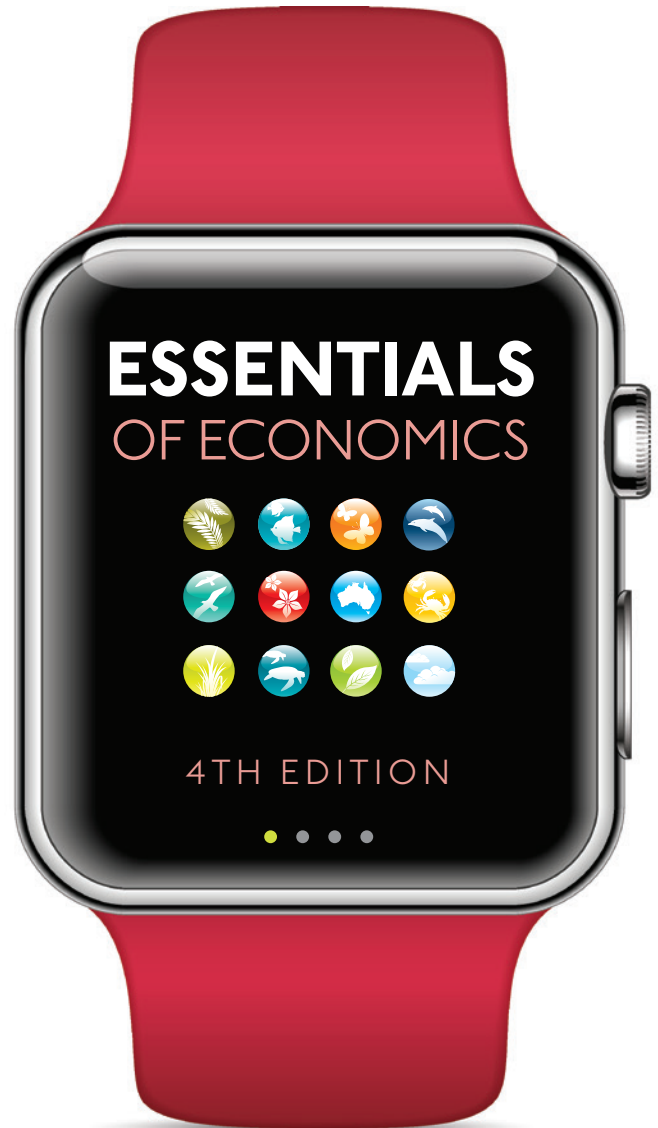
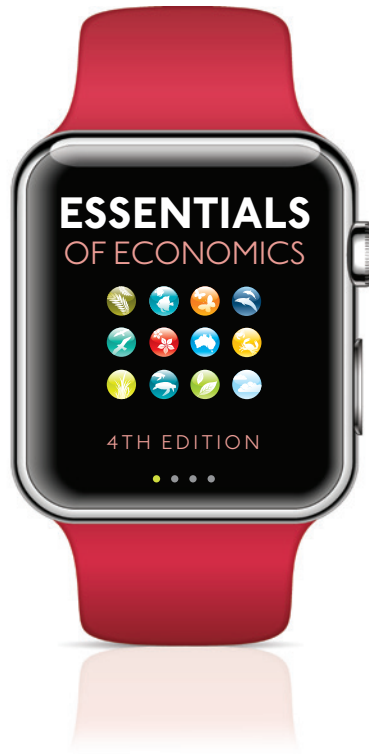


R. GLENN
HUBBARD
ANNE M.
GARNETT
PHILIP
LEWIS
ANTHONY
O'BRIEN





ANNE M. GARNETT

For Anton and my family

PHILIP LEWIS

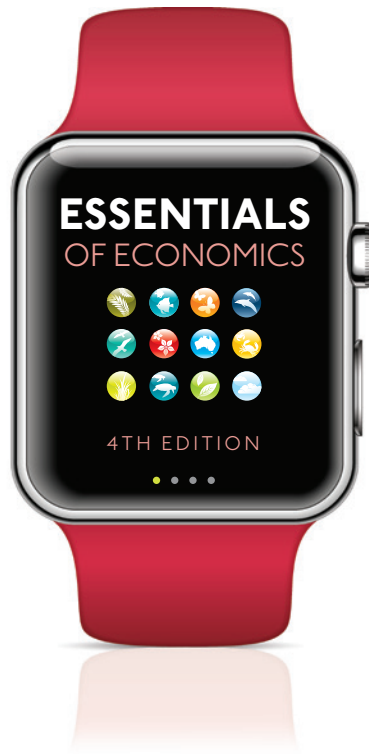
For my family, friends, colleagues and students

R. GLENN HUBBARD

For Constance, Ralph and Will

ANTHONY PATRICK O'BRIEN

For Cindy, Matthew, Andrew and Daniel



R. GLENN
HUBBARD
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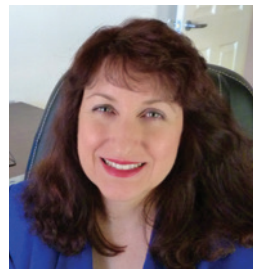
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ABOUT THE AUTHORS

ANNE GARNETT

Anne Garnett is a Senior Lecturer in Economics at Murdoch University. She has extensive teaching experience at the undergraduate and postgraduate level, both in Australia and many parts of Asia. Her research areas include regional economics, labour economics, international investment and trade, and agricultural economics. Anne has been an adviser to the federal government on rural and regional economics. She has published numerous chapters in books and articles in international journals. She has taught in all areas of economics at all levels; however, over the past 20 years her primary teaching focus has been to teach first-year introductory economics. Anne is also co-author of the widely used *Microeconomics* and *Macroeconomics* undergraduate texts published by Pearson Australia.



PHILIP LEWIS

Phil Lewis is Emeritus Professor of Economics, Director of the Centre for Labour Market Research at the University of Canberra, and Visiting Professorial Fellow at the University of New South Wales. He is among the best-known economists in the area of employment, education and training in Australia and Asia. He is the author of over 120 publications including journal articles, book chapters and books. He is the editor of *The Australian Journal of Labour Economics*. Phil has also worked extensively in government and has produced a number of major reports for the private and public sectors. He has served as the National President of the Economic Society of Australia. In 2008 Phil was presented with the Honorary Fellow Award by the Economic Society of Australia for exceptional service to the economics profession.



GLENN HUBBARD

Glenn Hubbard is the Dean and Russell L. Carson Professor of Finance and Economics in the Graduate School of Business at Columbia University and Professor of Economics in Columbia's Faculty of Arts and Sciences. He is also a research associate of the National Bureau of Economic Research and a director of Automatic Data Processing, Black Rock Closed-End Funds, KKR Financial Corporation and MetLife. From 2001 to 2003 he served as chair of the White House Council of Economic Advisers and chair of the OECD Economy Policy Committee, and from 1991 to 1993 he was deputy assistant secretary of the US Treasury Department. He currently serves as co-chair of the non-partisan Committee on Capital Markets Regulation. Glenn's fields of specialisation are public economics, financial markets and institutions, corporate finance, macroeconomics, industrial organisation and public policy. He is the author of more than 100 articles in leading journals.



TONY O'BRIEN

Anthony Patrick (Tony) O'Brien is a Professor of Economics at Lehigh University. He has taught principles of economics for more than 20 years. He received the Lehigh University Award for Distinguished Teaching. He was formerly the director of the Diamond Center for Economic Education and was named a Dana Foundation Faculty Fellow and Lehigh Class of 1961 Professor of Economics. He has been a visiting professor at the University of California, Santa Barbara, and the Graduate School of Industrial Administration at Carnegie Mellon University. Tony's research has dealt with such issues as the evolution of the US car industry, sources of US economic competitiveness, the development of US trade policy, the causes of the Great Depression and the causes of black–white income differences. His research has been published in leading journals.



PREFACE

When George Lucas was asked why he made *Star Wars*, he replied, ‘It’s the kind of movie I like to see, but no one seemed to be making them. So I decided to make one.’ We realised that no one seemed to be writing the kind of textbook we wanted to use in our courses. So, after years of supplementing texts with fresh, lively, real-world examples from websites, newspapers, magazines and professional journals, we decided to write an economics text that delivers complete economics coverage with many real-world examples.

NEW TO THE FOURTH EDITION

The core ideas of economics remain unchanged: opportunity costs, demand and supply, comparative advantage, marginal analysis, efficiency in competitive markets, the role of the entrepreneur in markets, the role of the government, aggregate demand and aggregate supply, the importance of long-run economic growth to rising living standards and the role of economic incentives in the design of policy. What does change is the context in which lecturers and instructors present these ideas in class and the policy debates of the time. In the past few years, to take just a few relevant examples, we have witnessed the runaway success of smartphones and tablet computers, seen the rapid growth of the sharing economy including companies such as Uber and Airbnb, experienced increased policy debate about how best to address climate change, and experienced the impact of the global economic contractions and recessions. This new edition helps students understand these changing economic realities.

In this fourth edition we retain the focus of presenting economics in the context of real-world businesses and real-world policy debates which have proved effective for teaching and learning. We have made a number of important improvements, which include suggestions from lecturers currently using the text, and from reviewers. We hope these changes will make the text an even more effective teaching tool. The fourth edition includes the following key changes:

- A new chapter—Chapter 12, Social Policy and Inequality—which covers income redistribution and the taxation system, and domestic and international income inequality and poverty.
- New material on the rapid growth in the use of robotics in the workplace in Chapters 1 and 10.
- Analysis of the rise of the sharing economy through companies such as Uber and Airbnb in Chapter 7.
- Coverage of the *Harper Report* on competition in Chapter 8.
- Extended coverage of compensating differentials in Chapter 10.
- Updated material on the policy debate on climate change policy in Chapter 11.
- New discussion and case studies on money and monetary policy in Chapters 16 and 17, including the use of bitcoin.
- New material on the Millennium Development Goals in Chapters 12 and 20.
- Updated coverage of government debt crises in Europe in Chapters 18 and 20.
- New material on world currencies, including the management of the Chinese yuan in Chapter 20.
- More international case studies, including China, Japan, Greece, Germany, countries in Africa, the United States and the United Kingdom.
- Updated and new chapter-opening cases for every chapter.
- A number of new and substantially revised *Making the Connection* features, with others containing updated data and information, to help students to tie economic concepts to current events and policy debates.
- New *An Inside Look* news articles and analysis, to enable students to apply economic concepts to current events and policy debates.
- Updated figures and tables, using the latest data available.

THE FOUNDATION

CONTEXTUAL LEARNING AND MODERN ORGANISATION

We believe a course is a success if students can apply what they have learned in both personal and business settings and if they have developed the analytical skills to understand what they read in the media. That's why we explain economic concepts by using many real-world business examples and applications, in both Australia and other countries, in the chapter openers, graphs, *Making the Connection* features, *An Inside Look* features, and end-of-chapter problems. This approach helps students to become educated consumers, voters and citizens. In addition, we also have a modern organisation and place interesting policy topics early in the book to pique student interest.

We are convinced that students learn to apply economic principles best if they are taught in a familiar context. Whether they fill a graduate role in business or government, trade on the securities exchange or open their own business, students must understand the economic forces behind their work. And though business and economics students will have many opportunities to see economic principles in action in various courses, students from other disciplines may not. We therefore use many diverse real-world business and policy examples to illustrate economic concepts.

The following points illustrate our approach:

- **A strong set of introductory chapters.** Our introductory chapters provide students with a solid foundation in the basics. We emphasise the key issues of scarcity, trade-offs, marginal analysis and economic efficiency. In Chapter 1 we introduce students to the economic way of thinking through the growing use by Australian businesses of robotics and offshoring, the debate on minimum wages and the debate on immigration to Australia. Chapter 2 examines the trade-offs and marginal analysis that managers and economies have to face, presented in the context of Tesla deciding on the mix of vehicles to produce. Chapters 3 and 4 introduce demand and supply and how the market works, using the examples of demand and supply of tablet computers, the rising demand for fitness trackers, the price of petrol and the increased tax on 'alcopops', to help contextualise the issues and concepts.
- **Early coverage of policy issues.** To pique interest and expose students to policy issues early in the course, we discuss the effect on jobs of Australia's growing use of robotics and offshoring in Chapter 1, the free market and the illegal downloading of movies and music from the Internet in Chapter 2, the market for housing in Australia in Chapter 3, government policy towards illegal drugs in Chapter 4 and whether the government should control rent prices for apartments in Chapter 5. The remainder of the chapters continue this approach by relating concepts to relevant business examples and current economic policy and events.
- **Immediate relevance to students.** This new edition of *Essentials of Economics* has been revised to provide students with the most up-to-date and relevant content they need to succeed in the field of economics. Once again, all chapters contain examples to demonstrate the practicality and relevance of economics to decision making that students may be currently involved with. Here are a few examples: Chapter 4 examines the pricing of alcoholic drinks, Chapter 8 analyses whether companies such as Netflix can provide competition with Foxtel in the subscription video-on-demand market, Chapter 9 looks at whether there is a 'best' strategy for bidding on eBay, Chapter 10 analyses the effect of robotics on the labour market, Chapter 16 poses the question 'Are bitcoins money?', and Chapter 19 touches on the controversial subject of whether we should buy products made with child labour.
- **Applications to contemporary issues.** Our chapters are written to reveal the relevance and importance of economic analysis to current significant issues that affect individuals, business and society. Chapter 6 looks at whether economies of scale can lead to cheaper electric cars. In Chapter 8 we look at the impact of Foxtel's dominance in sports in the pay TV market. In Chapter 11 we look at the effectiveness of government policy in reducing air lead levels in Melbourne and examine policies to address climate change. The new Chapter 12 addresses the growing focus on inequality and poverty, including a study of the role of taxation policy in income redistribution, and an examination of domestic and international income inequality and poverty. Chapters 16 and 17 examine the issue of sovereign debt, while Chapter 20 looks at how exchange rates affect the number of overseas students studying in Australia.

- **Extensive, realistic game theory coverage.** In Chapter 9 we use game theory to analyse competition between oligopolists. Game theory helps students to understand how companies with market power make strategic decisions in many competitive situations. We use familiar companies such as Big W, Kmart, eBay, Coca-Cola and Pepsi in our game theory applications.
- **Extensive and contemporary coverage of externalities and environmental policy.** A major part of Chapter 11 focuses on externalities and the associated environmental policy. We believe that in the current context of industrialisation and air pollution, greenhouse gases and climate change, it is important to dedicate the major part of a chapter to the economic analysis of these issues and the corresponding policies.
- **A broad discussion of macro statistics.** Many students pay at least some attention to the financial news and know that the release of statistics by government departments can cause movements in share and bond prices. A background in macroeconomic statistics helps to clarify some of the policy issues encountered in later chapters. In Chapter 13, 'GDP: Measuring Total Production, Income and Economic Growth', and in Chapter 14, 'Unemployment and Inflation', we provide students with an understanding of the uses and potential shortcomings of the key macroeconomic statistics, without getting bogged down in the finer points of how the statistics are constructed.
- **A dynamic model of aggregate demand and aggregate supply.** We take a fresh approach to the standard aggregate demand–aggregate supply (AD–AS) model. We realise there is no good, simple alternative to using the AD–AS model when explaining movements in the price level and in real GDP. But we know that more instructors are dissatisfied with the AD–AS model than with any other aspect of the macroeconomics principles course. The key problem, of course, is that the AD–AS model is a static model that attempts to account for dynamic changes in real GDP and the price level. Our approach retains the basics of the AD–AS model but makes it more accurate and useful by making it more dynamic. We emphasise two points: first, changes in the position of the short-run (upward-sloping) aggregate supply curve depend mainly on the state of expectations of the inflation rate; and second, the existence of growth in the economy means that the long-run (vertical) aggregate supply curve shifts to the right every year. This 'dynamic' AD–AS model provides students with a more accurate understanding of the causes and consequences of fluctuations in real GDP and the price level. We introduce this model in Chapter 15, 'Aggregate Demand and Aggregate Supply Analysis', and use it in Chapter 17, 'Monetary Policy', and Chapter 18, 'Fiscal Policy'.
- **Extensive coverage of monetary policy.** Because of the central role money and monetary policy plays in the economy and in students' curiosity about business and financial news, we devote two chapters—Chapters 16 and 17—to these topics. We emphasise the way in which monetary policy is carried out in Australia through interest rate targeting (not the outdated approach of targeting the money supply that still appears in some textbooks) and the role of credit in the economy. We also cover the use of monetary policy during the economic contraction that followed the Global Financial Crisis.
- **Fiscal policy analysis.** Our discussion of fiscal policy in Chapter 18 carefully distinguishes between automatic stabilisers and discretionary fiscal policy. We include analysis based on real data on government budgets and debt levels. The issue of the structural budget deficit is also introduced. We also have significant coverage of the supply-side effects of fiscal policy.
- **Extensive international coverage.** We include two chapters devoted to international topics: Chapter 19, 'Comparative Advantage and the Gains from International Trade', and Chapter 20, 'Macroeconomics in an Open Economy'. Having a good understanding of the international trading and financial systems is essential to an understanding of the macroeconomy and to satisfying students' curiosity about the economic world around them. In addition to the material in our two international chapters, we weave international comparisons into the narrative of several chapters, including our discussions of unemployment, inflation, central banking and government debt.

SPECIAL FEATURES

A REAL-WORLD, HANDS-ON APPROACH TO LEARNING ECONOMICS

OPENING CASES AND AN INSIDE LOOK NEWS ARTICLES

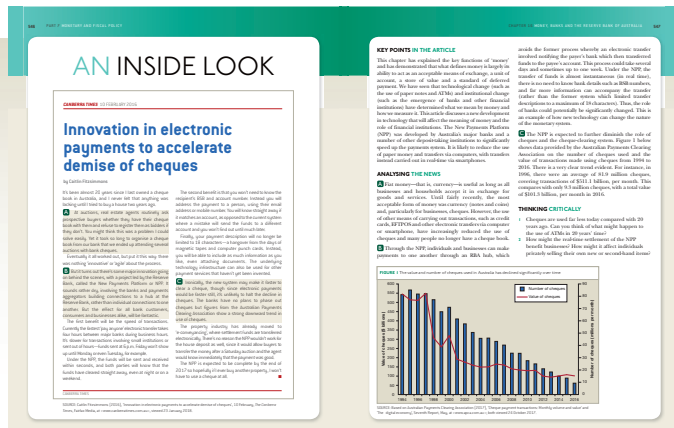
Each chapter-opening case provides a real-world context for learning, sparks students' interest in economics and helps to unify the chapter. The case describes real situations facing actual companies or countries. The company or economic issue is integrated into the narrative, graphs and pedagogical features in the chapter. For example, we look at companies such as Tesla, Uber, Apple, Sony, Rio Tinto, Coles, Woolworths, JB Hi-Fi, Hills, David Jones, Harvey Norman, Foxtel, Netflix, Telstra, and The Coffee Club.



Here are a few examples of chapter opening cases:

- How Uber brought competition to the taxi industry (Chapter 7).
- Rio Tinto mines with robots (Chapter 10).
- Can economic policy help to protect the environment? (Chapter 11).
- How JB Hi-Fi survived the economic cycle (Chapter 15).
- Australian universities experience crunch from high dollar (Chapter 20).

An Inside Look is a two-page feature that shows students how to apply the concepts of a chapter to the analysis of a news article. Articles are from sources such as ABC News, The Sydney Morning Herald, The Age, The Financial Times, The Australian, and The Conversation. The An Inside Look feature presents analysis of the article, a graph(s), and critical-thinking questions.



Here are some examples of the articles features in An Inside Look:

- 'Rise of the machines: What jobs will survive as robots move into the workplace?' ABC News (Chapter 1).
- 'Tesla: The gigafactory is the key.' Seeking Alpha (Chapter 6).
- 'Too big to fail: China pledges to set up landmark emissions trading scheme.' The Conversation (Chapter 11).
- 'Innovation in electronic payments to accelerate demise of cheques.' Canberra Times (Chapter 16).
- 'Brexit tipped to push \$A higher, RBA to cut rate', The Age (Chapter 20).

SOLVED PROBLEMS

Many students have great difficulty handling applied economics problems. We help students to overcome this hurdle by including worked-out problems tied to select chapter learning objectives and the associated quantitative information. Our goals are to keep students focused on the main ideas of each chapter and to give students a model of how to solve an economic problem by breaking it down step by step. Additional exercises in the end-of-chapter material are tied to every *Solved Problem*.

with a value of \$9.99 in 1980. Economic variables that are adjusted to the price of the overall economy are referred to as *real variables*. This calculation uses per cent real price index to adjust a nominal value—some number collected in the future—inflation to a real value.

For many purposes, we are interested in teaching changes in a variable, not the value. Before doing so, we adjust the value to a price index and multiply by 100 to obtain a real variable.

PROBLEM 1.1 WHAT WOULD BE HAPPENING WITH REAL WAGES IN AUSTRALIA?

In addition to their own employment, the ABC partners have been employed on average weekly earnings of workers. Average weekly earnings are the wages of workers before tax, less taxes per week. Economists classify these average weekly earnings as a *nominal variable* because they are based on the value of the dollar rather than the value of the goods and services that can be purchased with the money. Average weekly earnings are often referred to as the *real wage*.

Use the information in the following table to calculate the average weekly earnings for each year. Then calculate the percentage change in average weekly earnings between 2015 and 2017.

Year	Average weekly earnings (\$)
2015	1051.0
2016	1062.0
2017	1070.0

Solving the problem

STEP 1 Review the chapter material. This problem is about using price indexes to correct for inflation, as you may recall from the section on the price index in chapter 10. To calculate an average weekly earnings for each year, divide nominal average weekly earnings by the CPI, and multiply by 100. For example, real average weekly earnings for 2015 are equal to:

$$\frac{1051.0}{100} \times 100 = 1051.0$$

The results for all three years are:

Year	Nominal average weekly earnings (\$)	Real average weekly earnings (\$)
2015	1051.0	1051.0
2016	1062.0	1062.0
2017	1070.0	1070.0

STEP 2 Calculate the percentage change in real average weekly earnings from 2015 to 2017. This percentage change is equal to:

$$\frac{1070.0 - 1051.0}{1051.0} \times 100 = 1.8\%$$

We can conclude that although nominal average weekly earnings increased by 2.2 per cent [(1070.0 - 1051.0) / 1051.0] × 100, real average weekly earnings increased by only 1.8 per cent.

Full employment

As the economy moves through the expansion phase of the business cycle, cyclical unemployment will eventually drop to zero. The unemployment rate will be zero because, because of frictional and structural unemployment, Figure 14.4 shows, the unemployment rate normally fluctuates between 4 per cent for most two decades. When the only remaining unemployment is frictional and structural unemployment, the economy is said to be at the *full employment level*.

Economists often think of frictional and structural unemployment as being the natural or *normal* level of unemployment in the economy. The *frictional* unemployment level is the level of unemployment that exists because of the time it takes for workers to find a job. The *structural* unemployment level is the level of unemployment that exists because of changes in the demand for workers. The *frictional* and *structural* unemployment levels are referred to as the *natural rate of unemployment*, and varies when the economy is operating at a level of *full employment* or at a level of *below full employment*.

The *frictional* and *structural* unemployment levels are referred to as the *natural rate of unemployment*, and varies when the economy is operating at a level of *full employment* or at a level of *below full employment*.

The *frictional* and *structural* unemployment levels are referred to as the *natural rate of unemployment*, and varies when the economy is operating at a level of *full employment* or at a level of *below full employment*.

DON'T LET THIS HAPPEN TO YOU

Don't confuse full employment with zero unemployment rate. The natural rate of unemployment fluctuates, structural and frictional unemployment exist, which shows zero. Don't confuse full employment with zero unemployment rate. The natural rate of unemployment fluctuates, structural and frictional unemployment exist, which shows zero. Don't confuse full employment with zero unemployment rate. The natural rate of unemployment fluctuates, structural and frictional unemployment exist, which shows zero.

DON'T LET THIS HAPPEN TO YOU

We know from many years of teaching which concepts students find most difficult. Each chapter contains a box feature called *Don't Let This Happen to You* which alerts students to the most common pitfalls in that chapter's material. We follow up with a related question in the end-of-chapter *Problems and Applications* section.

GRAPHS AND SUMMARY TABLES

Graphs are an indispensable part of the principles of an economics course but are a major stumbling block for many students. Every chapter includes end-of-chapter problems that require students to draw, read and interpret graphs. Interactive graphing exercises can be found on the book's supporting MyLab website. We use four devices to help students read and interpret graphs:

1. Detailed captions
2. Boxed notes
3. Colour-coded curves
4. Summary tables with graphs.

FIGURE 14.1 Nominal and real inflation, Australia, 1982-2017

The following table uses the actual inflation rate in each year to calculate the resulting real interest rate in each year.

Year	2015	2016	2017	2018	2019
Nominal interest rate	5.0	5.0	5.0	5.0	5.0
Change in consumer price index	1.5	-0.5	-0.4	-0.1	-0.1
Real interest rate	3.5	5.5	5.4	5.1	5.1

WHAT CAUSES INFLATION?

Inflation is usually categorized as demand-pull or cost-push. Demand-pull inflation is a rise in the general price level in the economy that is caused by an increase in the aggregate demand for goods and services. Cost-push inflation is a rise in the general price level in the economy that is caused by an increase in the cost of production. Demand-pull inflation is caused by an increase in the aggregate demand for goods and services. Cost-push inflation is caused by an increase in the cost of production. Demand-pull inflation is caused by an increase in the aggregate demand for goods and services. Cost-push inflation is caused by an increase in the cost of production.

FIGURE 14.2 Duration of unemployment, 2017

Age Group	2017
Under 16 years	10.5
16 to 24 years	10.5
25 to 34 years	10.5
35 to 44 years	10.5
45 to 54 years	10.5
55 to 64 years	10.5
65 and over	10.5

Job creation and job destruction

The process of job creation and job destruction is a key feature of the Australian economy. The Australian economy creates and destroys hundreds of thousands of jobs every year. Job creation and destruction is a key feature of the Australian economy. The Australian economy creates and destroys hundreds of thousands of jobs every year. Job creation and destruction is a key feature of the Australian economy.

REVIEW QUESTIONS AND PROBLEMS AND APPLICATIONS—GROUPED BY LEARNING OBJECTIVE TO IMPROVE ASSESSMENT

All the end-of-chapter material—*Summary, Review Questions and Problems and Applications*—is grouped under learning objectives. The goals of this organisation are to make it easier for instructors to assign problems based on learning objectives, both in the book and in MyLab, and to help students to efficiently review material that they find difficult. If students have difficulty with a particular learning objective, an instructor can easily identify which end-of-chapter questions and problems support that objective and assign them as homework or discuss them in class. Similar exercises to every exercise in a chapter's *Problems and Applications* section are available in MyLab. Using MyLab, students can complete these and many other exercises online, get tutorial help and receive instant feedback and assistance on exercises they answer incorrectly. Also, student learning will be enhanced by having the summary material and problems grouped together by learning objective, which will allow students to focus on the parts of the chapter they found most challenging. Each major section of the chapter, paired with a learning objective, has at least two review questions and three problems.

As in the previous editions, we include one or more end-of-chapter problems that test students' understanding of the content presented in the *Solved Problem* and *Don't Let This Happen to You* special features in the chapter. Instructors can cover a feature in class and assign the corresponding problem for homework.

CHAPTER SUMMARY AND PROBLEMS

KEY TERMS

cease to produce (all else being equal)	59	inferior good	61	quantity supplied	64
competitive market	68	law of demand	58	shortage	68
complements	61	law of supply	64	substitutes	61
demand curve	58	market equilibrium	64	substitution effect	59
demand schedule	58	market supply	64	supply curve	64
demographics	65	normal good	61	supply schedule	64
income effect	62	quantity demanded	58	technological change	68

THE DEMAND SIDE OF THE MARKET

LEARNING OBJECTIVE Discuss the variables that influence the demand for goods and services.

SUMMARY

The types and quantities of goods and services produced ultimately depend on the desires of consumers. The model of demand and supply is one of the most powerful tools in economics. The **quantity demanded** is the amount of a good or service that consumers are able and willing to purchase at a given price. A **demand schedule** is a table that shows the relationship between the price of a product and the quantity of the product demanded. A **demand curve** is a graph showing the relationship between the price of a product and the quantity of the product demanded. **Income** determines the ability of consumers to afford a good or service. The **law of demand** states that **ceteris paribus**—holding everything else constant—the quantity of a product demanded increases when the price falls and decreases when the price rises. Demand curves slope downwards because of the **substitution effect** and the **income effect**. The **substitution effect** is the change in the quantity demanded that results from a change in price, making the good or service more or less expensive relative to other goods or services that are available. The **income effect** is the change in the quantity demanded that results from the effect of a change in the price of the good or service on consumer purchasing power. Changes in income, the prices of other goods, income, population and demographics (the characteristics of a population with respect to age, race and gender) can be expected to have positive effects on the demand curve to shift. **Substitutes** are goods or services that can be used for the same or similar purposes. **Complements** are goods and services that are used together. A **normal good** is a good or service for which the demand increases as income rises and decreases as income falls. An **inferior good** is a good or service for which the demand decreases as income rises and increases as income falls. A change in demand refers to a shift of the demand curve. A change in quantity demanded refers to a movement along the demand curve as a result of a change in the product's price.

REVIEW QUESTIONS

1. What is a demand schedule? What is a demand curve?
2. What do economists mean when they say the *ceteris paribus* assumption?
3. What is the difference between a change in demand and a change in quantity demanded?
4. What is the law of demand? Does the substitution effect and income effect in equal and opposite directions in the price of a product causes a decrease in the quantity demanded?
5. What are the main variables that will cause the demand curve to shift? Give an example of each.

PROBLEMS AND APPLICATIONS

1. The two main categories of products, *tees* and *shorts*, are complements, which are substitutes and which are complements?
 - a. Tees and shorts
 - b. The two categories and both tees and shorts
 - c. Tees and shorts are complements
 - d. Tees and shorts are substitutes
2. Based on the opening case about tablet computers based on the Android operating system were first introduced, there were exciting new applications, or apps, available for them. Now there are many more apps available for Android-based tablets. Are these apps substitutes or complements for tablet computers? How has the increase in the availability of apps for Android-based tablets affected the demand for Apple iPads? Explain.

THE SUPPLY SIDE OF THE MARKET

LEARNING OBJECTIVE Discuss the variables that influence the supply of goods and services.

SUMMARY

The **quantity supplied** is the amount of a good or service that a firm is willing and able to supply at a given price. A **supply schedule** is a table that shows the relationship between the price of a product and the quantity of the product supplied. A **supply curve** shows a graph of the relationship between the price of a product and the quantity of the product supplied. When the price of a product rises, the product is more profitable, a **“surge”**

1. State whether each of the following events will result in a movement along the demand curve for McDonald's Big Mac burgers or whether it will cause the curve to shift. If the demand curve shifts, indicate whether it will shift to the left or to the right and draw a graph to illustrate the shift.

- a. The price of ketchup, which is a complement for Big Macs, increases.
- b. McDonald's distributes vouchers for \$1.00 off on a purchase of a Big Mac.
- c. A change of preference causes the price of fish to increase.
- d. A firm raises the price of a bucket of fast-food chicken.
- e. The Australian economy enters a period of rapid growth in income.

2. Suppose that the following table shows the quantity demanded of U.S. loans in five different years in 2017 and 2018.

Interest rate	Quantity demanded
1%	100
2%	200
3%	300
4%	400
5%	500

3. Suppose that the data in the following table show the price and quantity of new model Toyota Camry sedans. Do these data indicate that the demand curve for Camrys is upward sloping? Explain.

Year	Price	Quantity
2015	\$21,999	10,000
2016	\$20,799	12,000
2017	\$20,499	13,000

4. Some analysts have suggested that the reduced number of households with land-line telephones will reduce the use in the number of antique landline phones and a bank will reduce the cost of funds and therefore increase the demand for them. Do you agree with this analysis? Explain.

5. A financial journalist made the following observation about forecasts of the future demand for tablet computers: “As the market is now going to mature, consider short- and long-term pressure. If you start any number of the time, good luck with that. Only if that market has the time and a bubble can it be forecast for the tablet market right now” (Science, 2017). Why might it be particularly difficult to forecast the demand for a new product? Which issues might make it particularly difficult to forecast the demand for tablet computers?

RESOURCES FOR EDUCATORS AND STUDENTS

A suite of resources are provided to assist with delivery of the text, as well as to support teaching and learning. These resources are downloadable from the Pearson website: www.pearson.com.au/9781488616983.

SOLUTIONS MANUAL

The Solutions Manual provides educators with answers to all of the end-of-chapter questions and problems in the textbook.

TEST BANK

Available in Word® format, the Test Bank provides educators with a wealth of accuracy-verified testing material for homework and quizzing. Revised to match the 4th edition, each Test Bank chapter offers a wide variety of multiple-choice and short-answer questions, ordered by key topics.

POWERPOINT LECTURE SLIDES

A comprehensive set of PowerPoint slides can be used by educators for class presentations or by students for lecture preview or review. They include key figures and tables, as well as a summary of key concepts and examples from the text.

DIGITAL IMAGE POWERPOINT SLIDES

All the diagrams and tables from the course content are available for lecturer use.

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Each MyLab™ comes with preloaded assignments, all of which are automatically graded and include selected end-of-chapter questions and problems from the textbook.

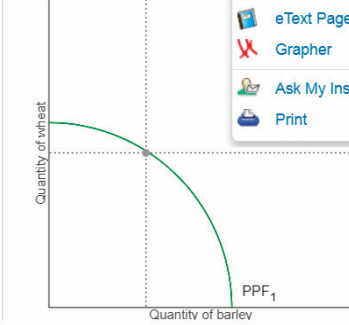
Problem 1.4 4 of 16 (1 complete) Question Help

Consider the production possibility frontier that shows the trade-off between the production of wheat and the production of barley depicted in the figure to the right.

Suppose that genetic modification makes barley resistant to insects, allowing yields to increase.

Use the three-point curved line drawing tool to show the effect of this technological change by drawing a new production possibility frontier. Properly label this curve.

Carefully follow the instructions above, and only draw the required object.



Click the graph to plot the first point of your curve.

All parts showing Clear All Check Answer ◀ ▶

Unlimited Practice

Many Study Plan and Instructor-assigned exercises contain algorithms to ensure students get as much practice as they need.

As students work through Study Plan or Homework exercises, instant feedback and tutorial resources guide them towards understanding.

Problem A.1 1 of 6 (0 complete) Question Help

The following table gives the relationship between the price of custard pies and the number of pies Bruce buys per week.

Price	Quantity of pies	Week
\$3.00	7	2 July
\$2.00	8	9 July
\$5.00	5	16 July
\$6.00	4	23 July
\$1.00	9	
\$4.00	6	

a. Is the relationship between the price of pies and the number of pies bought per week a positive relationship or a negative relationship?

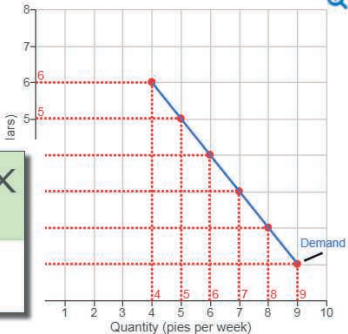
A. Positive relationship B. Negative relationship

b. Plot the data.

1) Use the point drawing tool to plot each data-point from the table.

2) Use the line drawing tool to draw a straight line that best fits the points. Label this line 'Demand'.

Carefully follow the instructions above, and only draw the required objects.



Enter your answer in the answer box and then click Check Answer.

All parts showing Clear All Check Answer ◀ ▶

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Essentials of Economics, 4e
Hubbard, Garnett, Lewis, O'Brien

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- ▶ Chapter 2: Choices and trade-offs in the market
- ▶ Chapter 3: Where prices come from: demand and supply
- ▶ Chapter 4: Elasticity: responsiveness of demand and supply
- ▶ Chapter 5: Economic efficiency, price setting and taxes
- ▶ Chapter 6: Technology, production and costs
- ▶ Chapter 7: Firms in perfectly competitive markets
- ▶ Chapter 8: Monopoly markets

Learning resources

To further reinforce understanding, Study Plan and Homework problems link to additional learning resources.

- Step-by-step Guided Solutions
- Graphing Tool
- eText linked to sections for all Study Plan questions

Hubbard, Essentials of Economics, 4e Student User

MyLab Economics

- Main Menu
- Course Materials
- Study Plan Builder
- Study Plan**
- Assignments
- Assignment Calendar
- eText
- Multimedia

Study Plan

Recommendations Progress All Chapters

Practice the learning objectives, then take a Quiz Me to prove mastery and earn mastery points (MP).

Recommended learning objectives

1.1 Explain these three key economic ideas: people are rational, people respond to incentives, and optimal decisions are made at the margin	▶	Practice	Quiz Me
1.2 Understand the issue of scarcity and trade-offs, and how the market makes decisions on these issues	▶	Practice	Quiz Me
1.3 Understand the role of models in economic analysis	▶	Practice	Quiz Me
1.4 Distinguish between microeconomics and macroeconomics	▶	Practice	Quiz Me

Study plan

A Study Plan is generated from each student's results on quizzes and tests. Students can clearly see which topics they have mastered and, more importantly, which ones they need to work on.

REVIEWERS

Sveta Angelopoulos, RMIT
Vandana Arya, University of South Australia
Steven Barrett, The University of Adelaide
Mark Bowden, Swinburne University
Andrew Brennan, Curtin University
Mark Buchanek, Deakin University
Ishita Chatterjee, University of Western Australia
Khorshed Chowdhury, University of Wollongong
Louisa Coglan, Queensland University of Technology
Aunchisa Foo, University of Western Australia
Timothy Kam, Australian National University
Elizabeth Manning, Deakin University
Simone Marsiglio, University of Wollongong
Anita Medhekar-Smith, Central Queensland University
Pundarik Mukhopadhaya, Macquarie University
Jorge Pereira, University of Queensland
Muni Perumal, University of Canberra
David Walker, La Trobe University
Nicky Zaikis, University of South Australia
Shane Zhang, University of Southern Queensland

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INTRODUCTION

CHAPTER

1

ECONOMICS: FOUNDATIONS AND MODELS

LEARNING OBJECTIVES

After studying this chapter you should be able to:

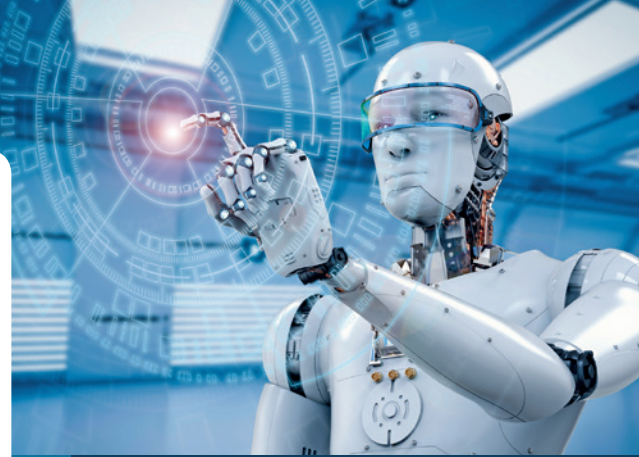
- 1.1 Explain these three key economic ideas: people are rational, people respond to incentives, and optimal decisions are made at the margin.
- 1.2 Understand the issues of scarcity and trade-offs, and how the market makes decisions on these issues.
- 1.3 Understand the role of models in economic analysis.
- 1.4 Distinguish between microeconomics and macroeconomics.

ROBOTS AND OFFSHORING: IS YOUR JOB SAFE?

TODAY THERE IS much concern that the rise of robotics and software programs are replacing many workers and there is fear for the future existence of some professions. At every stage of technological change and structural change in the economy, people have feared for their jobs. For instance, when the automated assembly line was introduced by Henry Ford in his motor vehicle plants in 1913, the use of machines to move the parts to the worker increased worker productivity. However, ultimately the development of the production line process, together with advancements in machinery, reduced the demand for skilled manual labour in the manufacturing industry. Similarly, new machinery in the agriculture and mining industries have seen them evolve from labour-intensive industries characterised by hard and dangerous jobs to ones which are highly capital intensive, employing relatively few workers.

In what may be seen as another threat to jobs, many Australian, US, Japanese and European firms have for decades been moving the production of goods and services to other countries where wages are lower. This process of firms producing goods and services outside of their home country is called *offshoring* (sometimes also referred to as *outsourcing*). In recent years, it is not only simple manufacturing that is being offshored but also jobs that require high skill levels. High-technology manufacturing, research and development and IT systems analysis are now outsourced to countries like China and India where skilled workers, such as software engineers, typically receive salaries that are 75 per cent lower than those of software engineers in Australia. A more recent development is the outsourcing of customer services, with future growth likely to occur in knowledge process outsourcing (KPO), which includes professional and legal services. Interestingly, it has been argued that developments in robotics (automating routine operations) will replace jobs both onshore and offshore, with the greatest impact in the service sector. The potential benefits from both offshoring and the use of robotics to firms include lower wages and greater flexibility.

Therefore, is the use of offshoring and robotics a threat to Australian jobs? Can this lead to lower-quality services? These questions are some of the many that cannot be answered without using economics. For instance, the lower production costs that can be provided to Australian businesses make these businesses more profitable and, therefore, in a position to invest in other areas of the economy and create new jobs that require more highly skilled and more highly paid Australian workers. Most economists argue that just as with changes decades ago, some jobs will be lost but that, overall, offshoring of services and automating routine tasks will lead to higher wages and increased prosperity for Australia, just as mechanisation and moving manufacturing production overseas did. The most noticeable impact of this process of continual change is that the average Australian is today much better off than they were decades ago, having access to a much wider (and more affordable) range of goods and services. In this chapter, and throughout the book, we will see how economics helps in answering important questions such as robotics and offshoring, as well as many other issues.



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ECONOMICS IN YOUR LIFE

ARE YOU LIKELY TO LOSE YOUR JOB TO OFFSHORING?

More than 20 000 jobs in Australia's service sector are being outsourced each year to other countries, according to a report by the National Institute of Economic and Industry Research. (NIEIR, 2012).¹ This seems like a large number. Suppose you plan on working as an accountant, a software engineer, a business consultant, a financial analyst or in another industry where some jobs have already been offshored. Is it likely that during your career your job will be outsourced to China, the Philippines, India or some other country? As you read this chapter, see if you can answer this question. You can check your answer with the one we provide on page 13 at the end of the chapter.

ECONOMICS IS USED to answer questions such as the following:

- 1 How are the prices of goods and services determined?
- 2 How does pollution affect the economy, and what government policies can be used to deal with it?
- 3 Why do firms engage in international trade, and how do government policies affect international trade?
- 4 Why does government control the prices of some goods and services, and what are the effects of those controls?

Economists do not always agree on the answers to every question. In fact, as we will see, economists engage in lively debates on many issues. In addition, economics is a dynamic field with new problems and questions constantly arising. Therefore, economists are always at work developing new methods to analyse economic issues.

All the issues we discuss in this book reflect a basic fact of life: people must make choices as they try to attain their goals. The choices reflect the trade-offs people face because we live in a world of **scarcity**, which means that although our wants are unlimited, the **resources** available to fulfil those wants are limited. You might like to own five Mercedes-Benz cars and spend three months each year in five-star European hotels, but unless you are a close relative of James Packer you probably lack the money to fulfil these dreams. Every day you must make choices about how to spend your limited income on the many goods and services available. The finite amount of time available to you also limits your ability to attain your goals. If you spend an hour studying for your economics test, you have one less hour available to study for your statistics test. Firms and the government are in the same situation that you are: they have limited resources available to them as they attempt to attain their goals. **Economics** is the study of the choices people and societies make to attain their unlimited wants, given their scarce resources.

We begin this chapter by discussing three key economic ideas that we will return to many times in the book: *people are rational*, *people respond to incentives*, and *optimal decisions are made at the margin*. Then we consider the three fundamental questions that any economy must answer: *What goods and services will be produced?* *How will the goods and services be produced?* *Who will receive the goods and services?* Next we consider the role of *economic models* in helping us to analyse the many issues presented throughout this book. **Economic models** are simplified versions of reality used to analyse real-world economic situations. Later in this chapter we explore why economists use models and how they construct them. Finally, we discuss the difference between microeconomics and macroeconomics.

Scarcity

The situation in which unlimited wants exceed the limited resources available to fulfil those wants.

Resources

Inputs used to produce goods and services, including natural resources (such as land, water and minerals), labour, capital and entrepreneurial ability. These are also referred to as the factors of production.

Economics

The study of the choices people and societies make to attain their unlimited wants, given their scarce resources.

Economic models

Simplified versions of reality used to analyse real-world economic situations.



Explain these three key economic ideas: *people are rational*, *people respond to incentives*, and *optimal decisions are made at the margin*.

LEARNING OBJECTIVE

Market

A group of buyers and sellers of a good or service and the institution or arrangement by which they come together to trade.

THREE KEY ECONOMIC IDEAS

As you try to achieve your goals, whether buying a new computer or finding a part-time job, you will interact with other people in *markets*. A **market** is a group of buyers and sellers of a good or service and the institution or arrangement by which they come together to trade. Much of economics involves analysing what happens in markets. Throughout this book, as we study how people make choices and interact in markets, we will return to three important ideas:

- 1 People are rational.
- 2 People respond to economic incentives.
- 3 Optimal decisions are made at the margin.

People are rational

Economists generally assume that people are rational. This assumption does not mean that economists believe that everyone knows everything or always makes the ‘best’ decision. It does mean that economists assume that consumers and firms use as much of the available information as they can to achieve their goals. Rational individuals weigh the benefits and costs of each action, and they choose an action only if the benefits outweigh the costs. For example, if a computer store charges a price of \$130 for the latest Windows upgrade, economists assume that the managers at the store have estimated that a price of \$130 will earn the most profit. The managers

may be wrong; perhaps a price of \$150 would be more profitable, but economists assume that the managers have acted rationally on the basis of the information available to them in choosing the price. Of course, not everyone behaves rationally all the time. Still, the assumption of rational behaviour is very useful in explaining most of the choices that people make.

People respond to economic incentives

Human beings act from a variety of motives, including religious belief, envy and compassion. Economists emphasise that consumers and firms consistently respond to *economic* incentives. This fact may seem obvious, but it is often overlooked as the following example illustrates. The Pharmaceutical Benefits Scheme (PBS) is an Australian government initiative under which more than 80 per cent of prescriptions are dispensed in Australia. In 2018, patients paid up to \$39.50 for most PBS medicines or \$6.40 if they have a concession card; the Australian government pays the remaining cost. Under current arrangements, these amounts are adjusted in line with inflation on 1 January each year.

The government's expenditure on the PBS—currently over \$12 billion annually—has been increasing rapidly, mainly due to the high cost of subsidising new and expensive prescription medicines to make them available at prices people can afford. The government paid part of the price of around 196 million prescriptions for subsidised medicines supplied up to the year ending June 2017. That's almost eight prescriptions every year for each Australian. The scheme accounts for around 17 per cent of the total Australian government's health budget.

For a medicine to be available on the PBS, it must not only satisfy the criterion that it has a significant impact on patient health but it must also be cost-effective in that the extra benefit to patients must be worth the cost to government (the taxpayer). Many Australians do not fully understand this second criterion and believe that if a medicine improves your health it must be worth taking no matter what the cost! Some also think that it is unfair to pay for something as important as medicine as it is vital for one's health. However, economists argue, and this is accepted by government, that if medicines were free there would be little incentive for patients or doctors to use medicines wisely.

Optimal decisions are made at the margin

Some decisions are 'all or nothing'. For example, an entrepreneur decides whether or not to open a new restaurant—they either start the new restaurant or they don't. Likewise, you decide whether to enter university or to take a job. But most decisions in life are not all or nothing. Instead, most decisions involve doing a little more or a little less. If you are trying to decrease your spending and increase your saving, the decision is not really a choice between saving every dollar you earn or spending it all. The choice is actually between buying a cappuccino at a café every day or cutting back to three times per week.

Economists use the word *marginal* to mean an extra or additional benefit or cost of a decision. Should you watch another hour of television or spend that hour studying? The *marginal benefit* (*MB*) of watching more television is the additional enjoyment you receive; the *marginal cost* (*MC*) is the lower grade you receive from having studied a little less. Should Apple produce an additional 300 000 iPhones? Firms receive revenue from selling goods. Apple's marginal benefit is the additional revenue it receives from selling 300 000 more iPhones; Apple's marginal cost is the additional cost—for wages, parts and so forth—of producing 300 000 more iPhones. *Economists reason that the optimal decision is to continue any activity up to the point where the marginal benefit equals the marginal cost—in symbols, where $MB = MC$.* Often we apply this rule without consciously thinking about it. Usually you will know whether the additional enjoyment from watching a television program is worth the additional cost involved in not spending that hour studying without giving it a lot of thought. In business situations, however, firms often have to make careful calculations to determine, for example, whether the additional revenue received from increasing production is greater or less than the additional cost of the production. Economists refer to analysis that involves comparing marginal benefits and marginal costs as **marginal analysis**.

In each chapter of this book you will see a special feature entitled 'Solved problem'. This feature will increase your understanding of the material by leading you through the steps of solving an applied economic problem. After reading the problem, you can test your understanding by working through the related problems that appear at the end of the chapter.

Marginal analysis

Analysis that involves comparing marginal benefits and marginal costs.

SOLVED PROBLEM 1.1 APPLE MAKES A DECISION AT THE MARGIN

Suppose Apple is currently selling 10 million iPhones per year worldwide. Managers at Apple are considering whether to raise production to 11 million iPhones per year. One manager argues, 'Increasing production from 10 million to 11 million is a good idea because we will make a total profit of \$500 million if we produce 11 million.'

Do you agree with her reasoning? What, if any, additional information do you need to decide whether Apple should produce the additional one million iPhones?

Solving the problem

STEP 1 Review the chapter material. The problem is about making decisions, so you may want to review the section 'Optimal decisions are made at the margin', which begins on page 5. Remember in economics to think 'marginal' whenever you see the word 'additional'.

STEP 2 Explain whether you agree with the manager's reasoning. We have seen that any activity should be continued to the point where the marginal benefit is equal to the marginal cost. In this case, that involves continuing to produce iPhones up to the point where the additional revenue Apple receives from selling more iPhones is equal to the marginal cost of producing them. The Apple manager has not done a marginal analysis, so you should not agree with her reasoning. Her statement about the *total* profit of producing 11 million iPhones is not relevant to the decision of whether to produce the last one million iPhones. You need to know whether the total profit amount of \$500 million is the maximum amount that could be earned, or if a different quantity of production is more profitable. To determine this, you will need additional information.

STEP 3 Explain what additional information you need. You will need to know and compare the additional (marginal) revenue Apple would earn from selling one million extra iPhones with the additional (marginal) cost of producing them. As long as the marginal revenue for each extra iPhone produced is greater than the marginal cost of producing it, the extra production will add more to total profit. Therefore, Apple should continue to produce iPhones right up to the point where marginal revenue is equal to marginal cost. Furthermore, you should note that producing beyond this point, where marginal cost exceeds marginal revenue, will reduce total profits.



For more practice, do **related problems 1.5, 1.6 and 1.7 on pages 16 and 17** at the end of this chapter.

LO 1.2

Understand the issues of scarcity and trade-offs, and how the market makes decisions on these issues.

LEARNING OBJECTIVE

Trade-off

The idea that, because of scarcity, producing more of one good or service means producing less of another good or service.

SCARCITY, TRADE-OFFS AND THE ECONOMIC PROBLEM THAT EVERY SOCIETY MUST SOLVE

We have already noted the important fact that we live in a world of scarcity. As a result, any society faces the economic problem that it has only a limited amount of economic resources—such as workers, machines and natural resources—and therefore can produce only a limited amount of goods and services. Therefore, society faces **trade-offs**: producing more of one good or service means producing less of another good or service. Trade-offs force society to make choices, particularly when answering the following three fundamental questions:

- 1 *What* goods and services will be produced?
- 2 *How* will the goods and services be produced?
- 3 *Who* will receive the goods and services produced?

Throughout this book we will return to these questions many times. For now, we can briefly introduce each question.

What goods and services will be produced?

How will society decide whether to produce more economics textbooks or more Blu-ray players? Should we fund more child care facilities or more university places? Of course, 'society' does not make decisions; only individuals make decisions. The answer to the question of what will be produced is determined by the choices made by consumers, firms and governments. Every day you help to decide which goods and services will be produced when you choose to buy an iPhone rather than a Blu-ray player, or a cappuccino rather than a cup of tea. Similarly, Apple must choose whether to devote its scarce resources to making more iPhones or more iPads. The federal government must also choose whether to spend more of its limited budget on

breast cancer research or national defence. In each case, consumers, firms and the government face the problem of scarcity by trading off one good or service for another.

When analysing the decision to choose between alternative options, economists use the concept of **opportunity cost**. This is one of the most important concepts in economics. The opportunity cost of any activity is the highest-valued alternative that must be given up to engage in that activity. In the above example, if Apple chooses to produce more iPhones it must divert resources from producing iPads. The opportunity cost of producing more iPhones is the loss of production of iPads. Or, if you choose to buy a cup of coffee, your opportunity cost is the cup of tea that you could have chosen instead. Consider the example of an entrepreneur who could receive a salary of \$100 000 per year working as a manager at a firm but opens her own business instead. In that case, the opportunity cost of the entrepreneurial services to her own business is \$100 000, even though she does not pay herself an explicit salary. We will analyse this important concept of opportunity cost in further detail in the next chapter.

Opportunity cost

The highest-valued alternative that must be given up to engage in an activity.

How will the goods and services be produced?

Firms choose how to produce the goods and services they sell. In many cases, firms face a trade-off between using more workers or using more machines. For example, a local service station has to choose whether to provide car repair services using more diagnostic computers and fewer car mechanics or more car mechanics and fewer diagnostic computers. Similarly, movie studios have to choose whether to produce animated films using highly skilled animators to draw them by hand or fewer animators and more computer software. In deciding whether to move production offshore to China, firms are often choosing between a production method in their home country that uses fewer workers and more machines and a production method in China that uses more workers and fewer machines.

Who will receive the goods and services produced?

In Australia, as in most countries, who receives the goods and services produced depends largely on how income is distributed. Those individuals with the highest income have the ability to buy the most goods and services. Often, people are willing to give up some of their income—and therefore some of their ability to purchase goods and services—by donating to charities to increase the incomes of poorer people. An important policy question, however, is whether the government should intervene to make the distribution of income more equal. Such intervention occurs in Australia, because people with higher incomes pay a larger fraction of their incomes in taxes and because the government makes payments to people with low incomes. There is disagreement over whether the current attempts to redistribute income are sufficient or whether there should be more or less redistribution.

Centrally planned economies versus market economies

To answer the three questions—what, how and who—societies organise their economies in two main ways. A society can have a **centrally planned economy** in which the government decides how economic resources will be allocated, or a society can have a **market economy** in which the decisions of households and firms interacting in markets allocate economic resources.

From 1917 to 1991, the most important centrally planned economy in the world was the former Soviet Union. The government decided what goods to produce, how to produce them, and who would receive them. Government employees managed factories and stores. The objective of these managers was to follow the government's orders, rather than to satisfy the wants of consumers. Centrally planned economies like the former Soviet Union have not been successful in producing low-cost, high-quality goods and services. As a result, the standard of living of the average person in a centrally planned economy tends to be quite low. All centrally planned economies have also been political dictatorships. Dissatisfaction with low living standards and political repression finally led to the collapse of the Soviet Union in 1991. Today, only North Korea still has a completely centrally planned economy. All the high-income democracies, such as Australia, the United States, Canada, Japan and many European countries, are in large part market economies. Market economies rely primarily on privately owned firms to produce goods and services and to decide how to produce them. Markets, rather than the government, determine who receives the goods and services produced. In a market economy, firms must produce goods and services that meet the wants of consumers or the firms will go out of business. In that sense, it is ultimately consumers who decide what goods and services will be produced. This concept is referred to as **consumer sovereignty**. Because firms in a market economy compete to offer

Centrally planned economy

An economy in which the government decides how economic resources will be allocated.

Market economy

An economy in which the decisions of households and firms interacting in markets allocate economic resources.

Consumer sovereignty

The concept that in a market economy it is ultimately consumers who decide what goods and services will be produced. This occurs because firms must produce goods and services that meet the wants of consumers or the firms will go out of business.

the highest-quality products at the lowest price, they are under pressure to use the lowest-cost methods of production. For example, in the past 20 years some firms in Australia, the United States and elsewhere, particularly in the electronics and furniture industries, have been under pressure to reduce their costs to meet the low-cost competition of Chinese and Indian firms.

In a market economy, the income of an individual is determined by the payments received for what they have to sell. If an individual is a civil engineer and firms are willing to pay a salary of \$90 000 per year for engineers with training and skills, this is the amount of income an engineer will have to purchase goods and services and pay taxes. If the engineer also owns a house that is rented out, their income will be even higher. One of the attractive features of markets is that they reward hard work. Generally, the more extensive the training a person has received and the longer the hours the person works, the higher the person's income will be. Of course, luck (both good and bad), inheritance and other factors may also play a role here. We can conclude that market economies answer the question 'Who receives the goods and services produced?' with the answer 'Those who are most willing and able to buy them'.

The modern 'mixed' economy

In the nineteenth and early twentieth centuries, the governments in market economies engaged in relatively little regulation of markets for goods and services. Beginning in the middle of the twentieth century, government intervention in the economy dramatically increased in every market economy. This increase was primarily caused by the high rates of unemployment and business bankruptcies during the Great Depression of the 1930s. Some government intervention was also intended to raise the incomes of the elderly, the sick and people with limited skills. For example, in 1910 Australia established the Social Security System, which now provides government payments to the retired, disabled, unemployed and others including those with children. Governments also provide goods and services that the market does not provide, such as roads, street lighting and national defence, or that the market fails to provide in sufficient quantities or at affordable prices, such as education and health services. In more recent years, government intervention in the economy has also expanded to meet such goals as protection of the environment and the promotion of equal opportunity.

Some economists argue that the extent of government intervention makes it no longer accurate to refer to Australian, the United States, Canadian, Japanese and most European economies as market economies. Instead, they should be referred to as *mixed economies*. In a **mixed economy**, most economic decisions result from the interaction of buyers and sellers in markets, but the government plays a significant role in the allocation of resources. As we will see in later chapters, economists continue to debate the role government should play in a market economy.

One of the most important developments in the international economy in recent years has been the movement of China from being a centrally planned economy to being a more mixed economy. The Chinese economy suffered decades of economic stagnation following the introduction of a centrally planned economy in 1949 by Mao Zedong and the Communist Party. Although China does not have a democratically elected government, the production of most goods and services is now determined in the market, albeit with substantial government intervention. The result has been rapid economic growth.

Efficiency and equity

Market economies tend to be more efficient than centrally planned economies. There are three types of efficiency: *productive efficiency* (sometimes referred to as technical efficiency), *allocative efficiency* and *dynamic efficiency*. **Productive efficiency** occurs when a good or service is produced using the least amount of resources. **Allocative efficiency** occurs when production reflects consumer preferences and resources are allocated throughout the economy to produce what consumers demand. **Dynamic efficiency** occurs when new technologies and innovation are adopted over time. Markets tend to be efficient because they promote competition and facilitate *voluntary exchange*. **Voluntary exchange** refers to the situation in which both the buyer and seller of a good or service are made better off by the transaction. We know that the buyer and seller are both made better off because otherwise the buyer would not have agreed to buy the good or service or the seller would not have agreed to sell it. Productive efficiency is achieved when competition between firms in markets forces the firms to produce goods and services using the least amount of resources and therefore at the lowest cost. Allocative efficiency is achieved when the combination of competition between firms and voluntary exchange between firms and consumers results in firms producing the mix of goods and services that

Mixed economy

An economy in which most economic decisions result from the interaction of buyers and sellers in markets, but in which the government plays a significant role in the allocation of resources.

Productive efficiency

When a good or service is produced using the least amount of resources.

Allocative efficiency

When production reflects consumer preferences; in particular, every good or service is produced up to the point where the last unit provides a marginal benefit to consumers equal to the marginal cost of producing it.

Dynamic efficiency

Occurs when new technologies and innovation are adopted over time.

Voluntary exchange

Occurs in markets when both the buyer and seller of a good or service are made better off by the transaction.

consumers prefer most. Similarly, competition can lead to dynamic efficiency, as firms seek to adapt their product and use new technologies over time to secure their share of sales in the market. Competition will force firms to continue producing and selling goods and services as long as the additional benefit to consumers is greater than the additional cost of production. In this way, the mix of goods and services produced will reflect consumer preferences, achieving consumer sovereignty.

Although markets promote efficiency, they don't guarantee it. Inefficiency can arise from various sources. For example, water is a scarce resource which may be overused if government restrictions on water usage and pricing are set at levels that are too low, leading to allocative inefficiency. Or, if we look at productive efficiency, it may take some time to achieve an efficient outcome. For example, when Blu-ray players were introduced, productive efficiency was not achieved instantly—it took several years for firms to discover the lowest-cost method of producing this good. Governments sometimes reduce efficiency by interfering with voluntary exchange in markets. For example, many governments limit the imports of some goods from foreign countries. This limitation reduces efficiency by keeping goods from being produced at the lowest cost. The production of some goods damages the environment. In this case, government intervention can increase efficiency, because without such intervention firms may ignore the costs of environmental damage, and thereby fail to produce the goods at the lowest possible cost from society's perspective.

Just because an economic outcome is efficient, this does not necessarily mean that society finds it desirable. Many people prefer economic outcomes that they consider fair or equitable, even if these outcomes are less efficient. **Equity** is harder to define than efficiency, but it usually involves a 'fair' distribution of economic benefits. For some people, equity involves a more equal distribution of economic benefits than would result from an emphasis on efficiency alone. For example, some people support taxing people with higher incomes to provide the funds for programs that aid the poor. Although equity may be increased by reducing the incomes of high-income people and increasing the incomes of the poor, efficiency may be reduced. People have less incentive to open new businesses, to supply labour and to save if the government takes a significant amount of the income they earn from working or saving. The result is that fewer goods and services are produced and less saving takes place. As this example illustrates, *there is often a trade-off between efficiency and equity*. In this case, the total amount of goods and services produced falls, although the distribution of the income to buy those goods and services is made more equal. Government policy-makers have to confront this trade-off.

Equity

The fair distribution of economic benefits between individuals and between societies.

ECONOMIC MODELS

Economists rely on economic theories or *models* (the words 'theory' and 'model' are used interchangeably) to analyse real-world issues. As mentioned earlier, economic models are simplified versions of reality used to analyse real-world economic situations. Economists are certainly not alone in relying on models: an engineer may use a computer model of a bridge to help to test whether it will withstand high winds, or a biologist may draw a diagrammatic representation of a nucleic acid in order to understand its properties better. One purpose of economic models is to make economic ideas sufficiently explicit and concrete to be used for decision making by individuals, firms or the government. For example, we will see in Chapter 3 that the model of demand and supply is a simplified version of how the prices of products are determined by the interactions between buyers and sellers in markets.

Economists use economic models to answer questions. For example, consider the question arising from the opening case of this chapter: Has offshoring reduced jobs in the Australian economy? For a complicated issue such as the effects of offshoring, economists often use several models to examine different aspects of the issue. For example, they may use an economic model of how wages are determined to analyse how offshoring affects wages in particular industries, and they may use a model of international trade to analyse how offshoring affects income growth in the countries involved. Sometimes economists use an existing model to analyse an issue, but in other cases they must develop a new model. To develop a model, economists generally follow these steps:

- 1 Decide on the assumptions to be used in developing the model.
- 2 Formulate a testable hypothesis.
- 3 Use economic data to test the hypothesis.
- 4 Revise the model if it fails to explain well the economic data.
- 5 Retain the revised model to help to answer similar economic questions in the future.



Understand the role of models in economic analysis.

LEARNING OBJECTIVE