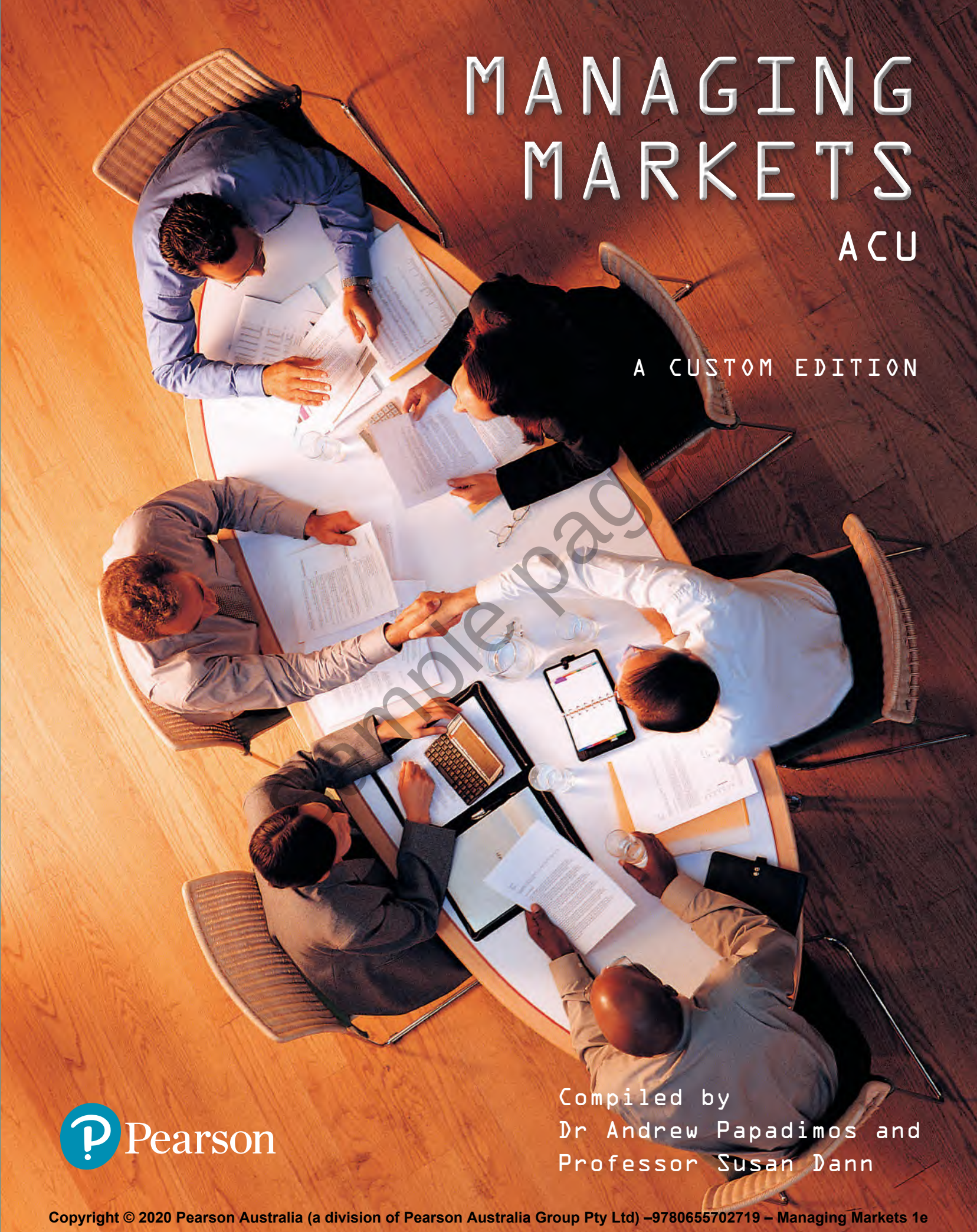

MANAGING MARKETS

ACU

A CUSTOM EDITION

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Pearson

A PEARSON AUSTRALIA CUSTOM BOOK

MANAGING MARKETS

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CONTENTS

CHAPTER 1

ECONOMICS: FOUNDATIONS AND MODELS

LEARNING OBJECTIVES

After studying this chapter you should be able to:

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

ROBOTS AND OFFSHORING: IS YOUR JOB SAFE?

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

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

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

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ECONOMICS IN YOUR LIFE

ARE YOU LIKELY TO LOSE YOUR JOB TO OFFSHORING?

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

ECONOMICS IS USED to answer questions such as the following:

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

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

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

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.

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

THREE KEY ECONOMIC IDEAS

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

LEARNING OBJECTIVE

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:

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

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

People are rational

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

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

People respond to economic incentives

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

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

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

Optimal decisions are made at the margin

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

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

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. Furthermore, you should note that producing beyond this point, where marginal cost exceeds marginal revenue, will reduce total profits.

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

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

LEARNING OBJECTIVE

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:

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

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

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

What goods and services will be produced?

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

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

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

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

How will the goods and services be produced?

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

Who will receive the goods and services produced?

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

Centrally planned economies versus market economies

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

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.

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

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

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

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

The modern 'mixed' economy

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

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

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

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

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

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

Dynamic efficiency
Occurs when new technologies and innovation are adopted over time.

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

Efficiency and equity

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

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

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

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

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

ECONOMIC MODELS

1.3
Understand the role of models in economic analysis.
LEARNING OBJECTIVE

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

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

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

The role of assumptions in economic models

Any model is based on making assumptions because models have to be simplified to be useful. We cannot analyse an economic issue unless we reduce its complexity. For example, economic models make *behavioural assumptions* about the motives of consumers and firms. Economists assume that consumers will buy those goods and services that will maximise their wellbeing or their satisfaction. Similarly, economists assume that firms act to maximise their profits. These assumptions are simplifications because they do not describe the motives of every consumer and every firm. How can we know if the assumptions in a model are too simplified or too limiting? We discover this when we form hypotheses based on these assumptions and test these hypotheses using real-world information.

Forming and testing hypotheses in economic models

Economic variable
Something measurable that relates to resource use and that can have different values; for example, wages, prices or hours worked.

A *hypothesis* in an economic model is a statement that may be either correct or incorrect about an *economic variable*. An **economic variable** is something measurable that can have different values, such as the wages paid to IT workers. An example of a hypothesis in an economic model is the statement that 'Outsourcing to offshore locations reduces wages of IT workers in Australia'. An economic hypothesis is usually about a *causal relationship*; in this case, the hypothesis states that offshoring causes, or leads to, lower wages for IT workers in Australia.

Before accepting a hypothesis, we must test it. To test a hypothesis, we must analyse statistics on the relevant economic variables. In our example, we must gather statistics on the wages paid to IT workers, and perhaps on other variables as well. Testing a hypothesis can be tricky. For example, showing that the wages paid to IT workers fell, or did not rise by as much as average wages, at a time when offshoring was increasing would not be enough to demonstrate that offshoring *caused* the wage changes. Just because two things are *correlated*—that is, they are associated with each other—does not mean that one caused the other. For example, suppose that the number of workers trained in IT greatly increased at the same time that offshoring was increasing. In that case, the fall in wages paid to IT workers in Australia might have been caused by the increase in supply of IT workers increasing competition for jobs, rather than by the effects of relocating some IT jobs overseas in the Philippines or India. Over a period of time, many economic variables will be changing, which complicates testing hypotheses. In fact, when economists disagree about a hypothesis, it is often because of disagreements over interpreting the statistical analysis used to test the hypothesis.

Note that hypotheses must be statements that could in principle turn out to be incorrect. Statements such as 'offshoring is good' or 'offshoring is bad' are value judgments, rather than hypotheses, because it is not possible to prove or disprove them.

Economists accept and use an economic model if it leads to hypotheses that can be confirmed by statistical analysis. In many cases the acceptance is tentative, however, pending the gathering of new data or further statistical analysis. In fact, economists often refer to a hypothesis having been 'not rejected', rather than being 'accepted', by statistical analysis. But what if statistical analysis clearly rejects a hypothesis? For example, what if a model leads to a hypothesis that offshoring by Australian firms leads to lower wages for Australian IT workers, but this hypothesis is rejected by the data? In that case, the model needs to be reconsidered. It may be that an assumption used in the model was too simple or too limiting. For example, perhaps the model used to determine the effect of offshoring on wages paid to IT workers assumed that IT workers in the Philippines and India had the same training and experience as IT workers in Australia. If, in fact, Australian IT workers have more training and experience than Philippine or Indian IT workers, this difference may explain why our hypothesis was rejected by economic statistics.

The process of developing models, testing hypotheses and revising models occurs not just in economics but also in disciplines such as physics, chemistry and biology. It is often referred to as the *scientific method*. Economics is a *social science* because it applies the scientific method to the study of individuals and societies.

Normative and positive analysis

Positive analysis
Analysis concerned with what is and involves value-free statements that can be checked by using the facts.

Throughout this book as we build economic models and use them to answer questions, we need to bear in mind the distinction between *positive analysis* and *normative analysis*. **Positive analysis** is concerned with *what is*, and involves value-free statements that can be checked by using the facts. For example, the statement that 'a reduction in taxation rates will lead to an increase in spending by individuals' is a positive statement and can be confirmed or negated by factual data.

Normative analysis is concerned with *what ought to be*, and involves making value judgments, which cannot be tested. For example, 'Individuals should receive reductions in taxation as they are able to decide how to spend money to maximise their satisfaction better than the government can' is a normative statement as it cannot be tested. Economics is about positive analysis, which measures the costs and benefits of different courses of action.

Normative analysis
Analysis concerned with what ought to be and involves making value judgments, which cannot be tested.

We can use the minimum wage laws in Australia to compare positive and normative analysis. In early 2019, it was illegal for an employer to hire an adult worker at a wage of less than $18.93 per hour or $719.20 per week. Without the minimum wage laws, some firms and some workers would voluntarily agree to a lower wage. Because of the minimum wage, some workers have difficulty finding jobs and some firms end up paying more for labour than they otherwise would have. A positive analysis of the federal minimum wage uses an economic model to estimate how many workers have lost their jobs because of the minimum wage, its impact on the costs and profits of businesses, and the gains to workers receiving the minimum wage. After economists complete this positive analysis, the decision as to whether the minimum wage is a good idea or a bad idea is a normative one and depends on how people assess the trade-offs involved. Supporters of minimum wages believe that the losses to employers and to workers who are unemployed as a result of minimum wages are more than offset by the gains to those workers who receive higher wages than they would have without a minimum wage. Opponents of the minimum wage believe the losses are greater than the gains. The assessment by any individual would depend, in part, on that person's values and political views. The positive analysis provided by an economist would play a role in the decision but can't by itself decide the issue one way or the other.

In each chapter you will see a 'Don't let this happen to you' box like the one that follows. The goal of these boxes is to alert you to common pitfalls in thinking about economic ideas. After reading the box, test your understanding by working through the related problem that appears at the end of the chapter.

DON'T LET THIS HAPPEN TO YOU

Don't confuse positive analysis with normative analysis

'Economic analysis has shown that the minimum wage is a bad idea because it causes unemployment.' Is this statement accurate?

If there were no minimum wage laws, some workers who currently cannot find any firm willing to hire them at the minimum wage would be able to find employment at a lower wage. Therefore, positive economic analysis indicates that the minimum wage causes unemployment (although economists disagree about how much unemployment is caused by the minimum wage). *But*, those workers who still have jobs benefit from the minimum wage because they are paid a higher wage than they would otherwise have been paid. In other words, the minimum wage law creates both losers (the workers who become unemployed and the firms that have to pay higher wages) and winners (the workers who receive higher wages).

Do the gains to the winners more than offset the losses to the losers? The answer to that question involves normative analysis. Positive economic analysis can only show the consequences of a particular policy; it cannot tell us whether the policy is 'good' or 'bad'. So, the statement at the beginning of this box is inaccurate.

Test your understanding by doing **related problem 3.7 on page 19** at the end of this chapter.

Economics as a social science

Because economics studies the actions of individuals and societies it is a social science. Economics is therefore similar to other social science disciplines such as psychology, political science and sociology. As a social science, economics considers human behaviour—particularly decision-making behaviour—in every context, not just in the context of business. Economists have studied such issues as how families decide the number of children to have, why people have difficulty losing weight or attaining other desirable goals, and why people often ignore relevant information when making decisions. Economics also has much to contribute to questions of government policy. As we will see throughout this book, economists have played an important role in formulating government policies in areas such as the environment, health care and poverty.

In each chapter, the feature entitled 'Making the connection' discusses a business news story, or other application, related to the chapter material. Read Making the connection 1.1 for a discussion on what positive economics suggests about the effect of immigration on unemployment levels and how economic analysis can differ from widely held public views and subsequent political policy decisions.

Making the Connection 1.1

Good economics doesn't always mean good politics

globevista.com

Immigration is good for the economy, but not always good for politics.
(The Abruzzese Emigrant Association monument near Lake Vasto, Perth).

Economic theories and models have had a huge influence on government policy. However, even when economic evidence is very strong, this doesn't mean that it will be adopted by politicians. Most economists agree that immigrants into Australia do not create unemployment; that is, they do not take jobs from existing Australian residents. Instead, immigration creates demand for goods and services, brings skills into Australia and contributes positively to economic growth. This conclusion is based on vast amounts of theory and economic modelling using evidence from many countries, including Australia. In other words, it is based on positive economics. However, politicians are acutely aware of conclusions voters believe to be correct but which may not be supported by positive analysis. Political decisions regarding immigration (and many other issues) are often based not only on positive economics but also on deeply held public views.

In Australia, between 2005 and 2008, net overseas migration (the difference between people migrating to Australia and those leaving Australia to live overseas) increased significantly. The increase in the volume of immigration that occurred largely during the Global Financial Crisis years led to public concern that new immigrants would worsen the rate of unemployment in Australia. Between 2007 and 2008, net overseas migration increased from just over 244 000 to over 314 600. After a significant reduction in 2010 for perceived political gain, to around 172 000 (despite continuing skills shortages), net overseas migration rose to over 237 000 in 2012 before again declining, reaching an estimated 216 600 in 2016. Of particular concern was the growth of temporary migrants under the Temporary Work Skills ('457') visa program, (which in 2018 was replaced by the Temporary Skill Shortage visa). This program was designed to get skilled workers into Australia relatively quickly to fill vacancies where there was a shortage of Australian workers, which in recent years occurred particularly in the then rapidly growing mining sector. '457' workers did not have to go through the extensive, and often lengthy, processes that permanent migrants must go through.

The 457 visa program exposed the difference between positive economics and normative views held by the public. In 2013, the then prime minister, Julia Gillard, announced that the government wanted to 'stop foreign workers being put at the front of the queue, with Australian workers at the back'. Specific examples of rorts of the system were used as the reason she argued that it should be harder for employers to bring in overseas workers on 457 visas. Ms Gillard stated that she wanted to protect Australian jobs and rejected claims her stance could be damaging to economic growth or national harmony.

In response, the Australian Chamber of Commerce and the Australian Industry Group both predicted continued skills shortages and argued for a steady migration policy instead of major fluctuations. Attacks on skilled migration have also been questioned by economist Professor Phil Lewis, Director of the Centre for Labour Market Research at the University of Canberra. When interviewed by the *Weekend Australian*, he stated: 'You simply won't get Australians to work on many of these projects, so if we don't allow migrants to work on them then we are giving up on creating wealth.' He said that the higher wages being offered to Australians was still insufficient to entice enough tradespeople to move to isolated mining regions with few services. He argued that Ms Gillard's stance was seen as vote-winning policy based on views held by much of the Australian public, rather than on sound economic modelling and positive analysis.

SOURCE: Australian Bureau of Statistics (2017), *Australian Demographic Statistics,* Cat. No. 3101.0, June quarter 2017, Table 16, at <http://www.abs.gov.au>, viewed 6 April 2018; Sid Maher (2013), 'PM faces internal revolt on visas', *The Australian*, 8 March; James Frost (2012), 'Migrants matter as clock ticks on boom', *The Weekend Australian*, 2 June.

LO 1.4

Distinguish between microeconomics and macroeconomics.

LEARNING OBJECTIVE

Microeconomics
The study of how households and firms make choices, how they interact in markets, and how the government attempts to influence their choices.

MICROECONOMICS AND MACROECONOMICS

Economic models can be used to analyse decision making in many areas. We group some of these areas together as *microeconomics* and others as *macroeconomics*. **Microeconomics** is the study of how households and firms make choices, how they interact in markets, and how the government

attempts to influence their choices. **Macroeconomics** is the study of the economy as a whole, including topics such as inflation, unemployment and economic growth. Table 1.1 gives examples of microeconomic and macroeconomic issues.

Macroeconomics
The study of the economy as a whole, including topics such as inflation, unemployment and economic growth.

TABLE 1.1 Issues in microeconomics and macroeconomics

EXAMPLES OF MICROECONOMIC ISSUES	EXAMPLES OF MACROECONOMIC ISSUES
• How consumers react to changes in product prices • How firms decide what prices to charge for the products they sell • Which government policy would most efficiently reduce teenage smoking • What are the costs and benefits of approving the sale of a new prescription drug • What is the most efficient way to reduce air pollution	• Why economies experience periods of contraction and increasing unemployment • Why, over the long run, some economies have grown much faster than others • What determines the inflation rate • What determines the value of the Australian dollar • Whether government intervention can reduce the severity of an economic contraction

The division between microeconomics and macroeconomics is not hard and fast. Many economic situations have *both* a microeconomic and a macroeconomic aspect. For example, the level of total investment by firms in new machinery and equipment helps to determine how rapidly the economy grows—which is a macroeconomic issue. But to understand how much new machinery and equipment firms decide to purchase, we have to analyse the incentives individual firms face—which is a microeconomic issue.

ECONOMICS IN YOUR LIFE

ARE YOU LIKELY TO LOSE YOUR JOB TO OFFSHORING?

At the beginning of the chapter we posed the question: Is it likely that during your career your job will be outsourced to China, the Philippines, India or some other country? It is important to remember that the number of jobs offshored as a proportion of total employment in Australia is very small. Also, offshoring enables firms to lower their production costs, which keep prices lower for consumers, allowing consumers to spend more on other goods and services, potentially creating more jobs. Furthermore, in a market economy, new jobs are constantly being created as old jobs disappear or become redundant. So while you may lose or change your job one or more times during your career, it will probably not be due to offshoring.

(continued from page 3)

CONCLUSION

The best way to think of economics is as a group of useful ideas about how individuals make choices. Economists have put these ideas into practice by developing economic models. Consumers, business managers and government policy-makers use these models every day to help them make choices. In this book we explore many key economic models and give examples of how to apply them in the real world.

Most students taking an introductory economics course do not major in economics or become professional economists. Whatever your major may be, the economic principles you will learn in this book will improve your ability to make choices in many aspects of your life. These principles will also improve your understanding of how decisions are made in business and government.

Reading news websites, newspapers and magazines is an important part of understanding the current economic climate and learning how to apply economic concepts to a variety of real-world events. At the end of each chapter you will see a feature entitled 'An inside look'. This feature consists of an excerpt from an article that relates to the concepts we have discussed throughout the chapter. A summary and analysis and supporting graph highlight the key economic points of the article. Read 'An inside look' on the next page to learn how economic analysis is used to address the issue of the growth in robotics and the effect this may have on jobs. Test your understanding by answering the 'Thinking critically' questions that follow.

AN INSIDE LOOK

ABC NEWS 6 JULY 2017

Rise of the machines: What jobs will survive as robots move into the workplace?

by Elysse Morgan

A The invasion of robots into factories and offices has long been seen as the final blow for workforces ravaged by cheap offshore labour and the never-ending quest to cut costs. However, that is a view being seriously challenged in a hi-tech steel fabricating factory just south of Brisbane.

Having put 'artificially intelligent' welding and cutting equipment to work, Smart Steel Systems chief executive Chis Brugeaud said he was now able to bring back jobs 'onshore' and reverse the trend of laying off people as technology improves.

Robotics has delivered two noticeable outcomes. It has more than halved the time it takes to produce a tonne of fabricated steel and the number of employees has risen from three to nine. The payroll now includes software, mechatronics and robotics engineers. The company's welders and boilermakers have moved off the factory floor into the office and now sit alongside computer scientists and artificial intelligence experts.

Economist and director of consultants Alpha Beta, Andrew Charlton, has been studying whether there is any truth to concerns that the pace of automation is increasing and will end in mass unemployment.

B 'The rate today is no higher than it was in the peak of the 1950s and '60s, when automation was taking thousands of jobs out of agriculture, no greater than it was in the '70s and '80s when automation was taking thousands of jobs out of manufacturing,' Dr Charlton said. 'What's new today is that automation is affecting predominantly white-collar jobs more and more than it ever has in the past.'

Studies have shown two-thirds of the shift away from automatable tasks will be driven by people changing the way they work, not changing jobs. It is a trend evident in legal and paralegal circles where the more mundane functions are increasingly handed over to artificial intelligence (AI) platforms.

'The huge amount of work that is done in law firms is frankly not interesting and lawyers are very talented and intelligent people,' said Andrew Mellett, CEO of software developer Plexus. 'What's exciting for us is that we are able to create career paths that people are far more engaged and excited to come to work each day.'

C Dr Charlton argued the nature of work is changing in a way that was improving the competitiveness of the economy but also creating more jobs that were good jobs. However, that doesn't mean an open slather approach was the way to go, according to Dr Charlton.

'We have to work really hard to make sure that workers displaced by automation are reskilled, retrained and given new opportunities in different areas,' he said. 'When machines do work that humans could do, that is a positive productivity shock in the language of economists. And if we get that shock right, then there's an up to $2 trillion dividend for the Australian economy over the next 15 years.' ■

ABC NEWS

SOURCE: Elysse Morgan (2017), 'Rise of the machines: What jobs will survive as robots move into the workplace?', *ABC News*, 6 July. Reproduced with permission of the Australian Broadcasting Corporation—Library Sales.