TOPIC 1

INTRODUCTION TO ECONOMICS

Focus

The focus of this topic is the need for choice by individuals, businesses and governments. Their decisions determine the nature of the economy and create the diversity of economies found in the world.

Issues

By the end of Topic 1, you will be able to examine the following economic issues:

- Identify the opportunity costs involved in economic decisions made by individuals, businesses and governments at local, state and national levels
- Examine the ways that the economic problem affects individuals at different income levels
- Examine the implications of unemployment and technological change using production possibility frontiers
- Compare and contrast the ways that different economies deal with specific problems or issues.

Skills

Topic 1 skills questions can ask you to:

- construct and interpret production possibility frontiers
- distinguish between equilibrium and disequilibrium situations in the circular flow of income model
- explain how an economy might return to an equilibrium situation from a disequilibrium situation
- identify bias in media items on economic issues affecting the local, state and national economies
- identify key features of an economy through analysis of a variety of information types and sources
- work in groups to investigate aspects of economics and economies.

Topic 1

Introduction

Topic 1 introduces some essential concepts in the study of economics. You will find that in studying economics we continually come back to these core concepts.

Chapter 1 places the study of economics within the bigger picture of human life. Economics is essentially about how we solve the economic problem of unlimited wants but limited resources – that is, how we choose between alternatives. This involves concepts of opportunity costs and production possibilities. The three groups that influence how we make these choices are individuals, businesses and governments.

Chapter 2 examines how economies operate, as well as the process that determines how economies produce and distribute goods and services. We examine the circular flow of income, a model that explains how the economy works by dividing it into five sectors and explaining the income flows between each sector. Chapter 2 finishes with a brief discussion of the concept of equilibrium, another essential economic concept.

Chapter 3 compares the different ways in which economies attempt to solve the economic problem. We compare the characteristics of a market economy, where business and consumers determine what is produced, with a centrally planned economy, where governments make the decisions about production and distribution. Australia is a mixed economy – one that combines a market economy with some level of government intervention. We look at how Australia compares to other economies in Asia across a range of indicators, including economic growth, quality of life, employment and unemployment, distribution of income, environmental sustainability and the role of government.

What Is Economics About?

1

The economic problem is about *choices*

1.1 The economic problem and the role of choices

Historically, experts in economics have wrestled with one fundamental issue above all else: how to solve what we call the **economic problem**. That is, how can a society satisfy the unlimited wants (of individuals or the community) with the limited resources available? It can be summarised as follows:

- Our wants are unlimited.
- Resources are scarce – that is, the resources we have to draw from to satisfy our wants are limited.
- Since we cannot satisfy all our wants with our limited resources, we must choose between them.
- Therefore, we need to rank our preferences – we will choose our highest-preference wants, and leave some wants unsatisfied.

The study of economics is essentially about attempting to solve the economic problem – trying to allocate our limited resources for the satisfaction of our unlimited and competing wants. The economic problem can be applied to every aspect of the economy, from simple interactions between businesses and customers to larger issues such as the supply of education. Economics is the study of choices, in which each decision we make involves choosing one option but deciding against an alternative.

Understanding wants

People in all countries need to obtain **goods** and **services** for their daily lives. Goods such as food and shelter, and services such as health and education, are essential for our lives. While these are basic **needs** essential for human survival, individuals also **want** a whole range of other goods and services to make their lives easier, or give them pleasure. Economics assumes that humans pursue maximum self-interest, meaning that we have unlimited wants and limited means to satisfy them. Economics does not attempt to change the fact that we may be greedy. Rather, it attempts to help us work out which wants are our highest priority, and how we can organise production in order to satisfy the maximum number of our wants.

Wants can be defined as the material desires of individuals or the community. They are items that provide some pleasure or satisfaction when they are consumed. Economists say that individuals derive **utility** (which broadly means satisfaction or pleasure) from the consumption of goods and services. People have desires for the basic necessities of life, such as food or shelter, which we can further classify as **needs**, as well as for non-essential items, such as a pair of headphones, an overseas holiday or expensive clothing.

Individual wants are the desires of each person. An individual's desire depends on personal preferences, but can be influenced by broader social trends. The number of individual wants that can be satisfied differs from person to person, depending on their ability to purchase goods and services (that is, their level of income). Individuals who have low incomes are affected by the economic problem more severely than those on higher incomes. People who have low incomes can satisfy fewer of their wants. They may not even be able to cover the cost of basic needs such as food, housing and clothing. The less income a person has, the fewer wants they can satisfy.

Collective wants are the wants of the whole community. What is desired will depend on the preferences of the community as a whole – not only those of the individual person. Collective wants are usually provided by the government. In Australia, local government provides collective wants for local neighbourhoods, such as parks, libraries and local sporting facilities. State governments provide most wants for the wider community, such as hospitals, schools and a police force, while the Commonwealth (or Federal) Government satisfies the wants of the entire nation, such as a defence force. Governments provide collective wants by using taxation revenue collected from the community.

Our wants are **unlimited**. As soon as we have satisfied one want, we will seek to satisfy another one. Because our means of satisfying wants are limited (as a result of our limited income) we cannot satisfy them all at once. In other words, we cannot have everything we want. As a result, **we must choose between our wants**. This means that some wants will be satisfied sooner at the expense of others. Generally, the most pressing wants will be satisfied first. For example, we would satisfy our want for food before buying a new laptop.

Some wants will be **recurrent**. When we satisfy a want such as food, we are faced with the fact that we will have to satisfy this want over and over again in the future. Further examples of recurrent wants include newspapers, clothes and petrol. Other wants are complementary. A want is said to be complementary if it naturally follows the initial satisfaction of another want. For instance, when you satisfy the want for a car, you will also want petrol and car accessories.

Our wants also change over time. As people grow older, their wants change. The factors that affect these changes include age, income, technology and fashion. For example, a one-year-old wants a pram; an eleven-year-old wants a video game console; a twenty-one-year-old wants a car; and a ninety-one-year-old may want a wheelchair. As your income increases, you are able to afford more luxury goods, and you increase the range of wants that you can satisfy. Technology also introduces new wants that people seek to satisfy. A generation ago, most individuals did not own a mobile phone, whereas today they are an almost universal possession.

The key economic issues

All economies – regardless of their type – must attempt to answer the following questions:

1 What to produce?

Because of limited resources, no economy can satisfy all individual and collective wants. It must decide which wants it will satisfy first and which it will leave unsatisfied. Therefore, it must decide what goods and services will be produced.

2 How much to produce?

To allocate limited resources efficiently and maximise the satisfaction of wants, an economy must make decisions about how much of each good or service it will produce. When it produces too much of a good, resources will be wasted, and when it produces too little, the wants of some individuals will be left unsatisfied.

3 How to produce?

Having decided what and how much to produce, an economy must decide how to allocate its resources in the production process. It must look for the most efficient method of production that uses the least amount of an economy's resources so that the greatest number of wants are satisfied at any one point in time.

4 How to distribute production?

Having produced a certain range and quantity of goods and services, an economy must decide on their distribution among the population. In modern economies, each person's share of total production depends on their level of income. People on higher incomes can afford to buy more goods and services than people on lower incomes, and therefore receive a bigger share of total production. Each economy must decide whether it wants a more **equitable** (even) distribution of production or a more **inequitable** (uneven) distribution. This is a difficult question because there is often a conflict between equity and efficiency – more efficient systems may produce less equitable outcomes.

Opportunity cost

Whenever we satisfy one want, we are giving up the opportunity of satisfying an alternative want. The *real* cost of satisfying a want is, therefore, not the money we pay for it, but the next-best alternative want that we have to forgo. This cost is known as the **opportunity cost** (it is also sometimes referred to as the **economic cost** or **real cost**).

Opportunity cost represents the alternative use of resources. Often referred to as the *real* cost, it represents the cost of satisfying one want over an alternative want. This is also known as economic cost.

Opportunity costs can be applied to the individual, the business firm and the government:

- The individual consumer, with limited resources (represented by her limited income) may have to choose between satisfying her desire for a car and an overseas holiday. If she chooses the car, the real cost is the overseas travel that she has to forgo.
- The business firm must also make a choice in the allocation of its scarce resources. An entrepreneur who decides to produce a computer gives up the opportunity to produce something else – such as electrical appliances – with those resources.
- The government has limited resources that it can use to satisfy community wants. If the government allocates resources to constructing a new fleet of submarines, it may be at the expense of a new motorway or airport.

reviewquestions

1 List TWO examples of each of the following types of wants:

a) individual wants b) collective wants

c) recurrent wants d) complementary wants

2 Identify which of the following are examples of opportunity costs:

- paying $1200 for a new smartphone
- missing a rugby game to go to a music concert
- missing a work shift because the bus was late
- amalgamating local councils to expand the police force.

3 Explain how all societies face the economic problem, with reference to the four key economic issues.

1.2 The production possibility frontier

Production possibility frontier is a graphical representation of all the possible combinations of the production of two goods or services (or two types of goods or services) that the economy can produce at any given time.

The **production possibility frontier** can be used to demonstrate how opportunity costs arise when individuals or the community make choices. The production possibility frontier (sometimes also known as the production possibility curve) shows the various combinations of two alternative products that can be produced, given technology and a fixed quantity of resources, when all resources are used to their full capacity.

The following example of a production possibility frontier is based on a number of simplifying assumptions, including:

- the economy produces only two goods – in this case, oil and leather
- the state of technology is constant, meaning there are no technological advances in this scenario
- the quantity of resources available remains unchanged, and
- all resources are fully employed.

A simple production possibility frontier

Oil	160	120	80	40	0
Leather	0	20	40	60	80

Figure 1.1 – Production possibility schedule for oil and leather

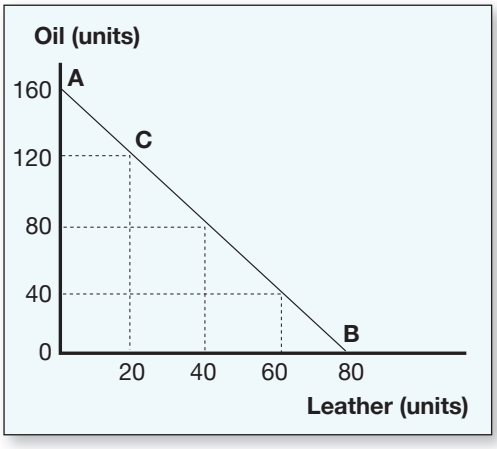
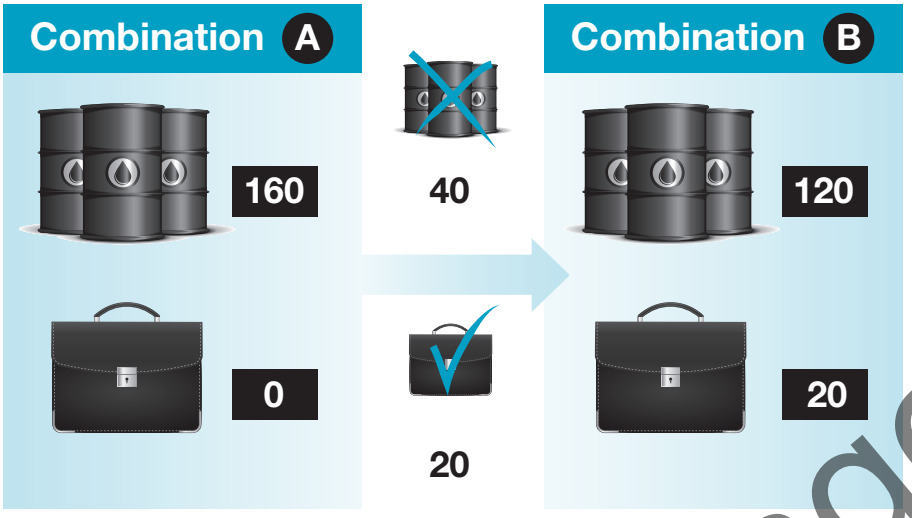


Figure 1.2 – Production possibility frontier for oil and leather

Given the above assumptions, we can construct a production possibility schedule. Figure 1.1 shows the production possibilities that would result if all our resources were used and were divided between the production of oil and leather. By graphing the data in figure 1.1, we can construct the production possibility frontier in figure 1.2.

The production possibility frontier shows all the possible combinations of production of oil and leather at a given point in time. We may choose to produce only oil and no leather (point A on the diagram), or just leather and no oil (point B), or any combination of oil and leather between these two extremes. Society must choose which combination is most desirable.

The production possibility frontier shows the maximum an economy can produce at a given point in time. All points on the frontier itself represent points at which the economy is operating at full productive capacity – that is, all resources are fully employed. If the economy were producing at a point inside the curve, it would be producing less than its maximum possible output and resources would not be fully employed.



When society wants to change its production combination, there is a cost involved – the opportunity cost. This can be seen in figure 1.2. Assume that the economy is producing at point **A** on the production possibility frontier (160 units of oil and no leather) but wanted to move to point **C** (120 units of oil and 20 units of leather). In order to get the 20 units of leather we would have to give up 40 units of oil. Therefore, the opportunity cost of obtaining the 20 units of leather is 40 units of oil.

We can calculate the opportunity cost of obtaining each individual unit of leather by dividing up the 40 oil units given up by the 20 leather units gained. Thus, for each unit of leather, we must give up 2 units of oil. In other words, the opportunity cost of leather is 2 units of oil.

New technology and the frontier

However, the production possibility frontier does not always remain the same. With the application of **new technology**, we may be able to develop more efficient methods of production. This might allow us to produce a higher quantity of a good with the same resources. This can be represented by an outward shift of the production possibility frontier.

Applying this to the previous example, an improvement in technology, such as enhanced oil extraction methods, increases the maximum production level to 200 units of oil with the same level of resources as before. Figure 1.3 shows the new production possibility frontier.

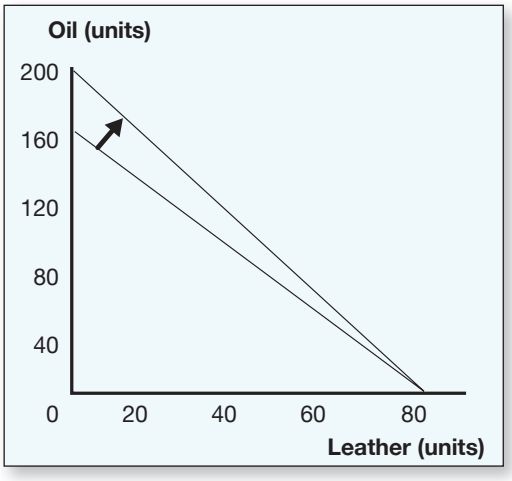


Figure 1.3 – An improvement in the technology of oil production

New resources and the frontier

Anything that increases the availability of production inputs will change the production possibility frontier. This includes discovery of new resources, or an expansion of the population through immigration, which would increase the number of people available for work. As a result of these new inputs, we would be able to produce more of both goods. This would also push the production possibility frontier outward, as shown in figure 1.4.

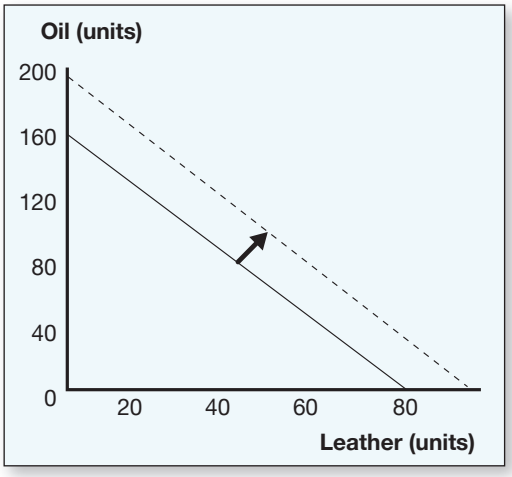


Figure 1.4 – Impact of the discovery of new resources

Unemployment and the frontier

The production possibility frontier can shed light on what occurs when an economy experiences unemployment. We usually refer to unemployment as the problem of a person being available for work but unable to find it. A similar problem may occur not just for people, but also for any input into the production process. If any resources are not fully employed, the frontier itself would not change, but we would change our position in relation to it. Our economy would be producing at a point somewhere within (or underneath) the production possibility frontier, as shown by point A in figure 1.5.

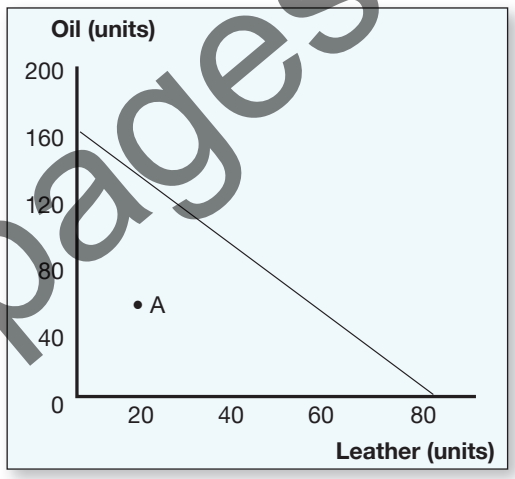


Figure 1.5 – Unemployed (or underemployed) resources

This situation indicates that we have an inefficient allocation of resources. We are not achieving a maximum satisfaction of wants with the minimum opportunity cost, which would deliver an efficient outcome. Because the economy has resources that are not being used efficiently in production, the total output of goods and services is less than what it could be. These resources would be "unemployed".

The shape of the production possibility frontier

In the analysis so far, the production possibility frontiers have been straight lines. For this to be the case, it must be possible to shift all resources between the production of oil and leather so that the opportunity cost of producing leather is constant (in other words, the economy could substitute between the production of the two goods at a constant rate).

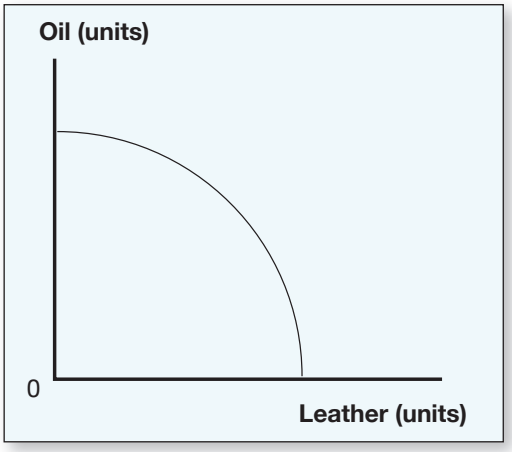


Figure 1.6 – Concave production possibility frontier

In the real world, this is generally not the case. Some resources are better suited to oil production, and others to leather – we cannot simply expect to move resources from oil production to leather without any loss of productive capacity, and vice versa. Therefore, as we move more and more resources into the production of leather, they will become less productive, which will increase the opportunity cost of leather. When this is taken into account, the proper shape of a production possibility frontier is drawn concave to the origin (as shown in figure 1.6), but the overall conclusions that have been discussed remain the same.

reviewquestions

1 A factory is able to produce a maximum of 1000 espresso machines or 2000 food processors. Construct a production possibility frontier and calculate the opportunity cost of producing one food processor.

2 Illustrate the effects of each of the following situations on a production possibility frontier for oil and leather:
- the invention of a new oil drill
- an improvement in stitching technology
- an increase in a nation's intake of working-age migrants.

3 Identify the change in the opportunity cost of producing more units of leather as an economy moves down to the right on the production possibility frontier shown in figure 1.6.

1.3 The future implications of choices

In making economic choices today, we can influence economic outcomes in the future. In a general sense, an economy as a whole can choose between producing goods that satisfy consumer demand immediately (**consumer goods**) and goods that will increase our productive capacity in the future (**capital goods**), such as machinery. While capital goods do not satisfy consumer wants now, they will allow us to satisfy these wants in the future by expanding our ability to produce. The trade-off between producing consumer goods and capital goods is represented in figure 1.7.

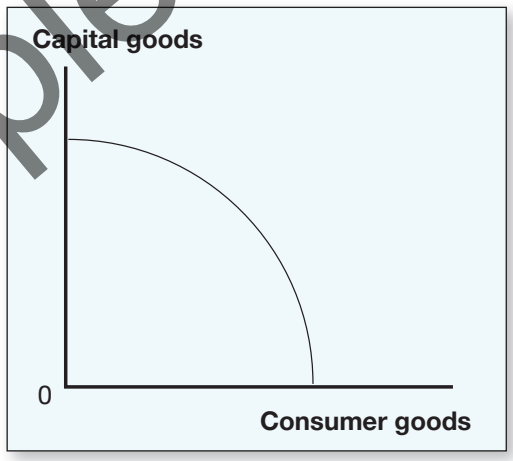


Figure 1.7 – The choice between consumer and capital goods

In the long run, an economy that focuses more on the production of capital goods will increase its productive capacity and experience a higher level of economic growth. A country that is producing at a higher point on the frontier will, in the long term, be able to satisfy its consumer wants better than a country at a lower point on the frontier. In effect, the country choosing to produce more capital goods now is making the choice to forgo satisfying some wants today so it can satisfy a greater number of wants tomorrow.

Consumer goods and services are items produced for the immediate satisfaction of individual and community needs and wants.

Capital goods are items that have not been produced for immediate consumption but will be used for the production of other goods.

The principle that economic decision making has future implications is true for individuals, businesses and governments. For example:

- An **individual** may choose to go without an overseas holiday or extravagant lifestyle and instead take out a mortgage and purchase a house. Saving up for a deposit will represent a significant sacrifice for many individuals, only to be followed by years of scrimping to pay off the mortgage. In the longer term, however, home ownership improves an individual's financial security, as they will not have to pay rent and will also have an asset that they can pass on to their children when they die.
- A **business** must choose to focus on one area of business activity over another. Businesses have a limited amount of labour, capital, entrepreneurial skill and other resources, so they must focus on the products in which they are likely to maximise profit. This involves a difficult assessment of which areas of business activity they can be most successful in over the medium to longer term. Businesses are likely to be most effective if they can identify where the next wave in business growth is likely to come from. For example, many businesses that invested in communications and information technology have achieved extraordinary financial success. If a business only chooses to operate where other businesses have already been successful, they may find that they have entered the market too late and are unable to obtain a competitive advantage.

The future implications of education for individuals

One of the most important economic decisions made by individuals is whether to invest in further education beyond high school. While students might prefer to hang out at the beach or go on an overseas holiday than be stuck in a classroom, most choose to sacrifice some enjoyment now in order to add to their education and improve their workforce skills. This should expand their job options and increase their future income.

Evidence confirms that education, particularly tertiary education, does improve individuals' earning potential. According to the 2021 Graduate Outcomes Survey, the median salary for new graduates with a bachelor's degree is $65,000 a year in their first year, up from $64,700 in 2020. While this is almost 30 per cent below the average annual earnings for all Australian full-time workers, research shows that higher-education graduates earn around 20 per cent more over their working lives compared with people who leave school after Year 12. Dentistry graduates enjoy the highest median starting salary ($100,000), followed by medicine ($76,000), social work and education (both $72,000), and engineering ($70,000).

The survey also noted that university graduates enjoy better job prospects. Among university graduates, 68.9 per cent are able to find full-time employment soon after entering the job market, compared to only 60.7 per cent of non-university graduates. The overall employment rate (including part-time work) is also notably higher at 84.8 per cent for university graduates, compared to 79.2 per cent for non-university graduates.

Furthermore, completion of a higher education or Vocational Education and Training (VET) qualification is increasingly a prerequisite for access to, and successful participation in, the labour market. A report by the National Skills Commission found that nine out of every ten new jobs will require post-school qualifications in the next five years. Further, 71 per cent of Australians aged 20 to 64 years held post-school qualifications in 2021, up from 60 per cent in 2009.

A decision to invest in education may require sacrifices in the short term, but it will pay off in the future.

- The decisions of **governments** have very important long-term implications, both for governments themselves and for the entire economy. A government may choose to give the highest priority in its spending to satisfying immediate needs, such as increased welfare benefits and health care. As a result, it may provide less funding for other areas of expenditure, such as education, infrastructure, and research and development. In the longer term, this is likely to result in a lower level of economic growth, because the country will have a lower skills base in its workforce, less innovation and weaker infrastructure (such as an inadequate transport system or limited bandwidth in its communications systems). The difficulty for governments is that in the short term it may be more politically popular to satisfy immediate wants than to plan for future needs.

reviewquestions

1 List TWO examples of a capital good and TWO examples of a consumer good.
2 Describe the costs and benefits of producing capital goods in an economy.
3 Outline a possible future economic benefit for each of the following choices:
   - saving money in a bank account
   - pursuing tertiary education
   - working beyond the retirement age.

1.4 The economic factors underlying choices

In the process of making economic choices, all participants in the economy must weigh up a range of factors relating to their short- and long-term objectives. The following section reviews some of the factors that affect the economic decision-making process for individuals, businesses and governments.

Individuals

The economic choices made by individuals are shaped by a variety of factors, including their age, income, expectations, future plans and family circumstances. Personality factors will also influence economic decision making; for example, some people are keen to embrace change and risk, while others will avoid risk and prefer security.

Whatever their level of income, individuals must make a choice about how much of that income they will **save** and how much they will **spend**. This will, of course, be influenced by their income level, as well as a range of other factors, such as age, the performance of any assets they hold and their expectations of whether their income is likely to rise or fall in the future.

Plans in relation to education, work, family and retirement also play a substantial role in influencing economic decision making. The decision to undertake further education may involve forgoing income for several years, although in most cases it will be rewarded with higher income in the longer run. In the meantime, the individual's ability to consume will be restricted by their limited income. When a couple decides to start a family, they may have to cut down on personal expenditure and one partner may reduce their working hours and income to care for young children. Later in life, the decision to retire involves adjusting to a much lower income when more free leisure time may give an individual more opportunities to consume.

Individuals also contribute to economic decision making by voting in elections. Economic policy issues are a central feature of political debate in Australia, and they are major priorities of government programs and election campaigns. Political parties regularly debate who is best at managing the economy and the budget, and which party is most likely to deliver lower levels of unemployment, inflation and interest rates. Elections involve individuals making a choice about who to vote for, and economic policies, especially on tax and infrastructure, significantly influence voting behaviour.

Business

Firms face choices in many aspects of their business operations. In pricing its products, a business may choose a higher price, hoping that this will maximise profits and only have a small impact on the level of sales. The pricing decisions that businesses make are also based on their marketing strategy – whether they are trying to sell a product to the mass market or target a more exclusive group of consumers.

In making decisions relating to production and resource use, businesses will seek to minimise their costs and maximise quality. This may sometimes involve difficult choices; for example, a business may face higher costs in the purchase of better quality equipment, but the equipment may have a longer operating life and require less maintenance. Businesses will generally choose inputs that are cheaper, but if the supply of a cheaper input is not assured, they may choose to pay slightly more for an input that has a more reliable supply. Businesses may also need to consider ethical issues, such as the importance of the natural environment. For example, a business may consider whether it is willing to pay a higher price for using inputs that are more environmentally sustainable (such as paper rather than plastic wrapping).

Businesses can also face complex choices in how they manage industrial relations issues. Businesses can choose to employ people on wage levels set by industrial awards; they can negotiate wage agreements with their whole workforce; or they can negotiate individual contracts with their staff. They also face choices about whether they will encourage union representation or involvement from employees in decision making.

Government

Governments can have a significant influence over the economic choices of individuals and business. This influence may include making it less or more expensive to make some choices. For example, by taxing cigarettes more heavily, governments attempt to discourage individuals from smoking.

In more extreme situations, governments may seek to influence economic behaviour by prohibiting certain activities and imposing heavy penalties on those who break the law. For example, businesses operating in the same industry are prohibited from meeting together to set prices for their industry, because this degrades competition and harms the interests of consumers.

Equally, governments may wish to encourage certain economic activities and may provide incentives for them. For example, in order to encourage individuals to join a private health insurance scheme, the Australian Government provides a tax rebate of up to 33 per cent to low- and middle-income earners for private health insurance payments, and imposes the Medicare levy surcharge (a tax penalty) on higher-income earners who do not take out private health insurance. Private health insurance coverage now extends to around 55 per cent of the population, compared with 30 per cent before these policies were introduced.

The government's influence on the economy is a result of both influencing the decisions of individuals and businesses, and providing goods and services directly.

reviewquestions

1 Outline THREE economic factors that may cause people to increase their level of saving.

2 Describe how each of the following business strategies could maximise business profits:

- raising the selling price
- lowering the selling price
- purchasing more efficient capital goods
- offering higher salaries to staff.

3 Identify TWO examples of business activities that the government may wish to encourage, and TWO business activities the government may want to discourage or ban altogether.

chapter summary

1 Economics is concerned with addressing the **economic problem** of satisfying unlimited wants with our scarce resources.

2 The economic problem means that we must make choices about how to allocate limited resources. Therefore, we must give priority to some wants over others.

3 Each economy must answer the following four basic questions:

- What to produce?
- How much to produce?
- How to produce?
- How to distribute production?

4 Whenever we choose to produce or consume one product, we miss out on the alternative products that could have been produced using those resources. This is known as the **opportunity cost**.

5 The **production possibility frontier** is a simple way of explaining opportunity cost. Assuming that only two goods are produced, it shows that producing more of one good requires us to produce less of the other.

6 Improvements in **technology** will cause the production possibility frontier to shift outwards.

7 Changes in the levels of **resources** will change the position of the production possibility frontier, moving it outwards (when the level of available resources increases) or inwards (when the level decreases).

8 If an economy is producing at a point below the production possibility curve, then it is experiencing **unemployment** of resources.

9 Today's economic choices affect tomorrow's economic outcomes. If we choose to satisfy a want today, we may not be able to satisfy a want in the future.

10 In choosing between satisfying present or future wants:

- **Individuals** must make choices between spending or saving. Spending satisfies present wants while saving raises future living standards.
- **Businesses** must make choices about price, how much to produce, what resources to use and how to manage their employees.
- **Governments** can influence the choices of individuals and businesses by affecting the cost of choices and other factors underlying their decision-making processes.

chapter review

1 Explain what is meant by the *economic problem*.

2 Outline why economics can be described as a study of choices.

3 Define *opportunity cost*.

4 Explain how a production possibility frontier can be used to demonstrate the concept of opportunity cost.

5 Identify why it is impossible for an economy to produce outside its production possibility frontier.

6 Discuss the circumstances under which it would be possible for the production possibility frontier to shift outward.

7 Explain why we might find our economy producing at a level within (or below) the production possibility frontier.

8 Given the following production possibility schedule, construct a production possibility frontier and answer the following questions.

Beef	200	150	100	50	0
Tea	0	30	60	90	120

a) What is the opportunity cost of obtaining the first 30 units of tea?

b) What is the opportunity cost of obtaining one unit of tea?

9 Identify the kinds of opportunity costs that the government might face in attempting to satisfy community wants.

10 Define the following terms:

a) consumer goods

b) capital goods.

Extended response

Define the *economic problem*. Explain how individual consumers, business firms and the government are all faced with the economic problem. Identify the different economic factors that influence how each group seeks to address this problem.