER 8	Explaining Different Concepts of Efficiency
	Understanding and Addressing Canada's Productivity Challenges
CHAPTER 9	An Example of Loss Minimization as Profit Maximization
	The Long-Run Industry Supply Curve
CHAPTER 10	The Battle over Online Prescription Drugs
CHAPTER 11	The Nature of Globalization
	A Sequential Game in Fibre Optics
	Oligopoly and Contestable Markets
CHAPTER 12	Ontario's Troubled Electricity Sector
CHAPTER 13	Does Government Support of Specific Industries Really Create Jobs?
CHAPTER 14	The Puzzle of Interindustry Wage Differentials in Canada
CHAPTER 15	The U.S. Housing Collapse and the Financial Crisis of 2007–2008
	A Beginner's Guide to the Stock Market
	Investment and Saving in Globalized Financial Markets
	Interest Rates and the Extraction of Natural Resources
CHAPTER 16	Externalities and the Coase Theorem
	How Excessive Regulation Hobbles Development
CHAPTER 17	Charging for Garbage by the Bag
	A Market for SO2 Emissions in the United States
	The Politics of Market-Based Environmental Policies
CHAPTER 18	Debate More Healthy than Health Care
	Who Are Canada's Poor?
	The Economic and Fiscal Challenges of Population Aging
	What Is the Balanced Budget Multiplier?
CHAPTER 33	Who Are Canada's Trading Partners?
	Does Third-World Growth Harm First-World Prosperity?
CHAPTER 34	The Continuing Saga of Softwood Lumber
	Farm Subsidies and the World Trade Organization

To the Instructor

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 fourteen editions, *Microeconomics* has evolved with the discipline. Our purpose in this edition, as in the previous thirteen, 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 *useful*, 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 fourteenth edition of Microeconomics, 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 past 240 years since Adam Smith's landmark work, economists recognize that there is still much we do not know.

The importance of technological change in determining increases in overall living standards is a theme that permeates both the microeconomics and macroeconomics halves of this book. Chapter 8 explores how firms deal with technological change at the micro level, and how changes in their economic environment lead them to create new products and new production processes. Chapters 11 and 12 discuss how imperfectly competitive firms often compete through their innovative practices, and the importance for policymakers of designing competition policy to keep these practices as energetic as possible.

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, Recession, and Recovery

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 micro causes and macro consequences. The challenges of appropriate regulation for financial and nonfinancial firms are explored in Chapters 12 and 16. The market for financial capital and the determination of interest rates are examined in Chapter 15. And debates regarding the appropriate role of the government in a market economy occur throughout the book, including in Chapters 1, 5, 16, and 18.

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 33 discusses the theory of the gains from trade; Chapter 34 explores trade policy, with an emphasis on NAFTA and the WTO.

The forces of globalization are with us to stay. In this fourteenth edition of *Microeconomics*, 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 argued the benefits of limited government. But the political winds shifted again with the arrival of the financial crisis and global recession in 2008, which led governments the world over to take some unprecedented actions. Many soon argued that we were observing the "end of laissez-faire" and witnessing the return of "big government." But was that really true?

Has the *fundamental* role of government changed significantly over the past 35 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 fourteenth edition of *Microeconomics*, 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:

- tax incidence (in Chapter 4)
- the effects of minimum wages and rent controls (in Chapter 5)
- economic regulation and competition policy (in Chapter 12)
- pay equity policy (in Chapter 13)
- environmental policies (in Chapter 17)
- the disincentive effects of income taxes (in Chapter 18)
- trade policies (in Chapter 34)

The Book

Economic growth, financial crisis and recession, 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 *Microeconomics* 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 useful in helping us to understand and deal with the world around us.

Structure and Coverage

To open Part 1, Chapter 1 begins with an informal presentation of six major issues of the day. We then introduce scarcity and choice, and this leads to a discussion of the market as a coordinating device. Finally, we turn to alternative economic systems. Comparisons with command economies help to establish what a market economy is *by showing what it is not.* The Appendix to Chapter 1 provides a useful refresher on graphing. Chapter 2 makes the important distinction between positive and normative inquiries and goes on to an introductory discussion of the construction and testing of economic theories.

Part 2 deals with demand and supply. After introducing price determination and elasticity in Chapters 3 and 4, we apply these tools in Chapter 5. The case studies are designed to provide practice in applying the tools rather than to give full coverage of each case presented. Chapter 5 also has an intuitive and thorough treatment of economic value and market efficiency.

Part 3 presents the foundations of demand and supply. The theory of consumer behaviour is developed via marginal utility theory in Chapter 6, which also provides an introduction to consumer surplus and an intuitive discussion of income and substitution effects. The Appendix to Chapter 6 covers indifference curves, budget lines, and the derivation of demand curves using indifference theory. Chapter 7 introduces the firm as an institution and develops short-run costs. Chapter 8 covers long-run costs and the principle of substitution and goes on to consider shifts in cost curves due to technological change. The latter topic is seldom if ever covered in the micro part of elementary textbooks, yet applied work on firms' responses to changing economic signals shows it to be extremely important.

The first two chapters of Part 4, Chapters 9 and 10, present the standard theories of perfect competition and monopoly with a thorough discussion of price discrimination and some treatment of international cartels. Chapter 11 deals with monopolistic competition and oligopoly, which are the market structures most commonly found in Canadian industries. Strategic behaviour plays a central part in the analysis of this chapter. The first half of Chapter 12 deals with the efficiency of competition and the inefficiency of monopoly. The last half of the chapter deals with regulation and competition policy.

Part 5 begins with Chapter 13, which discusses the general principles of factor pricing and how factor prices are influenced by factor mobility. Chapter 14 then examines the operation of labour markets, addressing issues such as wage differentials, discrimination, labour unions, and the "good jobs–bad jobs" debate. Chapter 15 discusses investment in physical capital, the role of the interest rate, and the overall functioning of capital markets.

The first chapter of Part 6 (Chapter 16) provides a general discussion of market success and market failure and outlines the arguments for and against government intervention in a market economy. Chapter 17 deals with environmental regulation, with a detailed discussion of market-based policies and an introduction to the issue of global climate change. Chapter 18 analyzes taxes, public expenditure, and the main elements of Canadian social policy. These three chapters expand on the basics of microeconomic analysis by providing current illustrations of the relevance of economic theory to contemporary policy situations.

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.

Substantive Changes to This Edition

We have revised and updated the entire text with guidance from an extensive series of formal reviews and other feedback from both users and nonusers of the previous editions of this book. As always, we have striven 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. *Additional Topics*, available on MyEconLab (www.myeconlab.com), address theoretical, empirical, and policy discussions that are interesting but optional. (A complete listing of the *Additional Topics* is provided following the Contents after the List of Boxes.) 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.

Part 1: What Is Economics?

Chapter 1 has been significantly rewritten and rearranged. We now begin with a brief discussion of six key issues in the Canadian and world economies, and then turn to examine resources and scarcity, coordination in markets, and alternative economic systems. We have added a discussion of the role of economic policy. In Chapter 2, we have improved our discussion of the nature of theories, causation, and predictions, and we have added a new box discussing where economists get jobs and what kinds of work they do.

Part 2: An Introduction to Demand and Supply

In Chapter 3 on the basics of demand and supply, we have added a new box explaining why the model works well for commodities (like apples) but not so well for differentiated products (like iPhones). Chapter 4 on elasticity begins with the example of the effect of the 2011 Libyan war on the price of oil. We have also streamlined the discussion of supply elasticity.

Part 3: Consumers and Producers

In Chapter 6, we have clarified the discussion of the condition for utility maximization, and the material on individual and market demand curves is now in the main text rather than in an optional box. Chapter 7 examines the short-run theory of the firm; we say more about the role of bank lending, have better explanations for diminishing returns, and the box on flat cost curves has been improved. We have expanded and clarified our discussion in Chapter 8 of the principle of substitution and have added a new discussion on the importance of productivity growth in driving long-run living standards.

Part 4: Market Structure and Efficiency

In Chapter 9 on perfect competition, we have improved our discussion of whether firms should produce at all, the concept of the shut-down price, and the meaning of loss minimization. In Chapter 10, we have clarified the comparison of price and marginal cost for determining efficiency. We have added Potash and Canpotex as an example of an active cartel, and car prices between Canada and the United States as an example of price discrimination. In Chapter 11, we have streamlined the discussion of monopolistic competition, including an improved discussion of short-run profits and losses. We have also added a new discussion about how profit maximization among oligopolists involves perceptions of rivals' responses and have included a new discussion about extensions beyond simple game theory. In Chapter 12, we have clarified the discussion about regulation of natural monopolies and we have added a new box on the regulation of Canadian banks motivated by the need to reduce risks and enhance stability. We have updated the discussion of Canadian competition policy, including the recent example of the proposed joint venture between Air Canada and United Continental.

Part 5: Factor Markets

Chapter 13 begins with a section on income distribution, and we have added a new box on rising income inequality in Canada and the other OECD economies, and why it matters. We have also entirely rewritten and shortened the discussion of a firm's demand for a factor of production, and what determines the elasticity of factor demand. In Chapter 15, we have improved our discussion of what events change a firm's demand for capital, and why household saving is related to the interest rate.

Part 6: Government in the Market Economy

In Chapter 16, we have improved our discussion and diagram explaining the meaning of positive and negative externalities. We have improved the box on the market for lemons and also our explanation of rent seeking. We have also deleted the old material on inefficient public choices and the box on the Arrow Impossibility Theorem, which many reviewers thought was too advanced. In Chapter 17 on environmental regulation, we have improved our discussion of direct controls, including a passage about when they are effective. We also have several changes in the section on climate change, including a new discussion of the state of play after the Kyoto Protocol. In Chapter 18, we have improved our discussions of the GST, the disincentive effects of taxation, the funding paths for CST and CHT, and the details surrounding the OAS and the Child Tax Benefits.

Part 12: Canada in the Global Economy

Chapter 33 on the gains from international trade has been updated and revised, but there is no substantial change to its structure or messages. In Chapter 34, we have reworked and clarified our discussion of the case for protection. We have shortened the discussion of countervailing duties but expanded the discussion and examples of national treatment in NAFTA. We have also streamlined our discussion of the ongoing WTO Doha round. Our mention of the new Trans Pacific Partnership now leads us to a new box on the ongoing drive to diversify Canada's trade.

***

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 Manual*, the *Study Guide*, the *TestGen*, or the web-based *Additional Topics*) to:

Christopher Ragan
Department of Economics
McGill University
855 Sherbrooke St. West
Montreal, Quebec H3A 2T7
e-mail: christopher.ragan@mcgill.ca

To the Student

Welcome to what is most likely your first book about microeconomics! You are about to encounter what is for most people a new way of thinking, which often causes people to see things differently than they did before. But learning a new way of thinking is not always easy, and you should expect some hard work ahead. We do our best to be as clear and logical as possible and to illustrate our arguments whenever possible with current and interesting examples.

You must develop your own technique for studying, but the following suggestions may prove helpful. Begin by carefully considering the Learning Objectives at the beginning of a chapter. Read the chapter itself relatively quickly in order to get the general idea of the argument. At this first reading, you may want to skip the boxes and any footnotes. Then, after reading the Summary and the Key Concepts (at the end of each chapter), reread the chapter more slowly, making sure that you understand each step of the argument.

With respect to the figures and tables, be sure you understand how the conclusions that are stated in boldface at the beginning of each caption have been reached. You should be prepared to spend time on difficult sections; occasionally, you may spend an hour on only a few pages. Paper and pencil are indispensable equipment in your reading. It is best to follow a difficult argument by building your own diagram while the argument unfolds rather than by relying on the finished diagram as it appears in the book.

The end-of-chapter Study Exercises require you to practise using some of the concepts that you learned in the chapter. These will be excellent preparation for your exams. To provide you with immediate feedback, we have posted Solutions to Selected Study Exercises on MyEconLab (www.myeconlab.com). We strongly advise that you should seek to understand economics, not to memorize it.

The red numbers in square brackets in the text refer to a series of mathematical notes that are found starting on page M-1 at the end of the book. For those of you who like mathematics or prefer mathematical argument to verbal or geometric exposition, these may prove useful. Others may disregard them.

In this edition of the book, we have incorporated many elements to help you review material and prepare for examinations. A brief description of all the features in this book is given in the separate section that follows.

We encourage you to make use of MyEconLab that accompanies this book (www.myeconlab.com) at the outset of your studies. MyEconLab contains a wealth of valuable resources to help you. MyEconLab provides Solutions to Selected Study Exercises. It also includes many additional practice questions, some of which are modelled on Study Exercises in the book. MyEconLab also contains many *Additional Topics*—these represent material written especially for this textbook and include many interesting theoretical, empirical, and policy discussions. You can also find animations of some of the key figures in the text, marked with the symbol  below the figure number, as well as an electronic version of the textbook. For more details about MyEconLab, please see the description on p. ii.

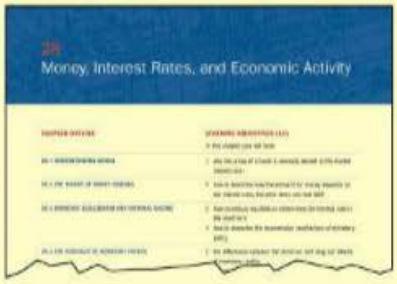
We strongly suggest you make use of the excellent *Study Guide* written expressly for this text. The *Study Guide* is closely integrated with the book; it offers practice questions and exercises that will test and reinforce your understanding of the concepts and analytical techniques stressed in each chapter of the text and will help you prepare for your examinations. Explanations are provided for the answers to many of the Multiple-Choice Questions to facilitate your independent study. Being able to solve problems and to communicate and interpret your results are important goals in an introductory course in economics. The *Study Guide* can play a crucial role in your acquisition of these skills.

Over the years, the book has benefited greatly from comments and suggestions we have received from students. Please feel free to send your comments to christopher.ragan@mcgill.ca. Good luck, and we hope you enjoy your course in economics!

Features of This Edition

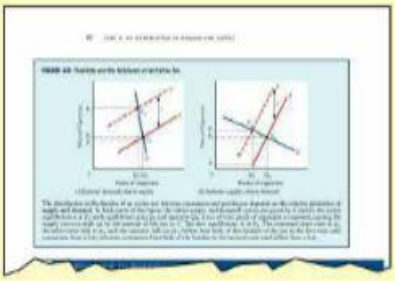
We have made a careful effort with this edition to incorporate features that will facilitate the teaching and learning of economics.

- A set of **Learning Objectives** at the beginning of each chapter, correlated to the **Chapter Outline**, clarifies the skills and knowledge to be learned in each chapter. These same learning objectives are used in the chapter summaries, as well as in the *Study Guide*.



- **Major ideas** are highlighted with a yellow background in the text.
- **Key terms** are boldfaced where they are defined in the body of the text and they are restated with their definitions in the margins. In the index at the back of the book, each key term and the page reference to its definition are boldfaced.
- **Weblinks** to useful Internet addresses are given in the margins. Each weblink presents a URL address, along with a brief description of the material available there. Some links are to government home pages where you can obtain much additional data. Other links are to organizations such as OPEC, the UN, and the WTO.

- The **colour scheme for figures** consistently uses the same colour for each type of curve. For example, all demand curves are blue and all supply curves are red.
- **A caption for each figure and table** summarizes the underlying economic reasoning. Each caption begins with a boldfaced statement of the relevant economic conclusion.



- **Applying Economic Concepts** boxes demonstrate economics in action, providing examples of how theoretical material relates to issues of current interest.
- **Extensions in Theory** boxes provide a deeper treatment of a theoretical topic that is discussed in the text.
- **Lessons from History** boxes contain discussions of a particular policy debate or empirical finding that takes place in a historical context.
- **Photographs with short captions** are interspersed throughout the chapters to illustrate some of the arguments.


SUMMARY

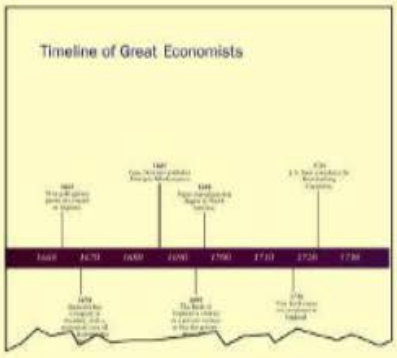
- **Chapter Summaries** are organized using the same numbered heading as found in the body of the chapter. The relevant Learning Objective (LO) numbers are given in red next to each heading in the summary.
- **Key Concepts** are listed near the end of each chapter.


STUDY EXERCISES

- A set of **Study Exercises** is provided for each chapter. These often quantitative exercises require the student to analyze problems by means of computations, graphs, or explanations.


Mathematical Notes

- A set of **Mathematical Notes** is presented in a separate section near the end of the book. Because mathematical notation and derivations are not necessary to understand the principles of economics but are more helpful in advanced work, this seems to be a sensible arrangement. References in the text to these mathematical notes are given by means of red numbers in square brackets.


Timeline of Great Economists

- A **Timeline of Great Economists,** extending from the mid-seventeenth century to the late twentieth century, is presented near the end of the book. Along this timeline we have placed brief descriptions of the life and works of some great economists, most of whom the reader will encounter in the textbook. The timeline also includes some major world events to give readers an appreciation of when these economists did their work.
- For convenience, a list of the **Common Abbreviations Used in the Text** is given on the final page of the text.

Supplements

A comprehensive set of supplements has been carefully prepared to assist students and instructors in using this new edition.

MyEconLab

The moment you know.

Educators know it. Students know it. It's that inspired moment when something that was difficult to understand suddenly makes perfect sense. Our MyLab products have been designed and refined with a single purpose in mind—to help educators create that moment of understanding with their students.

MyEconLab delivers proven results in helping individual students succeed. It provides engaging experiences that personalize, stimulate, and measure learning for each student. And, it comes from a trusted partner with educational expertise and an eye on the future.

MyEconLab can be used by itself or linked to any learning management system. Visit MyEconLab to learn more about how it combines proven learning applications with powerful assessment.

MyEconLab—the moment you know.

MyEconLab provides students with personalized Study Plans and the opportunity for unlimited practice. It also provides instructors with ready-to-use assignments that can be graded electronically. For more information on MyEconLab, please visit www.myeconlab.com.

Pearson eText gives students access to the text whenever and wherever they have access to the Internet. eText pages look exactly like the printed text, offering powerful new functionality for students and instructors. Users can create notes, highlight text in different colours, create bookmarks, zoom, click hyperlinked words and phrases to view definitions, and view in single-page or two-page view. Pearson eText allows for quick navigation to key parts of the eText using a table of contents and provides full-text search. The eText may also offer links to associated media files, enabling users to access videos, animations, or other activities as they read the text.

Study Guide

A robust *Study Guide*, written by Paul T. Dickinson and Gustavo Indart, is available for microeconomics (978-0-321-82840-8). It is designed for use either in the classroom or by students on their own. The *Study Guide* offers additional study support and reinforcement for each text chapter. It is closely integrated with the textbook; offering relevant exercises for each chapter. To facilitate independent study, explanations are provided for about 70 percent of the answers to the Additional Multiple-Choice Questions. For each chapter, the *Study Guide* provides the following helpful material:

- Learning Objectives matching those in the textbook
- Chapter Overview
- Hints and Tips
- Chapter Review consisting of Multiple-Choice Questions, organized into sections matching the numbered sections in the textbook
- Short-Answer Questions
- Exercises
- Extension Exercises
- Additional Multiple-Choice Questions
- Solutions to all of the Questions and Exercises above
- Explanations for the answers to at least 70 percent of the Additional Multiple-Choice Questions

CourseSmart for Students

CourseSmart goes beyond traditional expectations—providing instant, online access to the textbooks and course materials you need at an average savings of 60 percent. With instant access from any computer and the ability to search your text, you'll find the content you need quickly, no matter where you are. And with online tools like highlighting and note-taking, you can save time and study efficiently. See all the benefits at www.coursesmart.com/students.

Instructor's Resource CD-ROM

The *Instructor's Resource CD-ROM* (978-0-321-88969-0) for this new edition contains the following items:

- An **Instructor's Manual** (in both Word and PDF format) written by Christopher Ragan. It includes full solutions to all the Study Exercises.
- A **Computerized Testbank (Pearson TestGen)** prepared by Ingrid Kristjanson and Christopher Ragan. The testbank consists of 4000 multiple-choice questions, with an emphasis on applied questions (as opposed to recall questions) and quantitative questions (as opposed to qualitative questions). Approximately 60 percent of the questions test applied skills, about 20 percent of the questions are quantitative, and about 20 percent of the questions have a graph or table. All the questions have been carefully checked for accuracy. For each question, the authors have provided the correct answer, identified the relevant section number in the textbook chapter, specified the concept being tested, assigned a level of difficulty (easy, moderate, or challenging), identified the skill tested (recall or applied), noted whether the question is qualitative or quantitative, and noted whether the question involves a graph or table. *TestGen* enables instructors to search for questions according to any of these attributes and to sort questions into any order desired. With *TestGen*, instructors can easily edit existing questions, add questions, generate tests, and print the tests in a variety of formats. *TestGen* also allows instructors to administer tests on a local area network, have the tests graded electronically, and have the results prepared in electronic or printed reports.
- **PowerPoint® Slides**, covering the key concepts of each chapter, that can be adapted for lecture presentations.
- **Clicker Questions**, consisting of more than 600 questions in PowerPoint format, that can be used with any Personal Response System.
- An **Image Library**, consisting of all the figures and tables from the textbook in gif format. These files can easily be imported into PowerPoint slides for class presentation.
- **Additional Topics**, written by Christopher Ragan, offering optional topics on a wide variety of economic subjects. A list of these topics is included in the text; students can access them on MyEconLab (www.myeconlab.com).

These instructor supplements are also available for download from a password-protected section of Pearson Education Canada's online catalogue (www.pearsoncanada.ca/highered). Navigate to your book's catalogue page to view a list of those supplements that are available. See your local Pearson representative for details and access.

CourseSmart for Instructors

CourseSmart goes beyond traditional expectations—providing instant, online access to the textbooks and course materials you need at a lower cost for students. And even as students save money, you can save time and hassle with a digital eTextbook that allows you to search for the most relevant content at the very moment you need it. Whether it's evaluating textbooks or creating lecture notes to help students with difficult concepts, CourseSmart can make life a little easier. See how when you visit www.coursesmart.com/instructors.

Technology Specialists

Pearson's **Technology Specialists** work with faculty and campus course designers to ensure that Pearson technology products, assessment tools, and online course materials are tailored to meet your specific needs. This highly qualified team is dedicated to helping students take full advantage of a wide range of educational resources by assisting in the integration of a variety of instructional materials and media formats. Your local Pearson Canada sales representative can provide you with more details about this service program.

Pearson Custom Library

For enrollments of at least 25 students, you can create your own textbook by choosing the chapters that best suit your own course needs. To begin building your custom text, visit www.pearsoncustomlibrary.com. You may also work with a dedicated Pearson Custom editor to create your ideal text—publishing your own original content or mixing and matching Pearson content. Contact your local Pearson representative to get started.

Acknowledgements

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 thirteen 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 fourteenth edition, we are grateful to the many people who offered informal suggestions. We would also like to thank the following instructors who provided us with formal reviews of the textbook. Their observations and recommendations were extremely helpful.

- Benjamin Atkinson (Mount Royal University)
- Iris Au (University of Toronto Scarborough)
- Lee Bailey (University of Toronto Mississauga)
- Natalya Brown (Nipissing University)
- Marilyn Cottrell (Brock University)
- Ajit Dayanandan (University of Northern British Columbia)
- Paul Dickinson (McGill University)
- Michael Doyle (Memorial University of Newfoundland)
- Byron Eastman (Laurentian University)
- Oliver Franke (Concordia University of Alberta)
- Bruno Fullone (George Brown College)
- David Gray (University of Ottawa)
- Narine Grigoryan (Camosun College)
- Gustavo Indart (University of Toronto)
- Byron Lew (Trent University)
- Junjie Liu (Simon Fraser University)
- M. A. McGregor (Mount Royal University)
- Manish Pandey (University of Winnipeg)
- Amy Peng (Ryerson University)
- Kevin Richter (Douglas College)
- Gary Riser (Memorial University of Newfoundland)
- Rob Scharff (Kwantlen Polytechnic University)
- Jim Sentance (University of PEI)
- Fulton Tom (Langara College)
- and others, who choose to remain anonymous

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 three individuals with whom we worked closely. Claudine O"Donnell (Acquisitions Editor), Suzanne Schaan (Supervising Developmental Editor) and Leigh-Anne Graham (Senior Marketing Manager) 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 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 Andrea Falkenberg, Melinda Durham, Julia Hall, Marta Johnson, Sonya Thursby, and Miriam Blier.

Thanks also to Linda Jenkins for copyediting, Kevin Richter for the technical review, and to Megan Smith-Creed for proofreading, all of whom provided an invaluable service with their attention to detail.

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.

For this fourteenth edition, we enjoyed the help of several students and we would like to thank them all. David Meredith assembled much of the data for the necessary updates in the text; Justine Gagnepain and Katherine Ragan reviewed the solutions to all of the Study Exercises and also helped us to compile a list of websites, and Hannah Herman closely reviewed all of the questions in the Testbank. We thank all of them for their diligence and hard work.

Finally, Ingrid Kristjanson is deeply involved in the revision of this textbook and has been for several years. Without her participation, the quality and efficiency of this project would suffer greatly. In addition, for the past three editions she has played a leading role in the improvement, rewriting, and expansion of the electronic Testbank. With her active 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 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.

Professor 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 and as the Clifford Clark Visiting Economist at the Department of Finance. He currently serves on the Monetary Policy Council of the C.D. Howe Institute, where he also holds the David Dodge Chair in Monetary Policy.

Chris Ragan used the third edition of this textbook as an undergraduate student in 1981 and joined Richard Lipsey as a co-author in 1997 for the book's ninth edition. 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 Professor Ragan is now the sole listed author, this fourteenth edition of *Economics* still owes much to the dedication of previous authors, including Richard Lipsey, Douglas Purvis, and Gordon Sparks.

About the Cover

The cover image of this edition is an aerial drawing of the bustling port of Collingwood, Ontario, by artist Steve McDonald. Steve is an established Canadian artist and founding member of the acclaimed collective Drawnonward. The collective has been the subject of award-winning documentaries shown on CBC, Bravo, and TVO, profiled for the artists' unique bond with Canada's landscape. For more information, visit www.steviemcd.com.

1 Economic Issues and Concepts

CHAPTER OUTLINE	LEARNING OBJECTIVES (LO)
	After studying this chapter you will be able to
1.1 WHAT IS ECONOMICS?	1 explain the importance of scarcity, choice, and opportunity cost, and how all three concepts are illustrated by the production possibilities boundary.
1.2 THE COMPLEXITY OF MODERN ECONOMIES	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 that trade is greatly facilitated by money. 4 identify the economy's decision makers and see how their actions create a circular flow of income and expenditure.
1.3 IS THERE AN ALTERNATIVE TO THE MARKET ECONOMY?	5 see that 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. Some are mostly environmental, social, or political, but with many issues there is also a significant economic dimension. Wars and civil unrest throughout history have often had economic roots, with antagonists competing for control over vital resources; global climate change is a phenomenon that engages the attention of the scientific and environmental communities, but the economic implications of both the problem and its solutions will be tremendous; population aging in Canada and other developed countries will have consequences for the structure of our societies, but it will also have significant economic effects; and the existence of poverty, whether in Canada or in the much poorer nations of the world, most certainly has economic causes and consequences. We begin by discussing several issues that are currently of pressing concern, both inside and outside of Canada.

Productivity Growth Productivity growth lies at the heart of the long-term increase in Canadians' 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 in universities and governments 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.

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 several 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 are likely to rise as a result. Second, since our publicly funded health-care system tends to spend much more on seniors than it does on Canadians under the age of 55, there will be a significant increase in public health-care spending as a share of the total size of the economy. This will put new and difficult demands on governments' fiscal positions, and force them either to increase tax rates or reduce spending in order to balance their budgets. This same demographic problem is being encountered in most developed countries.

Climate Change Climate change is a global phenomenon that will have important implications for most nations on Earth. 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, and reductions in agricultural productivity. Particularly troubling is that much of the burden of climate change appears to be falling on developing countries that are least able to bear the burden. Global climate change presents a challenge for the design of better economic policy, aimed at reducing greenhouse-gas emissions without unduly slowing the growth of material living standards. It also presents a challenge for global diplomacy, aimed at getting all countries—rich and poor—involved in a collective effort of reducing their emissions.

Global Financial Stability The collapse of the U.S. housing market in 2007–2008 led to the failure of several major financial institutions and caused a global financial crisis. The largest and most synchronized worldwide recession in over 70 years followed in its wake. Many elements came together to cause these events, including new mortgage practices, innovative financial instruments, expansionary monetary policy, regulation in the financial sector, and many others. The crisis led most of the world's major governments to intervene considerably in their economies—by providing assistance to their financial institutions, by directly expanding expenditures on goods and

services, and by providing liquidity to their financial markets. By 2010 most of these economies had emerged from recession and were on their way to healthy economic recoveries. However, it was then clear that governments needed to play a role in redesigning their financial systems to reduce the likelihood that similar events would occur in the future. The quest for "financial stability" has become a policy imperative in many countries.

Rising Government Debt The aggressive government response to the global financial crisis led to massive new public spending in an effort to dampen the effects of the recession. These increases in government spending, however, took place when the recession was causing a decline in government tax revenues. As a result, governments' budget deficits increased for several years, and government debt in most countries increased significantly between 2008 and 2012. Even by 2010 it had become clear that government debt in some European countries (especially Greece, Portugal, Ireland, Italy, and Spain) was so high that bondholders were no longer prepared to purchase new government bonds or renew their existing holdings of bonds. The resulting upward spike in interest rates made it almost impossible for these countries to carry out their regular business without special financial assistance from other governments or from the International Monetary Fund. The political tensions created among European governments threatened to spell the end of Europe's common currency, the euro. The European "sovereign debt crisis" is still largely unresolved.

Globalization Canada is a small nation that relies significantly on trade with the rest of the world for its prosperity. We sell our lumber and oil and beef to the world, as we do our engineering and legal and financial services. As consumers we buy a wide variety of products from the rest of the world, including coffee, leather shoes, and fine wine; our firms also buy many inputs from abroad, including machine tools, software, and some specialized raw materials. In short, international trade and the ongoing process of globalization are crucial to Canada's economic prosperity. Yet globalization also presents some challenges. A decision to reduce tariffs on imported goods generates overall benefits for Canada, but it also generates temporary costs for those Canadians who are displaced from their previously protected occupations. And greater competition for Canadian firms from those in developing countries leads to overall increases in domestic living standards, as Canadians now have access to cheaper goods. However, it may also lead to a decline in some middle-level jobs in Canada that get replaced slowly with jobs in expanding sectors.

These six issues are only 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?

These issues 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 goods we wanted, it wouldn't be so important to be more productive in our work. Rapid growth in health-care spending would not be such a problem if governments had no limits on what they could spend, or if there were not problems associated with high levels of government debt. And there would be no need to trade with other countries if Canada could easily and cheaply produce coffee, clothing, electronic components, and all those other things that we currently import from foreign lands. But such an economy with unlimited products is impossible. Why?

The short answer is because we live in a world of *scarcity*. Compared with the desires of individuals for products such as better food, clothing, housing, education, holidays, health care, and entertainment, 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 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 and shoes), and **services** are intangible (e.g., haircuts and education).

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

goods Tangible commodities, such as cars or shoes.

services Intangible commodities, such as haircuts or medical care.

People use goods and services to satisfy many of their wants. The act of making them is called **production**, and the act of using them to satisfy wants is called **consumption**. Goods are valued for the services they provide. For example, a car helps to satisfy its owner's desires for transportation, mobility, and possibly status.

production The act of making goods or services.

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

Scarcity and Choice

For almost all of the world's 7 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 advanced industrialized nations rich enough that scarcity is nearly banished? 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 $75 000 per year, the average after-tax income for a Canadian family in 2013 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 the need for choice, so choice implies the existence of cost. A decision to have more of one thing requires a decision to have less of something else. The less of "something else" can be thought of as the cost of having more of that "one thing."

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

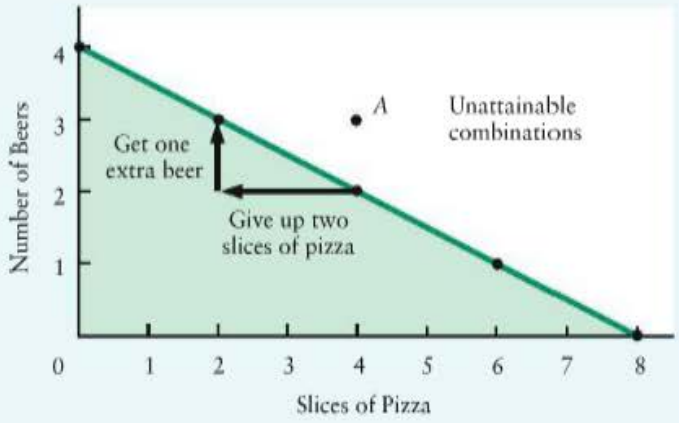
Opportunity Cost To see how choice implies cost, we look first at a trivial example and then at one that affects all of us; both examples involve precisely the same fundamental principles.

Consider the choice David faces when he goes out for pizza and beer with his friends. Suppose that he has only $16 for the night and that each beer costs $4 and each slice of pizza costs $2. Since David is both hungry and thirsty, he would like to have 4 slices of pizza and 3 beers, but this would cost $20 and is therefore unattainable given David's scarce resources of $16. There are several combinations, however, that are attainable: 8 slices of pizza and 0 beers; 6 slices of pizza and 1 beer; 4 slices of pizza and 2 beers; 2 slices of pizza and 3 beers; and 0 slices of pizza and 4 beers.

David's choices are illustrated in Figure 1-1, which graphs the combinations of beers and slices of pizza that David considers buying. The numbers of slices of pizza are shown on the horizontal axis; the numbers of beers are shown on the vertical axis. The downward-sloping line connects the five possible combinations of beer and pizza that use up all of David's resources—$16. This is David's *budget line*. Notice that point *A* shows a combination—4 slices of pizza and 3 beers—that lies outside the line because its total cost is more than $16. Point *A* is *unattainable* to David. If David could buy fractions of a beer and of a slice of pizza, *all* points that lie on or inside the line would be *attainable* combinations.

In this setting David can ask himself, "What is the cost of one beer?" One answer is that the cost is $4. An equivalent answer, assuming that he wanted to spend all of this $16 on these two items, is that the cost of one beer is the two slices

FIGURE 1-1 Choosing Between Pizza and Beer



Limited resources force a choice among competing alternatives. Given a total of $16 to spend on $2 slices of pizza and $4 beers, some choices are unattainable, such as point *A*. The five points on the green line show *all* combinations that are attainable by spending the $16. If it were possible to buy parts of a beer and parts of a slice of *pizza*, then all combinations on the line and in the green area would be attainable. If the entire $16 is to be spent, the choice between more pizza and more beer involves an opportunity cost. The *slope* of the green line reflects opportunity costs. The opportunity cost of one extra slice of pizza is half of a beer; the opportunity cost of one extra beer is two slices of pizza.

APPLYING ECONOMIC CONCEPTS 1-1

The 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 $6000 for tuition fees—approximately the average at Canadian universities in 2013—and a further $1500 per year for books and materials. Does this mean that the cost of a university education is only $30000? 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 that your best alternative to attending university was to get a job. 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 that your (after-tax) annual earnings would have been $25000 per year, for a total of $100000 if you had stayed at that job for four years. To the direct expenses of $30000, we must therefore add $100000 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 $130000!

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

of pizza he must give up to get it. In fact, we say in this case that two slices of pizza is the *opportunity cost* of one beer, since they are the opportunity David must give up to get one extra beer.

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

opportunity cost The cost of using resources for a certain purpose, measured by the benefit given up by not using them in their best alternative use.

As simple as it may seem, the idea of opportunity cost is one of the central insights of economics. Here is a precise definition: The **opportunity cost** of using resources for a certain purpose is *the benefit given up by not using them in the best alternative way*. That is, it is the cost measured in terms of other goods and services that could have been obtained instead. If, for example, resources that could have produced 20 km of road are best used instead to produce one hospital, the opportunity cost of a hospital is 20 km of road; looked at the other way round, the opportunity cost of 20 km of road is one hospital.

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.

Production Possibilities Boundary Although David's choice between pizza and beer may seem to be a trivial consumption decision, the nature of the decision is the same whatever the choice being made. Consider, for example, the choice that any country must face between producing military goods (such as ships, tanks, and guns) and civilian goods (such as food, clothing, and housing).

If resources are fully and efficiently employed, it is not possible to have more of both. However, as the government cuts defence expenditures, resources needed to produce civilian goods will be freed up. The opportunity cost of increased civilian goods is therefore

The opportunity cost to an individual completing a university degree in Canada is large. It includes the direct cost of tuition and books as well as the earnings forgone while attending university.

simply enjoy learning and thus 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 Chapter 14 we will see that this is true. 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 expensive should convince students to make the best use of their time while they are there. Read on!

*This box considers only the cost *to the student* of a university degree. For reasons that will be discussed in detail in Part Six 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.

the forgone military output. Or, if we were considering an increase in military output, the opportunity cost of increased military output would be the forgone civilian goods.

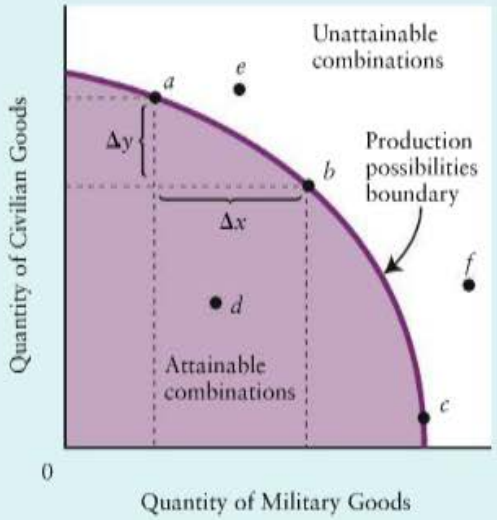
The choice is illustrated in Figure 1-2. Because resources are scarce, some combinations—those that would require more than the total available supply of resources for their production—cannot be attained. The negatively sloped curve on the graph divides the combinations that can be attained from those 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 available resources, and points on the curve can just be attained 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.

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

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.

The shape of the production possibilities boundary in Figure 1-2 implies that an increasing amount of civilian production must be given up to achieve equal successive increases in military production. 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, as in Figure 1-1, indicates that the opportunity cost of one good stays constant, no matter how much of it is produced.

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 military goods is the necessary reduction in the production of civilian goods equal to Δy.

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 military goods, and then consider gradually shifting more and more resources toward the production of civilian goods. We might begin by shifting nutrient-rich land that is particularly well suited to growing wheat. This land may not be very useful for making military equipment, but it is very useful for making certain civilian goods (like bread). This shift of resources will therefore lead to a small reduction in military output but a substantial increase in civilian output. Thus, the opportunity cost of producing a few more units of civilian goods, which is equal to the forgone military output, is small. But as we shift more and more resources toward the production of civilian 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 military output, like aerospace engineers or the minerals needed to make gunpowder. As we produce more and more civilian goods (by devoting more and more resources to producing them), the amount of military output that must be forgone to produce one *extra* unit of civilian goods rises. That is, the opportunity cost of producing one good rises as more of that good is produced.

Four Key Economic Problems

Modern economies involve millions of complex production and consumption activities. Despite this complexity, however, 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. Nor is the essence of the decisions in modern, complex economies different from those in current-day developing economies, where many people struggle for their daily survival. In all cases, scarcity, opportunity cost, and the need for choice play crucial roles. Whatever the economic system, whether modern or ancient or complex or primitive, there are four key economic problems.

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

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. Choosing to produce a particular combination of goods 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?

Furthermore, because resources are scarce, it is desirable that they be used efficiently. Hence, it matters which of the available methods of production is used to produce each of the goods. What determines which methods of production get used and which ones do not? Any economy must have some mechanism by which these decisions about resource allocation are made.

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? Could they achieve this if they tried?

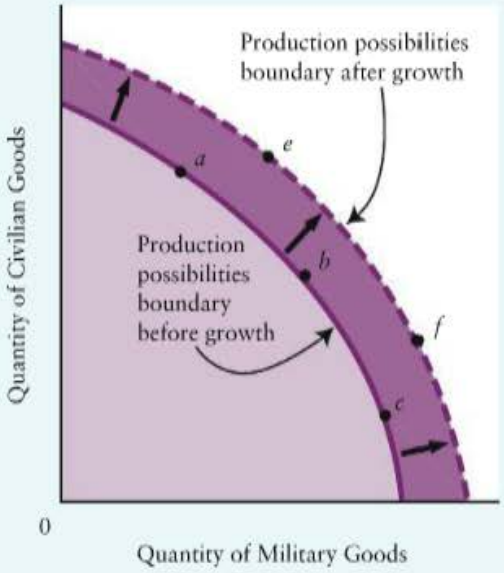
2. What Is Consumed and by Whom? Economists seek to understand what determines the distribution of a nation's total output among its people. Who gets a lot, who gets a little, and why? Should governments care about this *distribution* of consumption and, if so, what tools do they have to alter it?

If production takes place on the production possibilities boundary, then how about consumption? Will the economy consume exactly the same goods that it produces? Or will the country's ability to trade with other countries permit the economy to consume a different combination of goods?

3. Why Are Resources Sometimes Idle? Sometimes large numbers of workers who would like to have jobs are unable to find employers to hire them. At the same time, the managers and owners of offices and factories could operate at a higher level of activity—that is, they could produce more goods and services. For some reason, however, these resources—land, labour, and factories—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? Is there anything governments can do to reduce such idleness?

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.

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 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? Are there some undesirable side effects of growth? Can governments do anything to influence economic growth?

Economics and Government Policy

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 causes and consequences of the allocation of resources as it is affected by the workings of the price system and government policies that seek to influence it. 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, interest rates, the price level, and the rate of economic growth.

The design and effectiveness of government policy is relevant to discussing all four economic problems. When asking what combination of goods and services is produced in

microeconomics The study of the causes and consequences of the allocation of resources as it is affected by the workings of the price system.

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