



Hubbard Garnett Lewis O'Brien

Macroeconomics

3

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3

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

3

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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).

ECONOMICS IN YOUR LIFE

After the chapter-opening real-world case, we have added a personal dimension to the chapter opener, with a new feature titled *Economics in Your Life*, which asks students to consider how economics affects their own lives. This feature piques the interest of students and emphasises the connection between the material they are learning and their own experiences.

HOW CANON RODE THE ECONOMIC CYCLE

CANON AUSTRALIA WAS established in 1979 and is a market-leading supplier of consumer and business imaging products and services. During Australia's extended period of economic growth, from the early 1980s until 2002, Canon, like other producers of digital electronic equipment, large goods to demand. This came partly from households which, with rising incomes, showed an almost insatiable appetite for these goods. Demand also grew from businesses because as their own output expanded they needed more capital, including computer services. This need also grew as more firms entered the market and as the need for production rose through the use of the latest technologies. Sales of digital devices grew rapidly from their sales for the retail industry sector in a whole—an average of almost nine times a year.

When the effects of the global financial crisis (GFC) hit the Australian economy in 2008, which led to an economic contraction, there were expectations that demand for digital devices would fall as discretionary about expenditure reduced. However, TV's and DVD recorders were thought to be luxury items and therefore in low demand. This demand would fall as expected income fell. However, this proved not to be the case. While price falls of many electronic goods contributed to rising demand, there were other important contributing factors during the economic contraction. While households cut their expenditure on luxuries such as overseas holidays, when goods and going out, they increased expenditure on home entertainment systems, quality made cooked at home and heated cars. There was a perceived need to get back on top expenditure items like households were cut back on, enough to enjoy consuming low expenditure luxuries at home.

In the post-GFC period, although retail sales recovered, they did not return to their previous high rate of growth. In contrast demand for electronic goods and devices continued to grow very strongly. During the period, although interest in electronic goods was strong, the selling was slow as high up, investment in businesses in computers, peripherals, electrical and electronic equipment continued to grow strongly.

When the downturn in the economic contraction and expenditure falls different industries in very different ways. While the sales of many electronic items recovered fast during the 2008-2009 economic downturn, industries such as tourism, transport, restaurants and motor vehicles suffered from falling sales and significant losses, with some industries ending up in bankruptcy. The subsequent recovery was also uneven, with some firms going out of business and others significantly restructuring.

ECONOMICS IN YOUR LIFE

IS YOUR EMPLOYER LIKELY TO REDUCE YOUR PAY DURING A RECESSION?

Imagine that you have worked as a barista for a local coffee house for two years. Due to the declining and uncertain, you have faced your employer cutting costs and increasing staff. This has the economy moving into a recession and you are the coffee house owner. In the context of the coffee house, how do you think your employer will react to the current (being to cut your pay)? As a new employee, how do you think your employer will react to the current (being to cut your pay)?

At the end of the chapter, we use the chapter concepts to answer the questions asked at the beginning of the chapter.

AMBY'S SHORT-RUN FLUCTUATIONS

The graph shows the price level on the vertical axis and output on the horizontal axis. It illustrates short-run fluctuations with curves for aggregate demand (AD) and short-run aggregate supply (SRAS). Key points include the initial equilibrium (E), a recession (R), and a recovery (C). The graph shows that during a recession, the price level falls and output falls below the long-run aggregate supply (LRAS) level. The recovery process involves an increase in aggregate demand, moving the economy back towards the LRAS level.

ECONOMICS IN YOUR LIFE

IS YOUR EMPLOYER LIKELY TO REDUCE YOUR PAY DURING A RECESSION?

At the beginning of this chapter, we asked you to consider whether during a recession your employer is likely to reduce your pay, and the price of the products he or she sells. In this chapter, we saw that when during a recession, the price level falls and output falls below the long-run aggregate supply level. In a recession, the price level falls and output falls below the long-run aggregate supply level. In a recession, the price level falls and output falls below the long-run aggregate supply level. In a recession, the price level falls and output falls below the long-run aggregate supply level.

The following are examples of the topics we cover in the *Economics in Your Life* feature:

- Has the rise of China affected your job opportunities? (Chapter 6).
- Should you change your career plans if you graduate during a recession? (Chapter 7).
- What would you do with \$500? (Chapter 13).
- The Australian dollar and your new car price (Chapter 14).

CHAPTER 11 MONEY BANKS AND THE RESERVE BANK OF AUSTRALIA

MONEY IN A WORLD WAR II PRISONER OF WAR CAMP

R.A. Radford has described his experiences as a captured British soldier in a German prison camp during World War II. In the prison camp, the goods they received in packages from the Red Cross or from relatives at home on a limited basis, but the usual institutions of money and the price system to regulate supply and demand were absent. Cigarettes were included in the Red Cross packages. According to Radford, "Cigarettes, included necessities, were selling at well as cigarettes, using them to buy at another time and place. Cigarettes became the medium of exchange. There is a lesson to be learned: a commodity can serve as a medium of exchange if it is portable, divisible, and has a wide range of uses. In a prison camp, the only medium of exchange was cigarettes. There was a coffee and sugar store who sold coffee or cream at two cigarettes a cup, but the store had no money and was selling coffee at a price of two cigarettes. To be able to actually acquire the services of a chartered accountant or an accountant, you required 'more food and for drinks were sold with a bank of cigarettes'.

In January 1945, near the end of the war, the Red Cross ration of cigarettes was exhausted. Given that some of the prisoners were heavy smokers, some of the cigarettes were distributed from ration stores. The ration stores were distributed the cigarettes were distributed from ration stores. The ration stores were distributed the cigarettes were distributed from ration stores. The ration stores were distributed the cigarettes were distributed from ration stores.

THE FUNCTIONS OF MONEY

Anything used as money—whether coin, a banknote or a \$10 dollar note—should fulfil the following four functions:

1. Medium of exchange
2. Unit of account
3. Store of value
4. Standard of deferred payment

Medium of exchange

Money serves as a medium of exchange when it allows an individual to exchange for goods or services. When the local supermarket accepts your \$10 note in exchange for bread.

MAKING THE CONNECTION

In each chapter *Making the Connection* features present relevant, stimulating and provocative cases from various countries, including applications to businesses and other significant world economic events or policy issues. These features link the concepts and models covered in the chapter with a real-world application. Here are some examples of the *Making the Connection* features:

- Why did the global financial crisis occur? (Chapter 5).
- Does technological change create unemployment? (Chapter 10).
- Coca-Cola dries up as the Zimbabwe currency no longer serves as money. (Chapter 11).
- Why does the share market care about monetary policy? (Chapter 12).

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.

218 PART 4 UNEMPLOYMENT AND INFLATION
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-estate rate	209
deflation	214	menu costs	212		

MEASURING INFLATION (H201, H202, H203)

LEARNING OBJECTIVE 8.1 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?

PROBLEMS AND APPLICATIONS

- 1.1 (Related to Don't Let This Happen to You) Briefly explain whether you agree or disagree with the following statement: "I don't believe the government price indexes. 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."

USING PRICE INDEXES TO ADJUST FOR THE EFFECTS OF INFLATION (H201, H202, H203)

LEARNING OBJECTIVE 8.2 Use price indexes to adjust for the effects of inflation.

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 (usually 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

- 2.1 What is the difference between a nominal variable and a real variable?
- 2.2 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

- 2.1 (Related to Solved problem 8.1) In 1924, the famous US inventor J. Scott Fitzgerald wrote an article for the widely read US weekly magazine The Saturday Evening Post titled "You're to be an \$25,000 year!" (in which he speculated how he and his wife had managed to spend all of that very high income without working any job). The CPI in the United States in 1924 was 1.7, and the CPI in 2015 was 233. What income would a person living in 2015 have had to have had the same purchasing power that Fitzgerald's \$25,000 had in 1924? Be sure to show your calculation.

NAME	DATE	TOTAL BOX OFFICE RECEIPTS (\$M)	THEATRELANDING (\$M)	CPI
1	Ames	\$136 144 000	1000	214
2	Tom	\$136 075 000	1007	1613
3	Ames (re-release)	\$131 219 000	2002	2014
4	Shrek Forever and the Death of Superman 2	\$129 110 000	2011	2014
5	Ames 2	\$121 192 000	2010	2010
6	Lord of the Rings: Return of the King	\$119 408 000	2003	1610
7	Indiana Jones and the Temple of Doom	\$117 194 000	891	2014
8	AmE	\$116 049 000	2012	2014
9	The Sandlot Movie	\$115 149 000	2010	2014
10	AmE 2	\$114 200 000	2008	2011
11	The Last Airbender	\$112 082 000	1194	1612
12	AmE	\$110 200 000	1980	1611
13	AmE	\$109 842 000	2000	2011
14	AmE 2	\$11 280 000	1980	1182
15	AmE (re-release of the first film)	\$10 800 000	1980	1611
16	AmE (re-release of the first film)	\$10 200 000	1980	1611

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

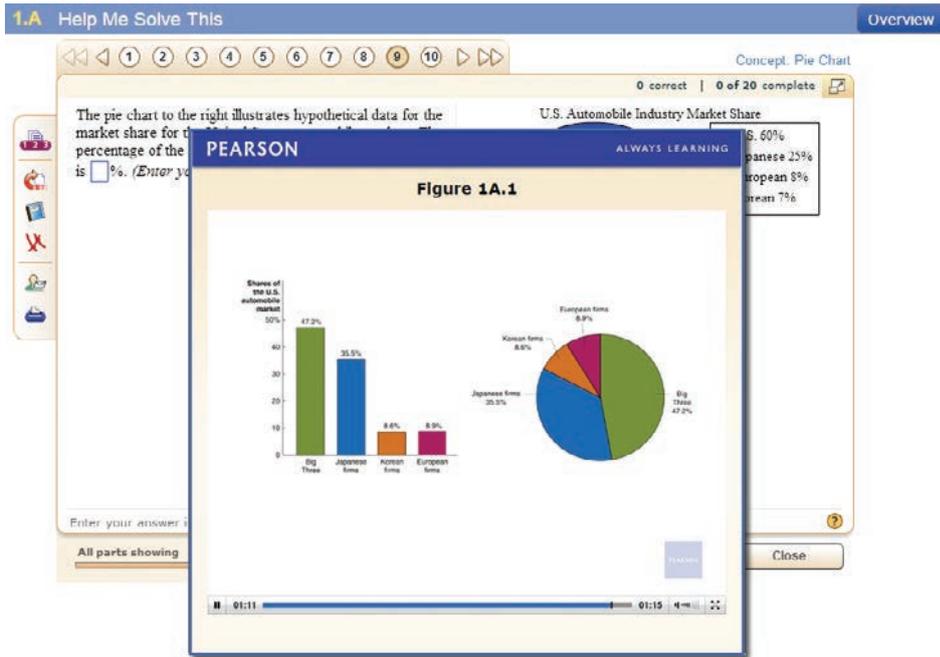
a. Is the relationship between the price of pies and the number of pies Jacob buys a positive relationship or a negative relationship?

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



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

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

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.

reviewers

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brief contents

PART 1 INTRODUCTION

CHAPTER 1	Economics: foundations and models	2
CHAPTER 1	APPENDIX Using graphs and formulae	21
CHAPTER 2	Choices and trade-offs in the market	32

PART 2 HOW THE MARKET WORKS

CHAPTER 3	Where prices come from: the interaction of demand and supply	56
-----------	--	----

PART 3 MACROECONOMIC FOUNDATIONS AND ECONOMIC GROWTH

CHAPTER 4	GDP: Measuring total production, income and economic growth	88
CHAPTER 5	Economic growth, the financial system and business cycles	110
CHAPTER 6	Long-run economics growth: sources and policies	142

PART 4 UNEMPLOYMENT AND INFLATION

CHAPTER 7	Unemployment	174
CHAPTER 8	Inflation	202

PART 5 SHORT-RUN FLUCTUATIONS

CHAPTER 9	Aggregate expenditure and output in the short run	224
CHAPTER 9	APPENDIX The algebra of macroeconomic equilibrium	263
CHAPTER 10	Aggregate demand and aggregate supply analysis	266
CHAPTER 10	APPENDIX Macroeconomic schools of thought	296

PART 6 MONETARY AND FISCAL POLICY

CHAPTER 11	Money, banks and the Reserve Bank of Australia	300
CHAPTER 12	Monetary policy	328
CHAPTER 13	Fiscal policy	358
CHAPTER 13	APPENDIX 1 Is there a short-run trade-off between unemployment and inflation?	390
CHAPTER 13	APPENDIX 2 A closer look at the multiplier	396

PART 7 THE INTERNATIONAL ECONOMY

CHAPTER 14	Macroeconomics in an open economy	402
CHAPTER 15	The international financial system	434
CHAPTER 15	APPENDIX The gold standard and the Bretton Woods System	454

Glossary	460
Index	465

detailed contents

Preface	vi	CHAPTER 2	
The foundation	vii	Choices and trade-offs in the market	32
Special features	ix	PRODUCTION POSSIBILITY FRONTIERS AND REAL-WORLD TRADE-OFFS	34
Resources for educators and students	xiii	Graphing the production possibility frontier	34
Reviewers	xvi	Increasing marginal opportunity costs	35
PART 1 INTRODUCTION	1	• Making the connection 2.1	
CHAPTER 1		<i>Trade-offs and emergency aid relief</i>	36
Economics: foundations and models	2	Economic growth	37
THREE KEY ECONOMIC IDEAS	4	COMPARATIVE ADVANTAGE AND TRADE	38
People are rational	4	Specialisation and gains from trade	38
People respond to economic incentives	5	Absolute advantage versus comparative advantage	39
Optimal decisions are made at the margin	5	• Don't let this happen to you	
• Solved problem 1.1		<i>Don't confuse absolute advantage and comparative advantage</i>	40
<i>Apple makes a decision at the margin</i>	6	Comparative advantage and the gains from trade	40
SCARCITY, TRADE-OFFS AND THE ECONOMIC PROBLEM THAT EVERY SOCIETY MUST SOLVE	6	• Solved problem 2.1	
What goods and services will be produced?	7	<i>Comparative advantage and the gains from trade</i>	41
How will the goods and services be produced?	7	THE MARKET SYSTEM	42
Who will receive the goods and services produced?	7	The gains from free markets	42
Centrally planned economies versus market economies	7	The market mechanism	43
The modern 'mixed' economy	8	• Making the connection 2.2	
Efficiency and equity	9	<i>Story of the market system in action: I, pencil</i>	43
ECONOMIC MODELS	10	The role of the entrepreneur	44
The role of assumptions in economic models	10	THE LEGAL BASIS OF A SUCCESSFUL MARKET SYSTEM	45
Forming and testing hypotheses in economic models	10	Protection of private property	45
Normative and positive analysis	11	• Making the connection 2.3	
• Don't let this happen to you		<i>Illegal downloads from cyberspace</i>	46
<i>Don't confuse positive analysis with normative analysis</i>	12	Enforcement of contracts and property rights	47
Economics as a social science	12	CONCLUSION	47
• Making the connection 1.1		• An inside look	
<i>Economics doesn't always mean good politics</i>	12	<i>Expansion and production mix at BMW</i>	48
MICROECONOMICS AND MACROECONOMICS CONCLUSION	13	CHAPTER SUMMARY AND PROBLEMS	50
• An inside look		PART 2 HOW THE MARKET WORKS	55
<i>The case for 'offshoring' is quite clear: it works</i>	15	CHAPTER 3	
CHAPTER SUMMARY AND PROBLEMS	17	Where prices come from: the interaction of demand and supply	56
CHAPTER 1 APPENDIX		THE DEMAND SIDE OF THE MARKET	58
Using graphs and formulae	21	Demand schedules and demand curves	58
Graphs of one variable	22	The law of demand	59
Graphs of two variables	22	Holding everything else constant: the <i>ceteris paribus</i> condition	59
Formulae	27	What explains the law of demand?	59
APPENDIX PROBLEMS	29	Variables that shift market demand	60

• Making the connection 3.1			
<i>The ageing of the baby boom generation</i>	62		
A change in demand versus a change in quantity demanded	63		
THE SUPPLY SIDE OF THE MARKET	64		
Supply schedules and supply curves	64		
The law of supply	64		
Variables that shift supply	65		
A change in supply versus a change in quantity supplied	67		
MARKET EQUILIBRIUM: PUTTING DEMAND AND SUPPLY TOGETHER	68		
How markets eliminate surpluses and shortages	68		
Demand and supply both count	69		
Shifts in a curve versus movements along a curve	70		
THE EFFECT OF DEMAND AND SUPPLY SHIFTS ON EQUILIBRIUM	70		
• Don't let this happen to you			
<i>Remember: a change in a good's price does not cause the demand or supply curve to shift</i>	70		
The effect of shifts in supply on equilibrium	71		
The effect of shifts in demand on equilibrium	71		
The effect of shifts in demand and supply over time	72		
• Solved problem 3.1			
<i>Demand and supply both count: pharmacists and accountants</i>	72		
• Making the connection 3.2			
<i>The falling price of blu-ray players</i>	74		
• Solved problem 3.2			
<i>Demand and supply both count: the Australian housing market</i>	75		
CONCLUSION	77		
• An inside look			
<i>PC sales plunge as consumers look to tablets, smartphones</i>	78		
CHAPTER SUMMARY AND PROBLEMS	80		
PART 3 MACROECONOMIC FOUNDATIONS AND ECONOMIC GROWTH	87		
CHAPTER 4			
GDP: Measuring total production, income and economic growth	88		
GROSS DOMESTIC PRODUCT MEASURES TOTAL PRODUCTION	90		
Measuring total production: gross domestic product	91		
Measuring GDP using the value-added method	91		
Other measures of total production and total income	92		
• Solved problem 4.1			
<i>Calculating GDP</i>	92		
METHODS OF MEASURING GROSS DOMESTIC PRODUCT	93		
Production, income and the circular-flow diagram	93		
Components of GDP	95		
• Don't let this happen to you			
<i>Remember what economists mean by 'investment'</i>	96		
An equation for GDP and some actual values	96		
DOES GDP MEASURE WHAT WE WANT IT TO MEASURE?	96		
Shortcomings in GDP as a measure of total production	97		
Shortcomings of GDP as a measure of wellbeing	98		
• Making the connection 4.1			
<i>How the underground economy hurts developing countries</i>	99		
• Making the connection 4.2			
<i>How else can we measure economic wellbeing?</i>	100		
REAL GDP VERSUS NOMINAL GDP	101		
Calculating real GDP	101		
CALCULATING THE ECONOMIC GROWTH RATE	102		
The GDP deflator	102		
CONCLUSION	103		
• An inside look			
<i>Can we measure happiness?</i>	104		
CHAPTER SUMMARY AND PROBLEMS	106		
CHAPTER 5			
Economic growth, the financial system and business cycles	110		
LONG-RUN ECONOMIC GROWTH IS THE KEY TO RISING LIVING STANDARDS	112		
• Making the connection 5.1			
<i>The connection between economic prosperity and health</i>	114		
Calculating growth rates and the rule of 70	115		
What determines the rate of long-run economic growth?	115		
• Solved problem 5.1			
<i>The role of technological change in growth</i>	117		
• Making the connection 5.2			
<i>What explains rapid economic growth in Botswana?</i>	117		
Potential GDP	118		
SAVING, INVESTMENT AND THE FINANCIAL SYSTEM	119		
An overview of the financial system	120		
The macroeconomics of saving and investment	121		
The market for loanable funds	122		

- **Don't let this happen to you**
Don't confuse 'full employment' with a zero unemployment rate 189
- EXPLAINING FRICTIONAL AND STRUCTURAL UNEMPLOYMENT** 190
 - Government policies and the unemployment rate 190
 - Social security and other payments to the unemployed 190
- LABOUR MARKET REGULATION AND DEREGULATION** 191
 - Minimum wages 192
 - Trade unions 192
 - Efficiency wages 192
- **Making the connection 7.3**
Why did Henry Ford pay his workers twice as much as other car manufacturers? 193
- CONCLUSION** 194
 - **An inside look**
Youth jobless rate up in Sydney's south-west 195
- CHAPTER SUMMARY AND PROBLEMS 197
- CHAPTER 8**
- Inflation** 202
- MEASURING INFLATION** 204
 - The consumer price index 205
 - Is the CPI accurate? 206
 - **Don't let this happen to you**
Don't confuse the price level and the inflation rate 207
 - The producer price index 207
- USING PRICE INDEXES TO ADJUST FOR THE EFFECTS OF INFLATION** 208
 - **Solved problem 8.1**
Calculating real average weekly earnings 208
- REAL VERSUS NOMINAL INTEREST RATES DOES INFLATION IMPOSE COSTS ON THE ECONOMY?** 209
 - Inflation affects the distribution of income 211
 - The problem with anticipated inflation 211
 - The problem with unanticipated inflation 212
 - Hyperinflation 212
 - **Making the connection 8.1**
Why a lower inflation rate is like a tax cut for Wesfarmers bond holders 213
 - Deflation 214
- WHAT CAUSES INFLATION?** 214
- CONCLUSION** 215
 - **An inside look**
Why inflation is not the monster it's thought to be 216
- CHAPTER SUMMARY AND PROBLEMS 218

PART 5 SHORT-RUN FLUCTUATIONS 223

- CHAPTER 9**
- Aggregate expenditure and output in the short run** 224
- THE AGGREGATE EXPENDITURE MODEL** 226
 - Aggregate expenditure 226
 - The difference between planned investment and actual investment 227
 - Macroeconomic equilibrium 227
 - Adjustments to macroeconomic equilibrium 227
- DETERMINING THE LEVEL OF AGGREGATE EXPENDITURE IN THE ECONOMY** 229
 - Consumption 229
 - The relationship between consumption and national income 232
 - Income, consumption and saving 234
 - Planned investment 234
 - Government purchases 236
 - Net exports 236
- GRAPHING MACROECONOMIC EQUILIBRIUM** 239
 - Showing a contraction or recession on the 45° line diagram 242
 - The important role of inventories 243
 - **Making the connection 9.1**
Business attempts to control inventories, then ... and now 244
 - A numerical example of macroeconomic equilibrium 244
 - **Don't let this happen to you**
Don't confuse aggregate expenditure with consumption spending 245
 - **Solved problem 9.1**
Determining macroeconomic equilibrium 246
- THE MULTIPLIER EFFECT** 246
 - A formula for the multiplier 249
 - **Making the connection 9.2**
The multiplier in reverse: the Great Depression of the 1930s 250
 - Summarising the multiplier effect 251
 - **Solved problem 9.2**
Using the multiplier formula 251
 - The paradox of thrift? 252
- CHANGES IN THE PRICE LEVEL** 253
- CONCLUSION** 255
 - **An inside look**
Singapore's economy grew by 3.7% in 2013, says PM Lee 256
- CHAPTER SUMMARY AND PROBLEMS 258

CHAPTER 9 APPENDIX

The algebra of macroeconomic equilibrium 263

APPENDIX PROBLEMS 264

CHAPTER 10

Aggregate demand and aggregate supply analysis 266

AGGREGATE DEMAND 268

Why is the aggregate demand curve downward sloping? 268

- Don't let this happen to you
Be clear why the aggregate demand curve is downward sloping 270

Shifts of the aggregate demand curve versus movements along it 270

The variables that shift the aggregate demand curve 271

- Making the connection 10.1
Should Germany reduce its reliance on exports? 273

- Solved problem 10.1
Movements along the aggregate demand curve versus shifts of the aggregate demand curve 274

AGGREGATE SUPPLY 275

The long-run aggregate supply curve 275

Shifts in the long-run aggregate supply curve 275

The short-run aggregate supply curve 276

Shifts of the short-run aggregate supply curve versus movements along it 277

Variables that shift the short-run aggregate supply curve 277

Variables that shift the short-run and long-run aggregate supply curves 278

MACROECONOMIC EQUILIBRIUM IN THE LONG RUN AND THE SHORT RUN 280

Recessions, expansions and supply shocks 280

A DYNAMIC AGGREGATE DEMAND AND AGGREGATE SUPPLY MODEL 283

What is the usual cause of inflation? 284

- Making the connection 10.2
Does technological change create unemployment? 286

- Solved problem 10.2
Showing the oil shock of 1974 on a dynamic aggregate demand and aggregate supply graph 287

CONCLUSION 289

- An inside look
JB Hi-Fi's \$116m profit defies slump 290

CHAPTER SUMMARY AND PROBLEMS 292

CHAPTER 10 APPENDIX

Macroeconomic schools of thought 296

The monetarist model 296

The new classical model 296

The real business cycle model 297

Karl Marx: capitalism's severest critic 297

PART 6 MONETARY AND FISCAL POLICY 299

CHAPTER 11

Money, banks and the Reserve Bank of Australia 300

WHAT IS MONEY AND WHY DO WE NEED IT? 302

Barter and the invention of money 302

- Making the connection 11.1
Money in a World War II prisoner of war camp 303

The functions of money 303

What can serve as money? 304

- Making the connection 11.2
Coca-Cola dries up as the Zimbabwe currency no longer serves as money 306

HOW DO WE MEASURE MONEY TODAY? 306

M1: the narrowest definition of the money supply 307

Broader definitions of money 307

- Don't let this happen to you
Don't confuse money with income or wealth 308

HOW DO FINANCIAL INSTITUTIONS CREATE MONEY? 309

Bank balance sheets 309

Using T-accounts to show how a bank can create money 310

The simple deposit multiplier 312

- Solved problem 11.1
Showing how banks create money 313

The simple deposit multiplier versus the real-world deposit multiplier 315

THE RESERVE BANK OF AUSTRALIA 315

How the RBA manages financial liquidity and interest rates 316

Exchange rate management 317

THE QUANTITY THEORY OF MONEY 318

Connecting money and prices: the equation of exchange 318

The quantity theory explanation of inflation 318

High rates of inflation 319

- Making the connection 11.3
The German hyperinflation of the early 1920s 320

CONCLUSION 321

- An inside look
An Australasian currency? 322

CHAPTER SUMMARY AND PROBLEMS 324

CHAPTER 12		
Monetary policy	328	
WHAT IS MONETARY POLICY?	330	
The goals of monetary policy	330	
THE DEMAND FOR AND SUPPLY OF MONEY	332	
The demand for money	332	
Shifts in the money demand curve	332	
How the RBA manages the supply of cash	333	
Equilibrium in the money market	335	
A tale of two interest rates	336	
MONETARY POLICY AND ECONOMIC ACTIVITY	337	
How interest rates affect aggregate demand	337	
The effects of monetary policy on real GDP and the price level	338	
Can the RBA eliminate contractions and recessions?	339	
Using monetary policy to fight inflation	340	
• Making the connection 12.1		
<i>Too low for zero: a cash rate of almost zero in the United States</i>	341	
• Solved problem 12.1		
<i>The effects of monetary policy</i>	343	
Is monetary policy always effective and fair?	344	
• Making the connection 12.2		
<i>Why does the share market care about monetary policy?</i>	345	
• Don't let this happen to you		
<i>Remember that with monetary policy it's the interest rate—not the money—that counts</i>	346	
SHOULD THE RBA TARGET INFLATION?	346	
• Making the connection 12.3		
<i>How does the RBA measure inflation?</i>	347	
IS THE INDEPENDENCE OF THE RESERVE BANK OF AUSTRALIA A GOOD IDEA?	349	
The case for RBA independence	349	
The case against RBA independence	349	
CONCLUSION	350	
• An inside look		
<i>Bank of England holds record low rates</i>	351	
CHAPTER SUMMARY AND PROBLEMS	353	
CHAPTER 13		
Fiscal policy	358	
WHAT IS FISCAL POLICY?	360	
What fiscal policy is and what it isn't	360	
Automatic stabilisers versus discretionary fiscal policy	360	
An overview of government spending and taxes	361	
USING FISCAL POLICY TO INFLUENCE AGGREGATE DEMAND	363	
Expansionary fiscal policy	363	
Contractionary fiscal policy	364	
• Don't let this happen to you		
<i>Don't confuse fiscal policy and monetary policy</i>	365	
GOVERNMENT PURCHASES AND TAX MULTIPLIERS	365	
The effect of changes in tax rates	368	
Taking into account the effects of aggregate supply	368	
The multipliers work in both directions	369	
• Solved problem 13.1		
<i>Fiscal policy multipliers</i>	369	
THE LIMITS OF USING FISCAL POLICY TO STABILISE THE ECONOMY	370	
Does government spending reduce private spending?	371	
Crowding out in the short run	371	
Crowding out in the long run	372	
• Making the connection 13.1		
<i>Why was the United States recession of 2007–2009 so severe?</i>	372	
DEFICITS, SURPLUSES AND FEDERAL GOVERNMENT DEBT	373	
How the federal budget can serve as an automatic stabiliser	375	
• Solved problem 13.2		
<i>The effect of economic fluctuations on the budget deficit</i>	376	
Should the federal budget always be balanced?	377	
Is government debt a problem?	377	
• Making the connection 13.2		
<i>Government bankruptcy in Europe</i>	378	
THE EFFECTS OF FISCAL POLICY IN THE LONG RUN	379	
The long-run effects of tax policy	380	
Tax simplification	380	
The economic effect of tax reform	381	
How large are supply-side effects?	382	
CONCLUSION	382	
• An inside look		
<i>In infrastructure, they don't hard hats for a reason</i>	383	
CHAPTER SUMMARY AND PROBLEMS	385	
CHAPTER 13 APPENDIX I		
Is there a short-run trade-off between unemployment and inflation?	390	
The Phillips curve	390	
Explaining the Phillips curve with aggregate demand and aggregate supply curves	391	
Is the Phillips curve a policy menu?	392	
Is the short-run Phillips curve stable?	392	
The long-run Phillips curve	392	
The role of expectations of future inflation	393	
Do workers understand inflation?	394	
APPENDIX QUESTIONS AND PROBLEMS	395	

CHAPTER 13 APPENDIX 2

A closer look at the multiplier 396

An expression for equilibrium real GDP	396
A formula for the government purchases multiplier	397
A formula for the tax multiplier	397
The 'balanced budget' multiplier	398
The effects of changes in tax rates on the multiplier	398
The multiplier in an open economy	399
APPENDIX PROBLEMS	400

PART 7 THE INTERNATIONAL ECONOMY 401

CHAPTER 14

Macroeconomics in an open economy 402**THE BALANCE OF PAYMENTS: LINKING AUSTRALIA TO THE INTERNATIONAL ECONOMY 404**

The current account	404
The capital account	407
The financial account	407
Why is the balance of payments always zero?	408

- **Don't let this happen to you**
Don't confuse the balance of trade, the current account balance and the balance of payments 409
- **Solved problem 14.1**
Understanding the arithmetic of open economies 409

THE FOREIGN EXCHANGE MARKET AND EXCHANGE RATES 410

Equilibrium in the market for foreign exchange	410
• Making the connection 14.1 <i>Exchange rates listings</i>	412

- **Don't let this happen to you**
Don't confuse what happens when a currency appreciates with what happens when it depreciates 412

How do shifts in demand and supply affect the exchange rate?	413
--	-----

Some exchange rates are not determined by the market	414
--	-----

How movements in the exchange rate affect exports and imports	414
---	-----

- **Solved problem 14.2**
The effect of changing exchange rates on the prices of imports 415

The real exchange rate	416
------------------------	-----

THE INTERNATIONAL SECTOR AND NATIONAL SAVING AND INVESTMENT 417

Current account balance equals net foreign investment	417
Domestic saving, domestic investment and net foreign investment	418

THE EFFECT OF A GOVERNMENT BUDGET DEFICIT ON INVESTMENT 420

Is Australia's current account deficit a problem?	420
---	-----

- **Making the connection 14.2**
International debt relief for poor countries 423

MONETARY POLICY AND FISCAL POLICY IN AN OPEN ECONOMY 424

Monetary policy in an open economy	424
------------------------------------	-----

Fiscal policy in an open economy	424
----------------------------------	-----

CONCLUSION 425

- **An inside look**
Stevens' murky dollar premonitions 426

CHAPTER SUMMARY AND PROBLEMS	428
------------------------------	-----

CHAPTER 15

The international financial system 434**EXCHANGE RATE SYSTEMS 436**

- **Don't let this happen to you**
Remember that modern currencies are fiat money 437

THE CURRENT EXCHANGE RATE SYSTEM 437

The floating dollar	437
---------------------	-----

What determines exchange rates in the long run?	438
---	-----

The four determinants of exchange rates in the long run	439
---	-----

- **Making the connection 15.1**
The Big Mac theory of exchange rates 440

The euro	441
----------	-----

- **Making the connection 15.2**
Can the euro survive the recessions? 442

Pegging against the US dollar	443
-------------------------------	-----

- **Solved problem 15.1**
Coping with fluctuations in the value of the Australian dollar 446

INTERNATIONAL CAPITAL MARKETS 447**CONCLUSION 448**

- **An inside look**
The float Australia had to have? 449

CHAPTER SUMMARY AND PROBLEMS	451
------------------------------	-----

CHAPTER 15 APPENDIX

The Gold Standard and the Bretton Woods System 454

The gold standard	454
-------------------	-----

The end of the gold standard	454
------------------------------	-----

The Bretton Woods system	454
--------------------------	-----

The collapse of the Bretton Woods system	456
--	-----

APPENDIX QUESTIONS AND PROBLEMS	458
---------------------------------	-----

Glossary	460
----------	-----

Index	465
-------	-----

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>, 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.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 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.