



Hubbard Garnett Lewis O'Brien

# Macroeconomics

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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*



Hubbard Garnett Lewis O'Brien

# Macroeconomics

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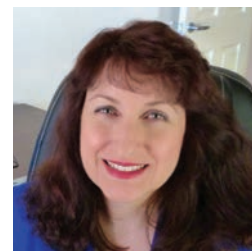
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Anne Garnett is a Senior Lecturer in Economics at Murdoch University. She has extensive teaching experience at the undergraduate and postgraduate level, both in Australia and many parts of Southeast Asia. Her research areas include regional economics, labour economics, international 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 15 years her primary teaching focus has been to teach first-year introductory economics. Anne is also co-author of the widely used *Essentials of Economics* undergraduate text published by Pearson Australia.



### PHILIP LEWIS

Phil Lewis is the Foundation Professor of Economics and the Canberra Director of the Centre for Labour Market Research at the University of Canberra. 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 chairman of the White House Council of Economic Advisers and chairman 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 15 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. Tony also serves on the editorial board of the *Journal of Socio-Economics*.



# 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 THIRD EDITION

The core ideas of economics remain unchanged: opportunity costs, demand and supply, comparative advantage, marginal analysis, the role of the entrepreneur in markets, 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 examples relevant to macroeconomics, we have witnessed renewed policy debate on issues such as education, immigration and the environment, experienced the wide-spread economic contractions and recessions that followed the global financial crisis, and debated the effectiveness of economic policies aimed at minimising the impact of these contractions and recessions. This new edition helps students understand these changing economic realities.

In this third edition we retain the focus of presenting economics in the context of real-world businesses and real-world policy debates that 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. The third edition includes the following key changes:

- Increased coverage of the growing use of offshoring in Chapter 1.
- Discussion of potential problems when using GDP for international comparisons of living standards in Chapters 4 and 5.
- Updated coverage of the economic contractions and recessions that followed the global financial crisis in a number of chapters, including features in Chapters 5, 7, 12, 13 and 15.
- A change in chapter order, with Chapter 7, 'Unemployment' and Chapter 8, 'Inflation', now preceding the chapters which model aggregate expenditure and aggregate demand and aggregate supply.
- New discussion on how the Reserve Bank of Australia measures inflation when determining monetary policy in Chapter 12.
- Expanded coverage of government loan defaults in Europe in Chapters 13 and 15.
- Updated and new chapter-opening cases for every chapter.
- A new special feature at the beginning and end of each chapter—*Economics in Your Life*—which asks students to consider how economics affects their own lives.
- A number of new and substantially revised *Making the Connection* features, with others containing updated data and information, to help students tie economic concepts to current events and policy debates.
- All 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.
- Many new, revised and updated end-of-chapter *Problems and Applications*.
- End-of-chapter summaries, *Review Questions* and *Problems and Applications* grouped according to learning objectives.

# 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 and economic policy 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 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.

Students come to study macroeconomics with a strong interest in understanding events and developments in the economy. We try to capture that interest and develop students' economic intuition and understanding in this text. We present macroeconomics in a way that is modern and based in the real world of business and economic policy. And we believe we have achieved this presentation without making the analysis more difficult. We avoid the recent trend of using simplified versions of intermediate models, which are often more detailed and more complex than is necessary to allow students to understand the basic macroeconomic issues. Instead, we use a more realistic version of the familiar aggregate demand–aggregate supply model to analyse short-run fluctuations and monetary and fiscal policy. We also avoid the 'alternative schools of thought' approach often used to teach macroeconomics at the principles level, while providing some of this material in selected appendices for those who want to investigate further. We emphasise the many areas of macroeconomics where most economists agree, which gives students a better context for understanding those issues where disagreements have not yet been resolved. And throughout the book we present many diverse real-world business and policy situations to develop students' intuition.

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 offshoring to the Philippines, 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 BMW deciding on the mix of vehicles to produce. Chapter 3 introduces demand and supply and how the market works, using the examples of demand for and supply of tablet computers, the changing nature of demand due to population ageing and the effects of technology on the supply and price of Blu-ray players, to help contextualise the issues and concepts. The macroeconomic chapters continue this approach by relating concepts, principles and models to relevant examples and current economic policy and events.
- **Early coverage of long-run topics.** We place key macroeconomic issues in their long-run context in Chapter 5, 'Economic growth, the financial system and business cycles', and Chapter 6, 'Long-run economic growth: sources and policies'. Chapter 5 puts the business cycle in the context of underlying long-run growth. In this chapter we discuss what actually happens during the phases of the business cycle. We believe this material is important if students are to have the understanding of business cycles they will need to interpret economic events, yet this material is often discussed only briefly or omitted entirely in other books. We know that many lecturers prefer to have a short-run orientation to their macroeconomic courses, with a strong emphasis on policy. Accordingly, we have structured Chapter 5 so that its discussion of long-run growth would be sufficient for instructors who want to move quickly to short-run analysis. Chapter 6 uses a simple neo-classical growth model to understand important growth issues. We apply the model to topics such as the decline of the Soviet economy, and the importance of the consistent enforcement of property rights to enable continued economic growth in China. And we challenge students with a discussion of 'Why isn't the whole world rich?'



- **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 clarify some of the policy issues encountered in later chapters. In Chapter 4, 'GDP: measuring total production, income and economic growth', Chapter 7, 'Unemployment', and Chapter 8, '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; 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 10, 'Aggregate demand and aggregate supply analysis', and use it in Chapter 12, 'Monetary policy' and Chapter 13, '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 11 and 12—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.
- **Coverage of both the demand-side and supply-side effects of fiscal policy.** Our discussion of fiscal policy in Chapter 13 carefully distinguishes between automatic stabilisers and discretionary fiscal policy. We also have significant coverage of the supply-side effects of fiscal policy.
- **A self-contained—but thorough—discussion of the Keynesian 45° line aggregate expenditure model.** The Keynesian aggregate expenditure approach (the '45° line diagram' or 'Keynesian cross') is a useful way of introducing students to the short-run relationship between spending and production. Many instructors, however, prefer to omit this material. Therefore, we use the income-expenditure approach only in Chapter 9, 'Aggregate expenditure and output in the short run'. The discussion of monetary and fiscal policy in later chapters uses only the dynamic AD–AS model, making it possible to omit the material in Chapter 9.
- **Extensive international coverage.** We include two chapters devoted to international topics: Chapter 14, 'Macroeconomics in an open economy', and Chapter 15, 'The international financial system'. 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.
- **Flexible chapter organisation.** Because we realise that there are a variety of approaches to teaching principles of macroeconomics, we have structured our chapters for maximum flexibility. For example, our discussion of long-run economic growth in Chapter 5 makes it possible for instructors to omit the more thorough discussion of these issues in Chapter 6. Our discussion of the Keynesian 45° line model is confined to Chapter 9, so that instructors who do not use this approach can proceed directly to aggregate demand–aggregate supply analysis in Chapter 10. While we devote two chapters to money and monetary policy, the first of these—Chapter 11—is a self-contained discussion focusing on the role of money and the creation of money. So instructors may safely omit the material in Chapter 11 if they choose to. Finally, instructors may choose to omit the material in the two international chapters (Chapters 14 and 15) or cover just Chapter 14, 'Macroeconomics in an open economy'. Please refer to the flexibility chart on page xxv of this preface to help you select the chapters and order best suited to your course needs.

# special features

## A Real-World, Hands-on Approach to Learning Economics

### OPENING CASES AND AN INSIDE LOOK NEWS ARTICLES

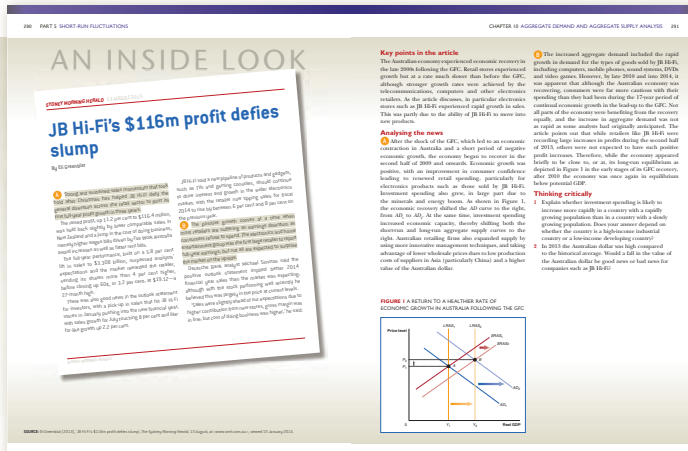
Each chapter-opening case provides a real-world context for learning, sparks students' interest in economics and helps to unify the chapter. The case describes real situations facing actual companies and countries. The company or economic issue is integrated into the narrative, graphs and pedagogical features in the chapter.



Here are a few examples of chapter opening cases:

- The role of entrepreneurs and the market in China's economic growth. (Chapter 6).
- How does unemployment affect Woolworths? (Chapter 7).
- How is Canon affected by economic booms and contractions? (Chapter 10).
- Rising interest rates and the housing industry. (Chapter 12).
- How do exchange rates affect Australian universities? (Chapter 14).

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 *The Sydney Morning Herald*, *The Age*, *The Financial Review*, *The Australian* and sometimes overseas news articles. The An Inside Look feature presents analysis of the article, graphs and critical thinking questions.



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

- 'Manufacturers jump ship from China to Cambodia', *The Sydney Morning Herald* (Chapter 6).
- 'Singapore's economy grew by 3.7% in 2013, says PM Lee', *Asean Affairs* (Chapter 9).
- 'JB Hi-Fi's \$116m profit defies slump', *The Sydney Morning Herald* (Chapter 10).
- 'Bank of England holds record low rates', *SBS News* (Chapter 12).



## SOLVED PROBLEMS

Many students have great difficulty handling applied economics problems. We help students 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*.

**FIGURE 3.10: SHORT-RUN FLUCTUATIONS**

**SOLVED PROBLEM 10.1: MOVEMENTS ALONG THE AGGREGATE DEMAND CURVE VERSUS SHIFTS OF THE AGGREGATE DEMAND CURVE**

Suppose the current price level is 1.05 and the current level of real GDP is \$1.10 trillion. Determine each of the following situations as a graph:

- The price level rises to 1.15, while all other variables remain constant.
- The price level remains constant, and the quantity of real GDP demanded increases.

**Solving the problem**

**STEP 1: Review the chapter material.** This problem is about understanding the difference between movements along an AD curve and shifts of an AD curve, including aspects such as the various shifts of the AD curve and movements along it, which begins in *Figure 3.10*.

**STEP 2: Answer question 1.** Draw a graph showing a movement along the aggregate demand curve. Indicate there will be a movement along the AD curve, but no shift of the AD curve, your graph should look like the following:

We don't have enough information to be certain what the new level of real GDP will be. We only know that it will be less than the initial level of \$1.10 trillion—the graph shows the value as \$1.05 trillion.

**STEP 3: Answer question 2.** Draw a graph showing a shift of the AD curve. We know that the AD curve will shift to the left, but we don't have enough information to be sure how far to the left it will shift. It will occur the shift is \$20 billion, in that case your graph should look like the following:

The graph shows a parallel shift of the AD curve, so that at every price level the quantity of real GDP demanded falls by \$20 billion. For example, at a price level of 1.05, the quantity of real GDP demanded decreases from \$1.10 trillion to \$1.08 trillion.

**FIGURE 3.10: SHORT-RUN FLUCTUATIONS**

**The international-trade effect: how a change in the price level affects net exports**

The aggregate demand curve shifts downward in response to both international trade and monetary policy. In the former case, when an adverse demand shock for a single product, such as apples, occurs, that will drive down the price level for that product. As a result, the price level for the entire economy will fall. This fall in the price level will increase net exports, which will increase aggregate demand. In the latter case, when an adverse demand shock for a single product, such as apples, occurs, that will drive down the price level for that product. As a result, the price level for the entire economy will fall. This fall in the price level will increase net exports, which will increase aggregate demand.

**Don't Let This Happen to You**

**Be clear why the aggregate demand curve is downward sloping**

The aggregate demand curve is downward sloping for two reasons. First, as the price level falls, the quantity of real GDP demanded increases. Second, as the price level falls, net exports increase. Both of these effects cause the aggregate demand curve to shift to the right. In other words, consumers consume other products to replace what the good price level is reducing. In the case of net exports, consumers have less of other foreign products which they can switch to home products. This fall in the price level will increase net exports, which will increase aggregate demand.

**YOUR TURN**

Shifts of the aggregate demand curve versus movements along it

An important point to remember is that the AD curve tells us the relationship between the price level and the quantity of real GDP demanded, holding everything else constant. If the price level changes, the other variables that affect the relationship of aggregate demand and the quantity of real GDP demanded will also change. For example, if the price level falls, net exports will increase, which will increase aggregate demand. In other words, consumers consume other products to replace what the good price level is reducing. In the case of net exports, consumers have less of other foreign products which they can switch to home products. This fall in the price level will increase net exports, which will increase aggregate demand.

**YOUR TURN**

Shifts of the aggregate demand curve versus movements along it

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## 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* that 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 principles of economics courses 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 MyEconLab website. We use four devices to help students read and interpret graphs:

- Detailed captions
- Boxed notes
- Colour-coded curves
- Summary tables with graphs

**FIGURE 3.10: SHORT-RUN FLUCTUATIONS**

**FIGURE 3.10.1: How expectations of the future price level affect the short-run aggregate supply curve**

The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve.

**FIGURE 3.10.2: How expectations of the future price level affect the short-run aggregate supply curve**

The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve.

**FIGURE 3.10.3: How expectations of the future price level affect the short-run aggregate supply curve**

The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve. The short-run aggregate supply curve is upward sloping because of the short-run aggregate supply curve.

**CHAPTER 3: AGGREGATE DEMAND AND AGGREGATE SUPPLY ANALYSIS**

**Technological change**

Technological change takes place the productivity of workers and machines increases, which means that firms can produce more goods and services with the same amount of labour and machinery. This improvement reduces the short-run cost of production and therefore shifts the short-run aggregate supply curve to the right. As a result, the short-run aggregate supply curve shifts to the right. In Australia, agricultural systems and manufacturing systems have improved, which has led to a rightward shift of the short-run aggregate supply curve.

**FIGURE 3.10.4: Variables that shift the short-run aggregate supply curve**

Variable	Shift	Effect
input prices	right	costs of production rise
technology	right	costs of production fall
input prices	left	costs of production rise
technology	left	costs of production fall
input prices	right	costs of production rise
technology	left	costs of production fall

## 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. This is a new feature of the third edition. 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 MyEconLab, and to help students efficiently review material that they find difficult. If students have difficulty with a particular learning objective, an instructor can easily identify which end-of-chapter questions and problems support that objective and assign them as homework or discuss them in class. Similar exercises to every exercise in a chapter's *Problems and Applications* section are available in MyEconLab. Using MyEconLab, 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, usually 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.

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CHAPTER 8 INFLATION 219

### CHAPTER SUMMARY AND PROBLEMS

**KEY TERMS**

aggregate demand	214	demand-pull inflation	214	nominal interest rate	209
aggregate supply	214	hyperinflation	212	price level	204
consumer price index (CPI)	205	inflation	204	producer price index (PPI)	207
cost-push inflation	214	inflation rate	204	real investment rate	209
deflation	214	menu costs	212		

**MEASURING INFLATION** (HLO1, HLO2, HLO3)

**LEARNING OBJECTIVE 1.1** Define price level, inflation rate, and understand how they are calculated.

**SUMMARY**  
The price level measures the average prices of goods and services. The inflation rate is equal to the percentage change in the price level from one year to the next. The Australian Bureau of Statistics compiles statistics on three different measures of the price level: the consumer price index (CPI), the GDP deflator, and the producer price index (PPI). The consumer price index is an average of the prices of goods and services purchased by the typical urban family. Changes in the CPI are the best measure of changes in the cost of living as experienced by the typical household. Changes in the construction of the CPI cause changes in its correlation to true inflation rate. The producer price index (PPI) is an average of prices received by producers of goods and services at all stages of production.

**REVIEW QUESTIONS**

- 1.1 Briefly describe the major measures of the price level.
- 1.2 Which measure is used most frequently in Australia to measure change in the cost of living?
- 1.3 Explain the difference and the link between the price level and rate of inflation.
- 1.4 What potential biases exist in calculating the consumer price index? What steps has the Australian Bureau of Statistics taken to reduce the size of the biases?
- 1.5 What is the difference between the consumer price index and the producer price index?

**PROBLEMS AND APPLICATIONS**

- 1.1 (Difficult to Do) Has this happened to you? Briefly explain whether you agree or disagree with the following statement: "I don't believe the government price statistics. The CPI for 2014 was 105, but I know that the inflation rate couldn't have been as high as 5 per cent in 2014."
- 1.2 (Difficult to Do) Suppose you are a manager at a company that produces only three products. Use the information in the following table to calculate the inflation rate for 2015 as measured by the consumer price index.

Product	Quantity	Price 2014	Price 2015
Hamburger	10	\$2.00	\$2.25
Donut	4	\$1.00	\$1.00

**SUMMARY**  
Price indexes are designed to measure changes in the price level over time, not the absolute level of prices. To correct for the effects of inflation we can divide a number's value by a price index and multiply by 100 to obtain a real variable. These variables will be measured in dollars of the base year for the price index.

**REVIEW QUESTIONS**

- 1.1 What is the difference between a nominal variable and a real variable?
- 1.2 Briefly explain how you can use data on nominal wages for 2005 to 2015 and data on the consumer price index for the same years to calculate the real wage for these years.

**PROBLEMS AND APPLICATIONS**

- 1.1 (Difficult to Do) Suppose you are a manager at a company that produces only three products. Use the information in the following table to calculate the inflation rate for 2015 as measured by the consumer price index.

Product	Quantity	Price 2014	Price 2015
Hamburger	10	\$2.00	\$2.25
Donut	4	\$1.00	\$1.00

# resources for educators and students

## SOLUTIONS MANUAL

The Solutions Manual, which is now organised by learning objective, includes solutions to all end of chapter review questions, and problems and applications questions in the textbook.

## TEST BANK

The Test Bank includes over 2000 multiple-choice questions, true/false, short-answer and essay questions. The Test Bank has undergone a full academic technical edit to ensure quality.

The Test Bank has been structured by learning objective with questions to support each learning objective in the book. Each test question has been mapped to AACSB standards in addition to being annotated with the following information:

- **Level of difficulty:** 1 for straight recall, 2 for some analysis, 3 for complex analysis
- **Type:** multiple-choice, true/false, short-answer, essay
- **Topic:** the term or concept the question supports
- **Learning objective**

## TESTGEN

This computerised package allows instructors to customise, save and generate classroom tests. The test program permits instructors to edit, add or delete questions from the test banks; edit existing graphics and create new graphics; analyse test results; and organise a database of tests and student results. This software allows for extensive flexibility and ease of use. It provides many options for organising and displaying tests, along with search and sort features.

## POWERPOINT® LECTURE PRESENTATION

The Australian authors have prepared a comprehensive set of PowerPoint® slides that cover the text's key concepts, and include graphs, tables and equations from the textbook. The PowerPoint slides also include worked examples.



## MyEconLab for Hubbard/Garnett/Lewis/O'Brien Macroeconomics, 3rd edition

A guided tour for students and educators

### Auto-generated tests and assignments

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

2.1 Production Possibilities Frontiers and Opportunity Costs Overview

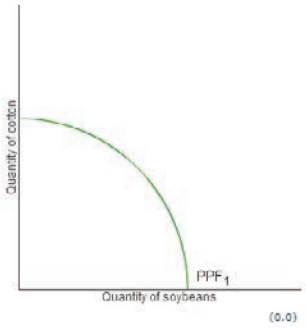
End of Chapter 1.4b  
1 correct | 1 of 21 complete

Consider the production possibilities frontier that shows the trade off between the production of cotton and the production of soybeans depicted in the figure to the right.

Suppose that genetic modification makes cotton 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 possibilities frontier. Properly label this curve...

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



Click the graph, choose a tool in the palette and follow the instructions to create your graph.

All parts showing Clear All Check Answer Close

### 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.

1.A Appendix: Using Graphs and Formulas Overview


End of Chapter 1A.1  
0 correct | 0 of 20 complete

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

Price (\$ per pie)	Quantity of pies	Week
\$3.00	7	July 2
2.00	8	July 9
5.00	5	July 16
6.00	4	July 23
1.00	9	July 30
4.00	6	August 6

a. Is the relationship between the price of pies and the number of pies Jacob buys a positive relationship or a negative relationship?

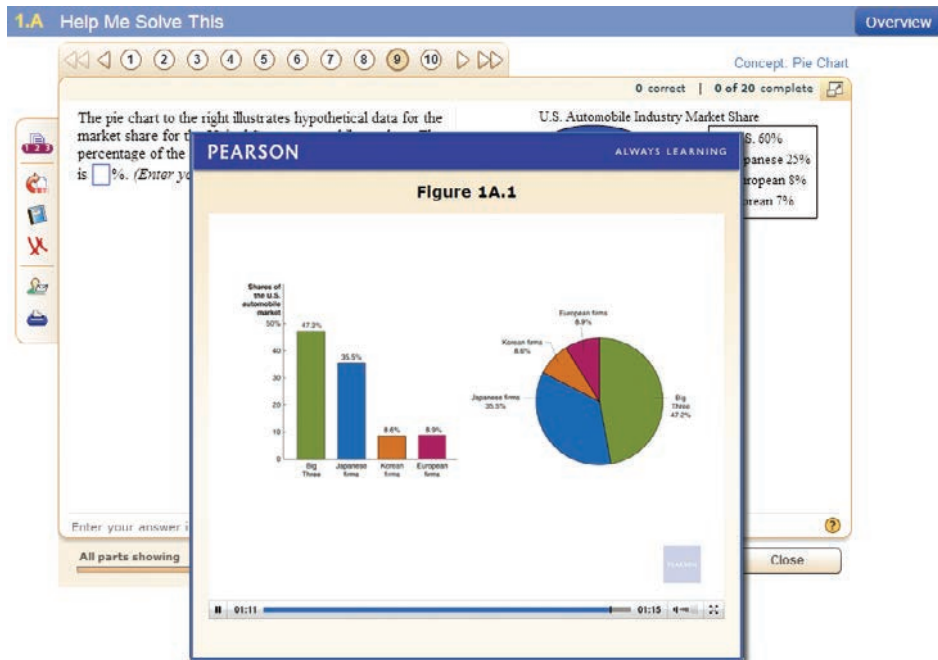
A. Positive relationship  B. Negative relationship



Click to select your answer, then click Check Answer.

3 parts remaining Clear All Check Answer Close

# MyEconLab [www.pearson.com.au/hubbard3](http://www.pearson.com.au/hubbard3)



### 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

### Study Plan

You have earned 0 of 164 mastery points (MP).

[View progress](#)

Practice these sections and then take a Quiz Me to prove mastery and earn more points.

#### What to work on next

	<b>0.1</b> Tutorial Examples for Students	<a href="#">Practice</a>	<a href="#">Quiz Me</a>	<b>0 of 1 MP</b>
	<b>More Sections to practice and master</b>			<a href="#">View all chapters</a>
	<b>1.1</b> Three Key Economic Ideas	<a href="#">Practice</a>	<a href="#">Quiz Me</a>	<b>0 of 1 MP</b>
	<b>1.2</b> The Economic Problem That Every Society Must Solve	<a href="#">Practice</a>	<a href="#">Quiz Me</a>	<b>0 of 1 MP</b>
	<b>1.3</b> Economic Models	<a href="#">Practice</a>	<a href="#">Quiz Me</a>	<b>0 of 1 MP</b>
	<b>1.4</b> Microeconomics and Macroeconomics	<a href="#">Practice</a>	<a href="#">Quiz Me</a>	<b>0 of 1 MP</b>

### 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 they need to work on.



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# flexibility chart

The following is a suggested way to organise your syllabus into core and optional teaching plans.

## CORE

### CHAPTER 1 Economics: foundations and models

Introduces the concepts of scarcity and trade-offs, marginal analysis and the issue of offshoring in Australia to discuss the role of models in economic analysis.

### CHAPTER 2 Choices and trade-offs in the market

Includes coverage of the production possibility frontier, opportunity cost, comparative advantage, the market system and the role of the legal system in a market.

### CHAPTER 3 Where prices come from: the interaction of demand and supply

Introduces the model of demand and supply, and illustrates equilibrium in the market.

### CHAPTER 4 GDP: measuring total production, income and economic growth

Covers how total production is measured, the limitations of using GDP as a measure of economic wellbeing, the difference between real and nominal variables and how to measure economic growth.

### CHAPTER 5 Economic growth, the financial system and business cycles

Provides an overview of key macroeconomic issues by discussing the business cycle in the context of long-run growth. Discusses the roles of entrepreneurship, financial institutions and policy in economic growth.

### CHAPTER 7 Unemployment

Discusses the types of unemployment and the associated economic costs, measurement issues and the role of the labour market in the economy.

### CHAPTER 8 Inflation

Introduces how inflation is measured, and the causes and potential economic costs of inflation.

### CHAPTER 10 Aggregate demand and aggregate supply analysis

Carefully develops the AD–AS model and then makes the model dynamic to account better for actual movements in real GDP and the price level.

### CHAPTER 12 Monetary policy

Uses the dynamic aggregate demand and aggregate supply model to show the effects of monetary policy on real GDP and the price level. Provides an up-to-date coverage of the operation of monetary policy in Australia.

### CHAPTER 13 Fiscal policy

Uses the dynamic aggregate demand and aggregate supply model to show the effects of fiscal policy on real GDP and the price level.

### CHAPTER 14 Macroeconomics in an open economy

Explains the linkages between countries at the macroeconomic level and how policy-makers take account of these linkages when conducting monetary and fiscal policy. Includes the balance of payments, foreign debt and exchange rates.

## OPTIONAL

### CHAPTER 1 APPENDIX Using graphs and formulae

Includes various graphing techniques such as times series and multiple variable graphs, the calculation of the slopes of linear and non-linear curves and several useful formulae commonly used in economics.

### CHAPTER 6 Long-run economic growth: sources and policies

Highlights the importance of institutions, policies and technological change for long-run economic growth, and analyses why some countries have not achieved long-run economic growth.

### CHAPTER 9 Aggregate expenditure and output in the short run

Uses the Keynesian 45° line aggregate expenditure model to introduce students to the short-run relationship between spending and production. The discussion of monetary and fiscal policy in later chapters uses only the aggregate demand and aggregate supply model, which allows lecturers to omit the material in Chapter 9.

### CHAPTER 9 APPENDIX The algebra of macroeconomic equilibrium

Uses equations to represent the aggregate expenditure model described in Chapter 9.

### CHAPTER 10 APPENDIX Macroeconomic schools of thought

Covers the monetarist, new classical and real business cycle models.

### CHAPTER 11 Money, banks and the Reserve Bank of Australia

Explores the role of money in the economy, the creation of money and the role of the Reserve Bank of Australia. Contains worked examples of the various types of multipliers.

### CHAPTER 13 APPENDIX 1 Is there a short-run trade-off between unemployment and inflation?

Covers the short-run relationship between unemployment and inflation and the view that in the long-run no trade-off exists.

### CHAPTER 13 APPENDIX 2 A closer look at the multiplier

Contains worked examples of the various types of multipliers.

### CHAPTER 15 The international financial system

Covers the international financial system and explores the roles central banks play in the system.

### CHAPTER 15 APPENDIX The gold standard and the Bretton Woods System

Provides a summary of earlier exchange rate systems which assists in understanding the reasons why the current systems exist.





PART

1

INTRODUCTION



# ECONOMICS: FOUNDATIONS AND MODELS

## LEARNING OBJECTIVES

**After studying this chapter you should be able to:**

- 1.1** Explain these three important economic ideas: people are rational; people respond to incentives; 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.

## OFFSHORING TO THE PHILIPPINES—GOOD OR BAD?

**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 or the United States. A more recent development is the outsourcing of customer services.

A large number of Australian companies—including Telstra, Vodafone, ANZ, Westpac, Jetstar, Foxtel and Macquarie Bank—are offshoring services to companies in the Philippines—known as business-process outsourcing (BPO) companies—to make or receive Australian calls or to respond to customer queries via the Internet. Over 638 000 Filipino BPO workers are employed in crowded, open-planned offices across the Philippines. The industry is estimated to generate over \$11 billion a year for the poor Southeast Asian country, with forecasts by the government of the Philippines that this will more than double over the next three or four years.

Smaller Australian companies are also using Filipinos for services, including insurance, loans and accounting services, writing software and debt collection. The Philippines is overtaking India as the biggest call centre operator in the world.

Most BPO workers have a tertiary degree or are students, and have the advantage that their English accent is often more easily understood than BPOs in India, making them more customer-friendly. Although Filipino call centre workers are paid much more than the average wage in the Philippines, their daily salary is much less than for similar Australian workers.

The focus of the debate on offshoring has been the questions: 'Has offshoring been good or bad for the Australian economy?' 'Does it move Australian jobs to other countries, or does it reduce production costs for Australian businesses, leading to job creation?' These questions are some of many that cannot be answered without using economics. In this chapter, and throughout this book, we will see how economics helps in answering important questions such as offshoring, as well as many other issues.

**SOURCE:** Summarised from Lindsay Murdoch (2013), 'Ready to answer Australia's call', *The Sydney Morning Herald*, 13 January, at <[www.smh.com.au/world/ready-to-answer-australias-call-20130112-2cmfa.html](http://www.smh.com.au/world/ready-to-answer-australias-call-20130112-2cmfa.html)>, viewed 21 March 2013.



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### ECONOMICS IN YOUR LIFE

#### ARE YOU LIKELY TO LOSE YOUR JOB TO OFFSHORING?

Around 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.<sup>1</sup> 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 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 how should government policy deal with these effects?
- 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 important economic ideas that we will return to many times in the book: *people are rational*; *people respond to incentives*; *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 important economic ideas: *people are rational*; *people respond to incentives*; *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 \$60 for the latest Windows upgrade, economists assume that the managers at the store have estimated that a price of \$60 will earn the most profit. The managers may be wrong; perhaps a price of \$65 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. At 1 January 2014 patients pay up to \$36.90 for most PBS medicines or \$6.00 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 around \$9 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 197 million prescriptions for subsidised medicines supplied up to the year ending June 2013. That's over eight prescriptions every year for each Australian. The scheme accounts for over 15 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 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. 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**.

### Marginal analysis

Analysis that involves comparing marginal benefits and marginal costs.

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.

#### 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. Further, 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 17 and 18 at the end of this chapter.

## 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 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 on 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 make more iPhones it must divert resources from 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 \$80 000 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 \$80 000, 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 and 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 computers. 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.

The most important centrally planned economy in the world used to be the former Soviet Union. The government decided what goods to produce, how to produce them and who

### 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.

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 a few small countries, such as Cuba and North Korea, still have largely centrally planned economies.

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 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, that is the amount of income they 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, the disabled, the 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, US, 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

### 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.

### 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.

economy. The Chinese economy had suffered decades of economic stagnation. Although China does not have a democratically elected government, 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 product 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 product 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 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.

### 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

When new technologies and innovation are adopted over time.

### Voluntary exchange

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

### Equity

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