Chapter 1
Fundamental Economic concepts

1.1 What is Economics all about?

Consider the following quote from The Reserve Bank of Australia's Jacqui Dwyer:

> ***"Economics is about how individuals and societies choose to allocate their limited resources to meet their needs and wants. It's about how we respond to incentives, make trade-offs, weigh up costs and benefits – and how we decide what is efficient and [sometimes] what is fair."***

This speech was focused on the declining number of people who are choosing to study economics. This might be seen as an unfortunate development, as the study of Economics will assist in the development of your analytical skills and an understanding of the theories that can be used to explain many of the challenges facing the modern world.

Study tip

In economics, we often use the expression 'economic agents' to refer to any entity (such as a person, household, government or business) that makes economic decisions.

Economics is, as you will soon discover, all around us. Whether we understand it or not, we influence, and are affected by, economic events and the decisions that **economic agents** make. Each person makes what seem to be small and insignificant economic decisions, but when aggregated, these decisions can have consequences that the original decision maker may not have considered. Economics therefore tries to explain the motivation for certain decisions and analyses the impacts of these decisions. Given the complex nature of the human mind and the infinite number of interactions that could take place, it is not surprising that economists often make mistakes with their predictions. One would hope that your on-going economic education will give you a better understanding of both the costs and benefits associated with your own decision making, as well as more insight into the different perspectives that can be held on what might first appear to be a one-sided issues.

Economics is essentially a **social science**. Social sciences focus on human behaviour and social interactions. Like other social sciences, Economics tries to explain aspects of the way societies function; both the causes and consequences of human behaviour. Economics has evolved over time as continued research and inter-disciplinary investigation has resulted in a deeper understanding of the ways humans behave. Theories about how the economy operates that were well regarded in the past have subsequently been tested using empirical research, resulting in a dismissal of some of these theories and the development of new ones. The focus for this book will be to provide you with an insight into some of the key economic issues that are faced by economic agents (households, businesses, governments and other key stakeholders), how these groups respond to incentives, factors that affect the performance of the Australian economy and ultimately how each of these economic decisions and events affect living standards.

As you continue to develop your knowledge of Economics, you may be faced with a number of key questions that economists have attempted to answer. Try to think deeply and creatively about possible solutions to some of these problems and create questions of your own. In some cases, the answers posited by economists may challenge your way of thinking. This is good for your learning and highlights the fact that economists often disagree, and are engaged in regular debate.

Over time, economists have branched out into many areas of knowledge (some of which are beyond the scope of the VCE Economics course). Here is a sample of some of the questions and issues that economists have considered:

- How do people choose which goods and services that they consume?
- How do producers decide what they will produce and how they will produce it?
- How are these choices influenced by new discoveries and technological change?

- What factors influence the level of income earned?
- Why do some people become unemployed?
- Why do prices change for goods and services?
- Why do governments intervene in the market and how are living standards affected by such intervention?
- What factors influence world trade and how does interaction with the rest of the world influence Australia's living standards?
- Why does poverty occur and why are some countries richer than others?

Economics as a discipline often faces much criticism. The models developed by economists are often based on a number of simplifying assumptions and these lead to conclusions and decision-making that may, in some cases, not lead to the best outcomes for the majority of society. The economic theory that is presented in this book may therefore sometimes conflict with your own experience and understanding of the world. You are encouraged to question the nature of these theories and what economists assume about the way humans behave. You do not have to accept all of the theories presented. Unlike a traditional science subject, they are not absolute facts, and critical thought and creative thinking are therefore encouraged in the study of Economics. Alternative models of human behaviour have been developed, some of which will be discussed in this book, while exposure to less mainstream economic thought will require independent research and further study.

Many economics courses are divided into the study of microeconomics and macroeconomics. **Microeconomics** is the study of the economic behaviour of individual consumers as well as businesses. The first area of study in the Unit 3 course has a microeconomics focus. In this area of study, the role of markets and the price mechanism is discussed as well as the factors that influence buying and selling decisions.

Macroeconomic analysis builds on this knowledge of microeconomics and attempts to explain economy-wide phenomena. Our study will look at the government's aggregate economic goals such as the rate of growth in the volume of production, the percentage of those who are considered unemployed and how quickly the general level of prices is rising. In Unit 4, the approach taken by the government to influence some of their macroeconomic goals will be considered.

Activity 1a: Macro or micro?

Complete the table below to distinguish microeconomic from macroeconomic factors:

Concepts/factors/events	Micro	Macro
The factors involved in the purchase of a new set of multi-room speakers		
The decision by the government to protect bank deposits		
A rapid increase in the general level of prices		
The exploitation of workers in the hospitality industry		
The decision by the government to reduce income tax rates		
An increase in income for the average Chinese household		
A lower rate of economic growth in Australia		
The imposition of the GST on all digital purchases		
A decision to raise the excise taxes on cigarettes		
An increase in the number of job vacancies		
The ageing of the Australian population		

Do economists agree on anything?

Economists, as noted earlier in this chapter, often disagree on a number of key concepts and how events might affect an economy. In 2018, the US president, Donald Trump, started to reverse a trend in trade policy that had been progressing over a thirty year period. This caught many economists by surprise, as most have advocated for policies that promote increased levels of trade between nations. Not surprisingly, the change in policy direction provided economists with a golden opportunity to reflect upon the impact of previous government decisions and to gain a deeper appreciation of Trump's motivations. Economists have also started to make predictions about how the change in trade policy will affect not only America, but also production in other countries as well as world rates of economic growth. Not surprisingly, economists have predicted a range of different outcomes, but there would appear to be some consensus that there is likely to be harm caused by these changes (some countries will obviously be affected more than others). This topic will be covered in more detail in Chapter 7.

Despite the healthy debate amongst economists about a wide range of contentious issues, there does seem to be some agreement among the majority of economists with regard to some key principles. A number of these key principles were explicitly stated by Gregory Mankiw, a Harvard Professor and former adviser to George W. Bush. Mankiw is the author of the best-selling economics textbook in the world. These principles are related to how people make decisions (1 -4), how people interact (5 -7) and how the economy as a whole works (7 -10). These principles are summarised in Table 1.1 and become a useful starting point for any discussion about the economy. The principles outlined by Mankiw reflect a well-accepted view of key economic conclusions, but not all academics (Economic or otherwise) accept these principles.

Table 1.1 Mankiw's "Ten Principles of Economics"

1	People face tradeoffs	In order to get something you like, you usually have to give up something else.
2	The cost of something is what you give up to get it	Whenever a decision is made the decision maker looks at the explicit costs but also include the value of what they have given up.
3	Rational people think at the margin	This is another way of saying that a rational person will do something if the extra benefit of doing so exceeds the extra cost associated with the action.
4	People respond to incentives	The behaviour of people will change when the costs and benefits associated with any action change.
5	Trade can make everyone better off	Trade allows people and countries to specialise in what they do best. By trading, a country's citizens are generally able to buy more goods and services and therefore increase living standards.
6	Markets are usually a good way to organise economic activity	In his 1776 book *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith observed that households and firms interacting in a market act as if they are guided by an "invisible hand" that leads them to desirable market outcomes. Prices are generally seen as the way the invisible hand works its magic.
7	Governments can sometimes improve market outcomes	In some cases markets are unable to efficiently allocate resources (referred to as market failure). In these cases governments develop public policy to re-allocate resources to those areas that will maximise society's wellbeing.
8	A country's standard of living depends on its ability to produce goods and services	Income is derived from the production of goods and services, so producing a greater volume of goods and services will increase living standards. Increases in productivity will mean that more goods and services can be produced from a nation's resources thereby increasing income and living standards.
9	Prices rise when the government prints too much money	When the government creates large volumes of its money, its value will fall. If this is the case, and there are the same number of goods and services available, then it makes sense that more money will be needed to purchase a given good or service.
10	Society faces a short-term trade off between inflation and unemployment	Reducing inflation often results in a temporary increase in the unemployment rate because it may require policies that reduce the ability of consumers to spend.

As you proceed through this book and gain a deeper understanding of economics, keep Mankiw's principles in mind. Try to regularly reflect upon and question whether Mankiw's principles are able to accurately describe human behaviour and the economic outcomes you have observed yourself. For example, one notable ecological economist, Herman Daly, would argue that there is inadequate reference to the environment in **Mankiw's principles**, arguing that instead, these should be a key starting point for any discussion of Economics and economic decision making. Other economists, who question the **neoliberal model** presented by Mankiw, argue that his models oversimplify economic theory and omit the ways in which markets can degrade human well-being, undermine societies and threaten the planet. If you have studied Unit 1 Economics, you may also question the nature of the rationality principle as you will have investigated instances where humans make seemingly irrational choices (see Box 1.1).

One of the challenges associated with learning about economics is that the media and politicians often misinterpret and deliberately distort elements of economic theory to present an argument that suits their agenda. You will need to ensure that you read these statements in a critical manner and discuss the validity of these with your teacher and your peers. Unfortunately, much of what you are presented with may in fact be 'econobabble', where aspects of economic theory have been conveniently manipulated (or ignored) to convince the public that the government (or alternative party) will be good economic managers. As a student of Economics, you have therefore chosen a path where the answers are not always obvious (and there may not always be a right answer) and you will need to reflect constantly on what you are learning. While this may appear challenging at first, the rewards will come as you develop a deeper understanding of the human condition and our role in the world.

You are therefore encouraged to begin your studies of Economics with an open-mind. Future generations will need solutions to the challenges associated with managing the economy, such as how to promote long term economic growth that is also sustainable, how to address the issue of intergenerational equity, how to reduce the manipulation and exploitation of consumers, how to avoid a future economic crisis, how to make property more affordable and how to reduce government debt.

Box 1.1 Economists make assumptions

When economists develop their models and theories, they often make simplifying assumptions about human behaviour and the way variables might interact with one another. As we progress through the textbook, it might be useful to reflect upon and regularly challenge these assumptions to deepen your understanding of the relevant theories. You may also gain some insight into why it is often difficult for economists to make accurate forecasts and predictions. Four of the key assumptions that economists make are outlined below.

1. Ceteris Paribus

Economists often want to know how one variable (such as price) affects another (such as the demand for a particular product). As you discover in the next chapter, economic theory suggests that an increase in price will result in a decrease in demand for the given product. This relationship is made using the assumption ceteris paribus, which means that all of the other factors that might affect the decision to buy the product at a point in time are held constant. The ceteris paribus assumption is unlikely to reflect the real world but it helps to isolate key economic relationships. Econometric programs can test the validity of economic theories by isolating the effect of the two (or more) relevant variables.

2. Rational economic decision making

The ceteris paribus assumption is not necessarily a reflection of the real world but it helps to isolate key economic relationships. This assumes that whenever a decision needs to be made, an economic agent will consider all of the relevant information and weigh up the potential costs and benefits. This assumption inherently implies that consumers (in particular), have access to perfect information and know exactly what they are buying.

3. Consumers are utility maximisers and firms are profit maximisers

Many of the established models of economic behaviour (one of which will be covered in the next chapter), assume that individuals seek to maximise their utility. This means that they will, for example, purchase those goods and services that they believe will generate the highest level of individual satisfaction. The models also assume that firms will make decisions that maximise their profits (which is equal to their revenue minus their expenses).

4. Diminishing marginal utility

The consumer is assumed to benefit from greater consumption of a good or service than less. This is why products may be described as goods (rather than bads!). It is generally assumed, however, that each additional unit of a good does not necessarily generate the same degree of satisfaction. Economists argue that the more of a good or service that is consumed per period, the smaller the increase in total utility (satisfaction) that is generated from the last unit. This is referred to as **diminishing marginal utility.**

1.2 Relative Scarcity: needs and wants

Scarcity is the fundamental economic problem

If you ask someone who may have studied Economics what it is about, they may initially struggle to provide you with a concise explanation. As we have seen in Section 1.1, there are a vast array of issues that could be considered in an economics course. Economics is often described as a subject about incentives, choices, and consequences. It is essentially focused on the management of a society's scarce resources to maximise a society's wellbeing. Most economics courses therefore start from the premise of **relative scarcity.** Something is seen as scarce when it is desired but access to it is limited. We start by making the (perhaps challengeable) assumption that our needs and wants can never be fully satisfied (they are therefore considered **infinite**). In contrast, the resources needed to meet all of our needs and wants have physical limits (they are therefore **finite**). If humans could attain all of their desires, there would be no scarcity and Economics may disappear as a discipline.

Study tip

Many of the theories and models that will be investigated in this course will be based on key assumptions. Assumptions are often needed to develop a theory and to explain key relationships between economic variables. While it might seem like an obvious assumption that 'needs and wants can never be satisfied' there will be some theorists and some individuals around the world who would openly question the validity of such a viewpoint. Therefore, as you progress through the course, pay particular attention to the assumptions that are explicitly stated and how these might affect the validity of economic predictions. [Also see Box 1.1 'Economists make assumptions']

All economies face the problem of relative scarcity, no matter how wealthy or resource-rich they are. Therefore Economics studies how different **economic systems** attempt to allocate scarce resources (discussed in Section 1.3) to meet the needs and wants of their people. In fact, one could argue that the problem of scarcity is likely to get worse over time as more and more of the world's resources are consumed and the size of the human population increases.

Economists often distinguish between needs and wants when they discuss relative scarcity. A **need** is seen as good or service that is deemed to be necessary for one's survival. As societies evolve over time, what is considered a need by some individuals (in rich industrialised nations like Australia) may be seen by others as a want (those who may be living in a less developed nation like Zimbabwe). A **want** is therefore a good or service that is not necessary for one's survival, but consumption of which adds to the quality of one's life. Most would accept that food, water, clothing and shelter are needed for survival, but what about telecommunications services, electricity and healthcare? Are these needs or wants? Like many areas of Economics, there is no definitive answer and each person will express a different opinion on how they perceive each of these 'products'. The economic models that are discussed throughout this book are based on another key economic assumption; households seek to maximise their needs and wants through their interactions in the economy and that for most people, these needs and wants cannot be fully satisfied. In other words, as one need or want is satisfied, another will emerge in its place.

Economics as a discipline tries to improve the experience of humanity by seeking (constantly) to overcome the problems created by relative scarcity. Scarcity makes it necessary for economic agents to make decisions to allocate resources to best meet their needs and wants. They must make **choices**. Humans cannot have everything they want and usually have a limited income they can use to meet their desires. They also cannot work 24 hours per day and therefore need to allocate their scarce labour resource to that area of production that a) is within their skills set and b) will maximise their wellbeing (which may include, but is not totally limited to, the ability to purchase the goods and services that are available). Economics continually seeks to understand why humans make the choices they make and then tries to analyse the consequences of these choices for the economy as a whole and for a number of key stakeholders.

Relative scarcity

Wants/needs > Resources

1.3 Resources and the key economic questions

An **economy** is a place where scarce resources are allocated among competing uses. Economists distinguish between three main types of **resources** that can be used to produce goods and services to meet the needs and wants of the people on the planet. For this reason, they are also referred to as **factors of production**, where the quantity and quality of these factors of production has a big impact on national living standards or welfare. The three factors of production are as follows:

- **Land or natural resources** refers to all those resources that occur in nature. These can be **utilised** in the production process to generate more elaborate products or consumed in their raw form. Examples of such resources include water, forests, minerals, land, animals, fruit and vegetables. It may seem obvious, but all production depends on natural resources.

Study tip

A note about language. In Economics, you will come across a lot of new terms. One term you will see often is 'utilise'. Some students assume this is just a fancy way of saying 'use'. Technically, in Economics, we talk about 'utilising' our resources or 'capacity utilisation' to signify that we mean they are being used for some benefit or being used effectively.

- **Labour** refers to the mental and physical effort by humans in the production process. For example, your teacher is currently exerting effort to provide you with an education and your doctor has to think deeply when presented with the challenges associated with diagnosing a patient. A construction worker may be involved in more physical effort than some other professions. In some cases people will become unemployed or leave the labour force (covered in Chapter 5) and may therefore be unable (or unwilling) to contribute their labour resource to the production process.

- **Capital** refers to those resources that have been made by combining labour and natural resources to create a more sophisticated input in the production process. Capital goods are made with the intention of making more goods and services in the future, and generally these will increase the efficiency with which natural resources can be converted into end-use products for consumption. Examples of physical capital include machinery, tools, factories, infrastructure and artificial intelligence.

In some texts you will see reference to a fourth type of resource (or factor of production) referred to as **entrepreneurship** or **enterprise**. This refers to the skills of those individuals who combine resources to produce goods and services. They take financial risks to establish enterprises and are extremely important to wealth creation for every nation. They not only include high profile entrepreneurs like Rupert Murdoch, Bill Gates or Mark Zuckerberg, but include the owners of every small or medium-sized business in existence. This type of scarce resource typically forms part of 'labour resources,' given that entrepreneurs are providing their expertise or skills to the business sector of the economy.

As you will recall, because we have limited resources and unlimited demands on those resources, all economic agents and all economies need to make choices. These choices can be guided by answering three key basic questions. Each economy around the world attempts to answer the **three basic economic questions**:

1. **What goods and services will be produced and in what quantities?**

   All economies must decide the types of goods and services that should be produced. For example, the Australian economy produces more education services than it does television sets. Economic theories have been developed to explain why this occurs. In a predominantly market-based economy (such as Australia), the question of what and how much to produce is assumed to be answered through the interaction of demand and supply of independent self-interested consumers and producers. What to produce will also be affected by government decision making. For example, the Australian Government has actively promoted the production and consumption of vaccines while also implementing policies that make it more difficult to produce and consume the drug 'ice'.

2. How will the goods and services be produced?

This key economic question looks at the methods of production that are employed to meet the needs and wants of society. Should the production method be more labour intensive or rely upon the use of simple or sophisticated technology? Over time, technological advances and knowledge about production methods leads to changes in the way goods and services are produced. Robots and artificial intelligence may undertake more and more tasks that have been traditionally performed by humans if the cost associated with doing so is relatively favourable. Some countries may also have an abundance of labour and lower wages which might encourage their manufacturers to employ more people in the production process. Generally speaking, these decisions will be made by businesses to maximise their profits (another key assumption). How to produce will therefore be heavily influenced by the costs and benefits associated with different production methods. In some cases, the government will influence how goods and services are produced. For example, governments often require that firms alter their production processes to meet occupational health and safety standards. Alternatively, governments will typically legislate for minimum wages to apply across the country. These types of interventions will tend to increase the cost of labour relative to capital, and influence how firms produce goods and services.

3. For whom will these goods and services be produced?

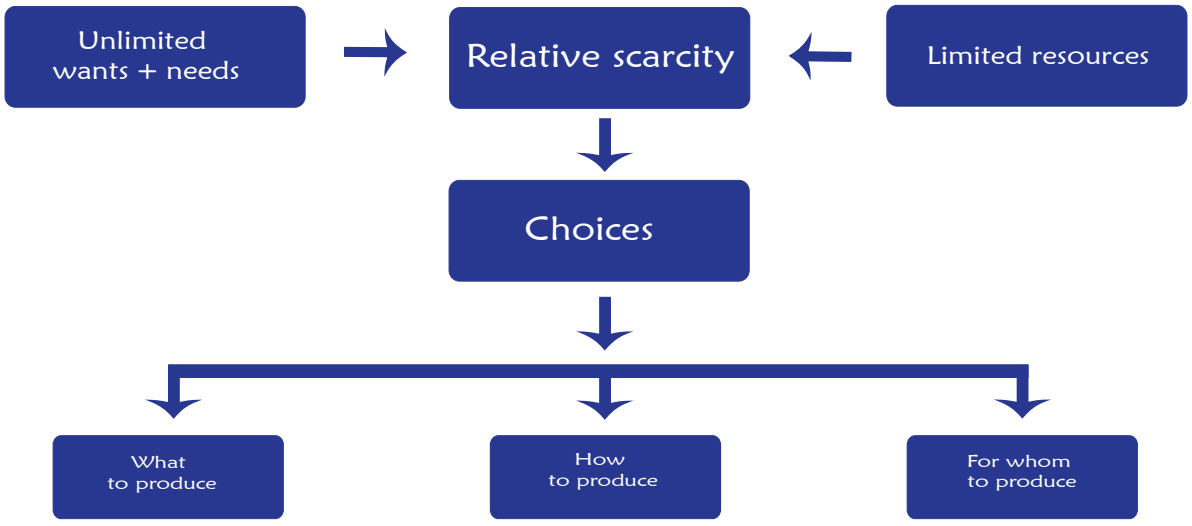
The final key question that all economies must consider is associated with the **distribution** of the benefits derived from production. Once the goods and services have been produced and made available for consumers, how does an economy decide who gets to enjoy them? Should the decision be based on the ability to pay or should need or social standing be a relevant determinant? The approach taken by economies when answering this question is the cause of much debate, and like many areas of economics there is not a definitive solution that will satisfy all relevant economic agents. In Australia, this question is largely answered based on who can afford to buy what is produced (which is affected by the value of their economic contribution to the production process). In most countries (and in varying degrees), the government will redistribute incomes (via taxes and transfers) to alter the access to goods and services as well as provide some essential items at reduced or zero prices.

Study tip

In the VCE 3/4 Economics course, we focus on the role of the Australian Federal Government and how it influences resource allocation. In reality, all levels of government (which includes State and Local governments) play an active role in re-allocating resources to areas considered to be in the national interest. They influence each of the key economic questions, which is further discussed in Activity 1b.

Figure 1.1 highlights the core economic problem faced by all economies, characterised by an imbalance between our unlimited needs and wants and limited resources which results in scarcity and the need to make key economic decisions about how resources will be allocated. Box 1.2 refers to general options available to countries when deciding which economic system will deliver the best outcome. For further discussion on how the Australian economy attempts to answer these three key economic questions, refer to Activity 1b.

Figure 1.1
Relative scarcity and choices



Box 1.2 Different systems used to allocate resources

Market capitalism

A market is any place that allows buyers and sellers to interact and exchange goods and services. This interaction and exchange may or may not take place in a physical space. A market system is therefore one that allocates resources based on the buying and selling decisions of consumers and producers. Prices give signals, which influence the behaviour of these buyers and sellers. Capitalism refers to an economic system where the majority of productive resources are owned by private individuals and firms. Capitalists will therefore use their assets to generate revenue which motivates them to provide the goods and services that are demanded.

Planned Socialism

A completely different type of economic system is one in which the government is primarily responsible for resource allocation. Governments may make long-term and short-term plans about what to produce, how to produce it and who receives the production after it is produced. This is referred to as a planned economy. Socialism indicates that the majority of productive assets are state owned (owned by the people of the country collectively) and therefore no one can benefit excessively from producing goods and services.

Planned Capitalism

An unusual economic system may evolve whereby the government directs the private owners of productive assets to produce certain goods and services. Therefore the output of the country is planned. This has been used by countries during war time when the owners of factors of production are directed to the production of goods and services that are needed for defence. In this system, the ownership of factors of production remains with private individuals, and so it continues to be called a form of capitalism.

Market Socialism

Under this system the government owns most of the resources (socialism) but markets determine what goods and services are ultimately produced (market system). For example, the businesses may be owned by the government but their operations would be left to independently appointed management who would try to maximise profits based on what consumers wanted most.

Review Questions 1.1

1. **Explain why Economics is often referred to as a social science. How might this affect the conclusions made by economic theorists?**
2. **Define the term relative scarcity. Explain why this is such an important concept when studying Economics.**
3. **Discuss the concept of relative scarcity with respect to the time you have available to undertake all of the activities you want to complete today.**
4. **Distinguish microeconomics from macroeconomics.**
5. **Define 'factors of production' and explain why economists often refer to resources as 'factors of production'.**
6. **Identify the three essential economic questions that each economy seeks to answer. Using Australia as an example, explain how the economy attempts to answer them.**
7. **With reference to at least two types of economic systems, explain how an economy could answer the economic question what to produce.**
8. **Explain how, in a market capitalist economy, firms might answer the question how to produce.**
9. **Briefly identify and discuss possible reasons why resources might be allocated unequally in a country like Australia.**

Activity 1b: Relative scarcity and resource allocation

Each country around the world is faced with a limited amount of resources. In some countries, there is a lack of natural resources such as water or fertile land, whilst other countries may suffer from a lack of skilled workers in a specific area. Each country, including Australia, faces the problem of scarcity because these resources, even when utilised in their most efficient manner, are not extensive enough to meet all of the needs and wants of the population (especially when economists assume that people have infinite needs and wants). Even though most Australians are able to satisfy their basic human needs, the infinite wants of the population means that key economic decisions must be made.

The problem of scarcity requires all economies to make choices about **resource allocation**. Resource allocation refers to the way the key factors of production (land, labour and capital) are assigned to different areas of production. The first aspect of the resource allocation decision that a country must make is what to produce. The country needs to decide how much food to produce, how many educational and medical services to provide and some resources will also need to be allocated towards weapons and cigarettes. The relative lack of resources will mean that choices need to be made and a decision to allocate resources to the production of food (for example, land that is used to grow the food) will mean that these resources are not necessarily available to grow an alternative crop such as tobacco. In a country like Australia which relies heavily on the market to allocate scarce resources, what to produce is heavily influenced by the buying decisions of consumers. The producers will respond to buying decisions of consumers and so scarce resources will be used to make those goods and services that consumers want most. There is some production, however, that governments might discourage. They may prohibit certain goods or impose taxes (on consumption or production) to make them more expensive. This means that less of our scarce resources will be used to make these products. Alternatively, they could encourage the production and consumption of some products that they fear might be under-provided in a free market. They could do this by offering monetary incentives to produce (or consume) the products, or governments might provide the products to the market themselves.

Economies must also decide how to produce the goods and services using the available resources. Each good or service will require resources and the producers need to choose how much of each resource is needed and how they can be best combined. In some cases, the production method may be more **labour intensive** (a large workforce is needed to produce the goods or services) or **capital intensive** (production requires investment in a large amount of key assets such as plant and equipment). For example, the hospitality industry is relatively more labour intensive than the car manufacturing industry. An economy with a forward-looking government may be subject to intervention that restricts certain methods of production (because it causes harm to the environment now and/or in the future). For example, in Australia, shop buildings cannot be built from asbestos.

All goods and services produced will have an end-user. How do economies distribute the goods and services that are produced? Which is essentially asking - who gets to consume the resources available to us? All economies need to answer key questions such as should everyone get a fair share of the nation's resources? or should access to key resources that improve opportunity be available to all? This is often associated with the issue of income distribution, because access to goods and services is generally associated with purchasing power, which is intrinsically linked to a person or household's total income.

Whenever these questions are answered, the economy is essentially making a decision about resource allocation. Over time, some products will be produced in greater quantities whilst others will be reduced. This involves a **reallocation of resources** because some factors of production such as labour will no longer be required to produce certain goods (such as cigarettes because fewer people smoke today compared to 20 years ago) and more labour may be allocated towards the production of others (such as hemp products which were recently legalised for human consumption in Australia).

As you progress through this book, it is likely that you will come across these questions time and time again. The key economic problem is relevant for most of the topics that will be covered and you will want to reflect on each transaction in which you are personally involved, so that you might ask yourself the key economic questions; why have scarce resources been used to produce this good, how was it produced and why am I going to ultimately have these resources allocated to me?

Questions

1. **Explain why all countries face the problem of relative scarcity.**
2. **What is meant by the term 'resource allocation'? What is the link between the concepts of resource allocation and relative scarcity?**
3. **Identify and explain one example where the allocation of resources in Australia has changed over the last 10 years. Provide at least one reason why resources may have been reallocated in this manner.**
4. **The question of 'what to produce' can be influenced directly or indirectly by the government. Identify one area of production where the government influences the allocation of resources such that more of this type of good or service is produced. Explain how it might achieve this goal.**
5. **Explain why the government might intervene in the free market to influence the question of 'how to produce.' Give examples from Australia's experience.**
6. **Explain one reason why the government may want to intervene to reallocate income, such that some people have access to more resources and others receive less, compared to what may occur in a free, unregulated market.**

Activity 1c: From abundance to scarcity

Economics is about scarcity. The opposite of scarcity is abundance. Some resources are very abundant, such as the oxygen you breathe each day. It is becoming increasingly apparent that certain resources, that were once abundant for humanity (and other sources of life on the planet) are becoming increasingly scarce. This reflects the important inclusion of the word 'relative' when we look at this problem. Each year more goods and services are produced and consumed on the planet, but some of the key resources available are actually shrinking. For example, each time that fossil fuel is burned, we leave less for future generations to use as a source of energy. At the same time, as the incomes of people around the world increase, their desire for consumer goods such as automobiles increases, creating extra demand for the scarce resources such as key minerals. The increasing scarcity of the resource results in a higher price which, in turn, may alter how the resource is used in future time periods. This will be discussed in more detail in Chapter 2.

David Attenborough, a world-renowned naturalist and TV presenter, suggests that humans are a 'plague upon the planet'. He believes that population growth poses a significant challenge for humanity and that if nothing is done to address the problem then we will be unable to feed and house ourselves. He also suggests that if we don't make changes to the world's population growth then nature will impose limits on the number of people who can actually live and thrive on the planet.

These statements highlight how humans may have once lived with relative abundance. They had available to them as much as they needed. As societies evolved and consumerism became a key element of society, the demand on the world's resources increased exponentially. The desire for more goods and services than one needed increased but the resources available did not (although it is the case that many discoveries had not yet been made).

Economists must therefore respond to an increasing number of challenges as the world moves from abundance to scarcity. For example, it may be difficult to see that there is a scarcity of water, especially if you live in an area where rainfall is abundant. You can also turn on the tap and get as much water as you need for a very small price. The United Nations estimates that in the next 30 to 40 years, more than a quarter of the world's population could have insufficient water. More than 95% of the earth's water is saltwater and much of the fresh water remaining is frozen. Many climate change scientists have predicted that higher temperatures could result in less drinkable water as sea levels rise, causing more freshwater sources to be affected by saltwater. This could also be combined with more erratic weather patterns that result in more severe droughts.

It is therefore reasonable to expect that water will become scarcer over time and that societies will need to implement new ways to manage resources when rainfall becomes more sporadic (and at times, scarce). The government may have to change laws relating to water use (such as the restrictions that have been implemented in different parts of Australia during periods of low rainfall) and allocate more resources to water collection from different sources (such as subsidising water tanks and the building of a desalination plant).

There are a large number of examples that one could draw upon to show how the degree of relative scarcity has changed over time. The mismanagement of oceans has reduced the abundance of clean water and marine life which can sustain populations; the increased number of cars on the road has increased the scarcity of clean air to breathe such that people are increasingly suffering from respiratory conditions; land was once abundant and it was relatively easy to find places to grow food and seek shelter, but growing populations continue to result in increased scarcity of this key resource.

Try to observe the world around you to gain a deeper perspective on the concept of relative scarcity. Will the problem continue to worsen as populations around the world grow (as predicted), as climate change alters weather patterns, and we demand more goods and services to meet our needs and wants?

Sir David Attenborough on Overpopulation - https://www.youtube.com/watch?v=JRPmLWYbUqA
and for information about water scarcity around the world visit http://www.un.org/waterforlifedecade/scarcity.shtml

Questions

1. **Distinguish between the concepts of relative scarcity and abundance.**
2. **Identify and explain a key resource that does not suffer from the problem of relative scarcity.**
3. **Watch the David Attenborough video on overpopulation and discuss how the growth of the human population has affected the economic problem of relative scarcity.**
4. **Explain how governments around the world might respond to the increasing level of scarcity of a key resource such as water.**
5. **Research and discuss one other resource that might be faced with increased levels of scarcity as the human population continues to grow and human desires continue to expand.**

1.4 Choice and opportunity cost

If scarcity is described as the basic economic problem, then it is evident that not every need and want of humans can be met. The problem of scarcity has not yet been solved, even in the richest economies. The problem of scarcity creates a fundamental problem for all of humanity, often summarised in the following quote:

There is no such thing as a free lunch

While it may be tempting to argue that the above quote is in fact accurate, one must first gain an understanding of how economists measure and define the concept of 'cost'. Economists argue that every decision that humans make involves a cost (this relates to Mankiw's first and second principles). By devoting this minute to writing these words, the author is intrinsically sacrificing their ability to allocate their time to their second-best alternative. While the authors see the writing of this book as their best choice, they also acknowledge that there is a cost in doing so (which is how economists tend to think).

Whenever you are faced with a choice, there may be a myriad of alternatives available to you. Consider the allocation of your time on Friday night. You may be able to go to the movies with your friends, chat with a potential love interest online, eat dinner with your parents or sit in your room and learn more about the interesting theories developed by economists on human behaviour. Once you have made a choice, you have essentially foregone (given up) the ability to undertake the alternatives. Economists are generally only interested in the 2nd best alternative which is seen as the **opportunity cost.** It can be defined as the value of the next best alternative foregone whenever a choice is made.

Study tip

When students are asked about the opportunity cost of a particular decision they sometimes create a long list of all the possible alternatives. Remember that the opportunity cost is only referring to the value of the next best alternative and there is no need to mention the 3rd, 4th or subsequent choices as part of your answer. It is also important to remember that the value of the choice foregone is not the choice itself, but rather the benefit you would have gained by making that choice (instead of the choice you made.)

To make this a little clearer, consider your decision to read this chapter, in preparation for your first assessment task at school. Assume that you have wisely decided that this is the 'best' use of your time. While you might not agree, the fact that you are actually reading these words is evidence that you have made this your first choice. In doing so, you may have sacrificed many alternatives such as those mentioned in the previous paragraphs. Let's assume that you are reading this book late into the evening so your second best choice may be getting a good night's sleep so that you can concentrate better in class tomorrow. By choosing to read the book, you may in fact be foregoing the benefits that are associated with deep restorative sleep. This is your opportunity cost –the **value** of what you have given up in making your choice.

Opportunity cost can be measured in a number of ways. Let's consider the decision to buy a new iPhone (even though your old one is still working). A person with no background in Economics may think that the cost of the purchase is the price paid. A person who has studied Economics, however, will soon learn that the opportunity cost has not been fully considered in this buying decision. The person who foregoes $1500 to purchase the new phone may no longer be able to afford to take an overseas holiday. The benefits of this holiday is the real cost of the purchase, if it was the next best alternative for the person in question. If the person has a mortgage, then the opportunity cost might be that they now have to pay more interest on their home loan and they may have to work for more years to pay it off. It is important to remember that there can only be one opportunity cost, and that is the value of the next best alternative, which has been foregone.

1.5 The production possibility frontier

One way of illustrating the concept of opportunity cost and to show how an economy might allocate scarce resources, is to use a simple model of the economy called the **production possibility diagram** (or production possibility frontier or curve – PPF or PPC.) Given that an economy must decide what goods and service it will produce to satisfy its citizens' needs and wants, it would be reasonable to assume that there are an excessively large number of combinations of goods and services that could be produced in a nation. The combination that is ultimately chosen can be reflected using this simplified model. Whenever a combination of goods/services is produced using the available resources, it follows that another combination will no longer be achievable (i.e. there will be an opportunity cost).

Generally speaking, a production possibility diagram looks at the **trade-off** between producing two particular goods or services. For example, we could assume that an economy could devote all of its resources to the production of goods or services (or a combination of both goods and services). The model could be simplified further to show the decision to produce computers or guitars (or any other conceivable alternatives). The PPF could also be used to illustrate other trade-offs, such as how a person might allocate their hours each day. The alternatives could be hours spent working versus the hours spent engaged in leisure activities. Economists might also use the model to illustrate how an economy allocates scarce resources to the production of consumer goods and how this affects the production of capital goods (that will be used to make consumer goods in the future).

The simplest PPF model assumes that an economy can produce only two goods. It is also assumed that the economy has (initially at least) a fixed quantity of resources (land, labour and capital) and that these resources are being utilised in the most efficient manner possible. Table 1.2 below illustrates a possible combination of computers and guitars that could be produced using the available resources in the most efficient manner.

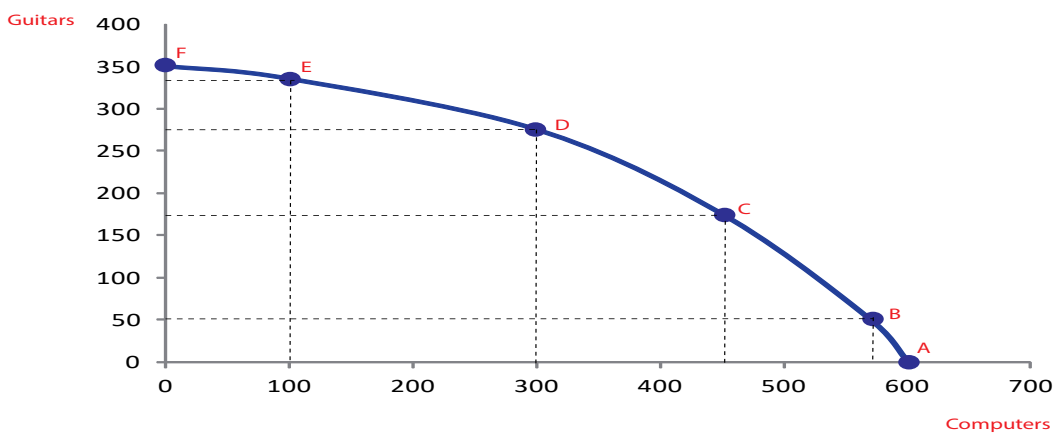
Table 1.2

Production combinations	Production of computers (units per year - million)	Production of guitars (units per year - million)
A	600	0
B	570	50
C	450	175
D	300	275
E	100	335
F	0	350

If the data above is transferred to a Production Possibility Frontier (PPF), then it would appear like Figure 1.2, with the production of guitars on one axis (in this case the y-axis) and production of computers on the other axis (x-axis).

The economy has a number of choices when it comes to allocating resources. The economy can choose, for example, to allocate all of its scarce resources to the production of computers (at which point they would produce 600 million computers and no guitars). If they were able to achieve this point along the PPF then it is said that they have efficiently allocated their resources (using one measure of efficiency called technical efficiency which will be discussed in Section 1.6).

Figure 1.2: Production Possibility Frontier



The hypothetical economy could choose any of the points along the PPF and in doing so there would always be trade-offs. Once a point on the PPF has been reached, the only way to move to another point is to give something up. For example, the economy could move from point A - where it was making only computers and the total output was therefore 600 computers- to point C - where it is now making 175 guitars, but only 450 computers. In making this shift – a reallocation of resources – the economy will gain 175 guitars, but in doing so it will no longer be able to produce 150 of the computers. This loss of 150 computers is the opportunity cost of producing the first 175 guitars. By producing more guitars and fewer computers, the economy has effectively changed its allocation of resources (there is a reallocation of resources because more land, labour and capital will be devoted to the production of guitars and less will be devoted to the production of computers when compared to point A). . This could be due to a number of factors many of which will be discussed in Chapter 2. In a **market capitalist economy**, the combination of guitars and computers that is chosen will usually be determined through the interaction of demand and supply and therefore be heavily influenced by the needs and wants of consumers and the supply conditions that prevail in the market.

Important information to note about this PPF:

- A movement along the PPF to the right and downward means a country is allocating more to the production of computers and less to the production of guitars. To increase production of computers the economy must **sacrifice** the production of guitars. The opportunity cost of producing extra computers is therefore measured in terms of the lost production of guitars.
- Production points outside the PPF are not achievable today. This highlights the economic problem of relative scarcity and the need for choice. The economy simply does not have enough resources to reach a production point outside its PPF, since its PPF represents the maximum possible output using all its resources efficiently. However, an economy could manage to consume at a point outside its PPF if it chose to specialise in the production of one good, such as guitars and traded some of these in exchange for computers, which may be produced cheaper/more efficiently in another country. The economy may also choose to consume more than their economy is capable of producing through **external borrowing**, but this may be associated with lower consumption levels in the future. These options will be discussed further in Chapter 7.
- Over time, a country may expand its **productive capacity** and therefore the PPF will shift out and to the right. This would indicate that there can be an increase in output of *both* computers and guitars. This could be achieved if there are discoveries or availability of new resources that can be utilised in the production process (such as land, labour or capital), or people develop more efficient production techniques, whereby more output can be generated from the existing resources (the inputs). This will be discussed in Chapter 4.
- Points inside the current PPF indicate that the economy is not allocating its resources efficiently. It may also mean that some resources are either **underemployed** or **unemployed** (see Chapter 5) as the maximum potential production levels are not being attained.

In reality, no economy is likely to produce at a point on its PPF because all economies have some unemployment and labour (and other factors of production) will not always be utilised in the most efficient manner. The PPF can also be used to discuss the concept of efficiency and the different ways that economists can measure the efficiency of resource allocation. This is covered in Section 1.6 below.

Review Questions 1.2

1. Define the term opportunity cost and explain how it is intrinsically linked to the concept of relative scarcity.
2. Consider the decision to purchase a new car. Explain how an economist would include the concept of opportunity cost into their decision making process.
3. Think of a critical choice you have made in the last week and describe the opportunity cost associated with making this decision.
4. Explain how a production possibility diagram demonstrates the trade-off between producing two products.
5. Refer to Figure 1.2, which highlights the production possibilities for a small hypothetical economy.
    a. If the economy moves from point A to point B, they can produce 50 guitars that were not previously possible. What is the opportunity cost of this decision?
    b. Describe the economic problem that might result if there was only demand for 100 computers and 200 guitars.
    c. An economy seeks to achieve the most efficient allocation of resources. In your own words, describe what this would mean for the hypothetical economy shown in Figure 1.2.
    d. If the people valued guitars and computers equally, what would be the most efficient allocation of resources for this economy?
    e. If the consumers of the economy wished to consume 500 computers and 200 guitars, how could the economy consume this amount? What problem might this create?

1.6 The nature and types of economic efficiency

This first chapter has focused on the nature of the economic problem and how economies attempt to answer the three key economic questions of *what to produce, how to produce and for whom to produce*. Ultimately the economy will need to allocate its scarce resources to produce the goods and services that best meet the needs and wants of its citizens. The **allocation of resources** that is achieved is therefore a discussion of where land, labour and capital are utilised in the production process and which particular combination of goods and services are produced by the economy. Does the economy produce more guitars or computers? Is more land allocated to the farming of beef or soybeans? Do more people work in medicine or the farming of the land? These are key questions for any economy and economists are also interested how efficiently resources are allocated. They want to know not only if production is being maximised, but also whether efforts are being made to maximise society's wellbeing. Is the economy able to respond quickly to changing preferences and circumstances and does an emphasis on meeting the needs and wants of current generations come at the expense of future generations? Each of these questions can be evaluated by looking at the different measures of **efficiency** that economists frequently use. When learning Economics, it is important to remember that in this subject 'efficiency' has a specific meaning, and it is important to learn and correctly use the different definitions of efficiency covered in the course.

Allocative efficiency

There are an extensive number of ways that resources could be allocated within an economy and around the world. A small change in consumer preferences or technology or the availability of resources will have implications for the way resources are allocated. The **most efficient allocation of resources** will be one that is able to maximise the needs and wants of society. If resources are allocated efficiently, the goods and services that people gain highest level of utility from will be produced in the best possible way i.e. the right goods and services will be produced. Goods and services will be made in the right quantities and will generally go to those people who value them the most.

When allocative efficiency occurs, no resources will be wasted, and it will be impossible to make someone better off without making someone else worse off. From a production point of view, the cost of producing a given output is minimised (or maximising the output from a given quantity of inputs) and from a consumption point of view, the goods and services produced by society will provide the highest level of 'collective' satisfaction.

While this ideal may never be achieved in reality, it is certainly possible to make assessments about whether resources are being allocated more efficiently over time. A reduction in waste or higher living standards for a society may be some of the indicators used to assess whether a society is allocating its resources more efficiently. It may also occur when markets clear and there is no shortages or surpluses of certain goods or services. With reference to Figure 1.2 earlier, only one point on the PPF will be considered **allocatively efficient**. This will occur when the allocation of resources chosen maximises society's wellbeing. In a market economy this will be determined through the interaction of demand and supply (which will be discussed in Chapter 2). Prices, which are assumed to be a measure of the additional benefits that consumers generate from each unit of consumption, provide producers with a valuable signal that can help determine where they allocate their scarce resources.

Technical (or productive) efficiency

This type of efficiency is said to occur when it is not possible to increase output without increasing inputs (resources). Therefore the most **technically efficient** point of production occurs where productivity is at a maximum and where average costs are at a minimum. Technical efficiency could therefore be improved if workers are able to produce more goods or services per hour worked (an increase in labour productivity). With reference to Figure 1.2, it is assumed that all points on the PPF are technically efficient because all resources are fully employed and being utilised efficiently.

Dynamic efficiency

This refers to how quickly an economy can reallocate resources to achieve allocative efficiency or how quickly an economic entity can reallocate its resources from one activity to another. This type of efficiency therefore relates to the speed of adjustment and Economists are interested in how quickly and how easily resources can be reallocated so that needs and wants can be maximised in any economy. With reference to the PPF, a dynamically efficient market would be one where the movement of resources from the production of guitars to computers could occur quickly if the demand for computers were to increase for some reason.

Study tip

When discussing the impact on efficiency of a change in economic conditions or government policy, try to focus on one or two of the types of efficiency discussed here.

Because prices are often seen as **'sticky'** (i.e. slow to adjust) it takes some time before resources are reallocated to where they are best able to meet the needs and wants of society. For example, some markets may be dynamically inefficient because it is not possible to quickly reallocate resources. If there was a week of horrible weather that resulted in fewer people attending the movies, it would be very difficult for the movie theatre operators to change how they allocate their cinemas. They may still need to show the movie even if the cinema is half empty, which is not maximising output using available inputs.

Successive Federal Governments from both sides of politics have encouraged flexibility in a range of markets to promote dynamic efficiency, for, by example, deregulating markets or removing subsidies that distort the price signals that alter the allocation of resources.

Inter-temporal efficiency

This type of efficiency focuses on balancing the allocation of resources between different time periods. Economic agents are increasingly concerned about how resources are managed not only now but whether they will be available to meet future needs and wants. If resources are consumed in excessive proportions by current generations then future generations may suffer a relative decrease in their living standards (therefore sacrificing allocative efficiency in the future). Alteration of the earth's delicate ecosystem due to our current actions, could also create greater problems associated with relative scarcity in the future. This may mean that a cost is being imposed on future generations and one could argue that this is not inter-temporally efficient.

An alternative way to look at inter-temporal efficiency is to look at the balance between the level of consumption and savings over a period of time. If inadequate savings are available in the current period, then investment opportunities may be missed. Current investment translates into future consumption so it is important for a country's long-term economic prosperity to maintain adequate levels of investment. If economic agents consume excessively in the current period by going into debt, then they may have to sacrifice future consumption because an increasing portion of their income will be devoted to servicing and paying off previously accumulated debt. Activity 1e looks at how food decisions made in the current period might affect the efficiency of resource allocation between current and future time periods.

There is often a complementary relationship between each of the types of efficiency. For example, if the economy is able to generate more goods and services at a lower cost, then it is likely that technical efficiency will be achieved. By producing more at the lowest possible cost, more goods and services can be attained which is likely to maximise society's needs and wants (i.e. improve allocative efficiency). A society that is dynamically efficient is also more likely to achieve allocative efficiency. When market conditions change, businesses need to respond quickly and if they are able to do so then they are more likely to maximise the needs and wants of society.

Achieving one type of efficiency, however, does not guarantee that another type will also be achieved. For example, an economy could be technically efficient by reducing costs and boosting productivity. But if this involves producing goods and services that nobody wants, then it will not be seen as allocatively efficient. Similarly a decision by the Federal Government to subsidise solar panels will help to promote inter-temporal efficiency because it will reduce greenhouse gases. Experts have agreed, however, that it is probably one of the most inefficient ways for an economy to reduce carbon emissions. In this respect, the improvement in inter-temporal efficiency is not matched by an improvement in allocative efficiency.

Activity 1d: Types of efficiency

Examine the scenarios described in the left hand column. In the right hand columns, identify a kind of efficiency that is likely to be affected and identify if there is likely to be an improvement (↑)or a worsening (↓) of efficiency. In some cases, more than type of efficiency will apply and you should be prepared to justify your choice(s).

Scenario	Efficiency type(s)	↑ or ↓
The government introduces a tax on sugary drinks		
A bank hires robots to serve its customers		
The government rewards those saving for a first home with bonus interest		
A power blackout caused by a storm results in the closure of many businesses		
A decrease in the demand for tobacco products causes a reallocation of farmland to the growing of chickens		
The Victorian Government builds a desalination plant to deal with the expected droughts that will occur in the future		
The Victorian Government bans commercial fishing in Port Phillip Bay		
The Government forces firms to observe occupational health and safety laws.		
The Government reduces the Higher Education Contribution Scheme (HECS) on all university courses		
The decreased costs of the internet make it easier to gather information about the prices and qualities of a wide range of products.		

Activity 1e: A link between food choices and efficiency

Much of the focus of Chapter 1 has been on the concepts of relative scarcity and choices. As we have seen, each choice we make usually has a number of consequences. Before any choice is made, economists might (unrealistically assume) that all of the consequences (including the opportunity cost) will be rationally considered. But how do our food choices affect our ability to achieve an efficient allocation of resources? To answer this question, we might want to look at some of the different ways we measure efficiency and find a link between each of these and our food choices.

To achieve allocative efficiency, it is assumed that the combination of goods and services that are produced and consumed will lead to a maximisation of society's wellbeing. Economists generally assume that the consumer knows what is best for him or herself and therefore economists typically avoid making value judgements on the choices that are made. In a broad sense, our wellbeing is influenced by the level of utility (or satisfaction) that we gain from the consumption of the good in question. We may, for example, gain immense pleasure from eating a bowl of ice cream, but this pleasure may soon turn to a feeling of unease. The economist might assume that the product has been made available because the demand is there, and it may have been sold in the right quantity to the people who wanted it the most. A deeper look at the concept of allocative efficiency might, however, suggest that we need to look beyond such a simplistic view of human needs and wants. The decision to consume the ice-cream may have been made without sufficient consideration of the costs and benefits and may not, in fact, be the most rational choice available to the consumer. If he/she had reflected on their decision over a longer time frame, then he/she may have been able to make a better decision that could have enhanced their wellbeing and led to a more allocatively efficient outcome. Ask yourself next time you are considering whether to eat a sugary treat whether you are maximising your wellbeing in the current period and how relevant your future wellbeing is factored into the decision making process.

While there is much debate about what is the most appropriate diet for humanity, there is some growing consensus that certain foods reduce human performance (including brain performance). If a consumer decides (especially over a period of time) to eat the 'wrong' types of foods then his/her cognitive function might decline and the number of sick days that he/she needs to take might increase. This will decrease his/her productivity in the workplace and result in a decline in technical efficiency over time, higher prices and fewer needs and wants being met (and hence the decline in technical efficiency is also associated with a decline in allocative efficiency).

The current consumption of the 'wrong' food could also be associated with a decline in inter-temporal efficiency. A decision to eat an excessive amount of sugar in the current period, for example, could be associated with an increase in the incidence of heart disease, diabetes and obesity in the future. This might impose a cost on future generations and governments, because they will need to spend more on medical expenses for the people who become unwell. Is it therefore inter-temporally inefficient for the consumer to focus on the consumption of those foods that provide the most immediate gratification, if, in the future, it is associated with a decline in human performance and increasing medical costs (which will be partially borne by all of society).

Questions

1. **How does allocative efficiency differ from technical efficiency?**
2. **With reference to the consumption of food, explain why choices made by individuals may lead to a decrease in technical efficiency. What food choices might enhance technical efficiency?**
3. **The definition of allocative efficiency makes reference to the idea of 'maximising society's wellbeing'. Evaluate whether a free market society will arrive at an efficient allocation of resources when it comes to food consumption. (Note: to 'evaluate' means to weigh up arguments for and against the proposition.)**
4. **With reference to a particular type of food, explain how food choices in the current period might lead to a decline in inter-temporal efficiency.**
5. **Based on your own experience and your knowledge of efficiency, discuss whether the government should intervene in the market for food to influence the choices made by consumers. (This issue will be covered again in Chapter 3 and this will give you the opportunity to look back at your answer and modify/improve it).**

Activity 1f: Should you go to university?

As a Year 11/12 student, you have probably noticed one of the many advertisements generated by the large number of universities in operation in Australia. In many cases, these universities promise their prospective students many benefits. The advertisements appeal to our inherent desire to achieve our human potential and the multitude of career opportunities that are available upon graduation.

Each year academics and journalists repeatedly ask 'Is going to university really worth it?' In 1971, only 2% of the population had a tertiary qualification, compared to nearly 40% today. With increasing numbers of people attending university and graduating (especially since the deregulation of the industry has led to an increase in the number of places available), there are potential benefits and costs that might be considered at the individual level and from the perspective of the whole economy.

One of the key attractions associated with a university education is that graduates receive, on average, higher salaries over their lifetime. For example, degrees in Medicine, Dentistry and Economics are usually associated with future employment in professions where the average income is significantly higher than most. Studies conducted by The Good Education Group have consistently shown that graduate salaries are well above the median for those without degrees and the scope for promotion and pay rises is enhanced. Another potential 'non-tangible' benefit is the personal fulfillment that comes from a job that is challenging and well-regarded by most in society. Time spent at university may also lead to the development of meaningful friendships and memorable experiences. The qualification could also reduce future anxiety because work security is likely to be higher.

It is rare, however, for university graduates to discuss all of the 'costs' that are associated with the extra years of learning. While at university, most students face very low upfront costs. The price of tuition can be deferred until the person starts work because the government essentially lends the student the money (usually through the various HELP schemes). But there are other (opportunity) costs that might not be considered by all those engaged in higher education. Whilst studying, the student gives up the opportunity to engage in full-time paid employment. Over the course of a standard three-year degree, this will amount to thousands of dollars. There may also be other costs (which are harder to quantify) such as the stress associated with meeting university deadlines and facing subject material that is initially difficult to grasp. At the end of the degree, the student ends up with a debt that is well into the tens of thousands of dollars and needs to be paid back as soon as the graduate begins to earn an income of $45,000. Starting one's working life with a large debt may inhibit the ability to borrow for other major purchases such as a house.

Weighing up the costs and benefits in a rational manner may be difficult. There are no guarantees that the university qualification will lead to meaningful employment in one's chosen profession. For example, there are two trained teachers for every teaching job vacancy in NSW. How do you know whether you will achieve an above or below average salary in your chosen field and how does your degree actually help you to gain the necessary skills you need? What will happen to the relevance of certain professions as the use of artificial intelligence increases? There are so many unknowns, so it may be impossible to make a fully informed and rational decision.

There is also the potential problem of an inefficient allocation of resources. The government pays for part of the cost of university education but allows students to choose what they want to study (as long as they are able to meet the university criteria). This has, for example, led to an increase in the number of students graduating from law degrees, far outstripping the demand in the labour market. Late in his term as Prime Minister, Malcolm Turnbull stated that too many students were studying law, making reference to what he saw as skills learned that are not easily transferrable to other areas of production.

Looking at university education in a more holistic manner may also help to determine how resources are allocated in this area. Society as a whole is likely to benefit from increased university education. Workers are likely to be more productive as their education may help to develop problem solving skills and lead to significant innovations that boost the nation's productivity. It may also allow future graduates to be multi-skilled so that they can be flexible enough to respond to changing demand and supply conditions in the labour market (thereby promoting dynamic efficiency). As you will discover in Chapter 7, Australia will need to be internationally competitive, if it is to continue to boost living standards over time, and a well-educated labour force would be well equipped to meet the challenges in this area.

Questions

1. **Define the term opportunity cost, with reference to a relevant example.**
2. **Identify and explain the opportunity costs that might be associated with a university education.**
3. **Create a T-table that identifies the potential cost and benefits associated with a university education (be as creative as you would like).**
4. **Evaluate the view that spending on certain areas of education may be seen as an inefficient allocation of resources.**
5. **Explain how spending on tertiary education may be associated with an increase in technical efficiency.**
6. **Explain how spending on tertiary education may be associated with an increase in dynamic efficiency.**

Review Questions 1.3

1. Explain why governments seek to maximise the efficiency of resource allocation.
2. Distinguish technical efficiency from allocative efficiency.
3. Distinguish dynamic efficiency from inter-temporal efficiency.
4. Explain why a more technically efficient allocation of resources can boost allocative efficiency.
5. Explain why a more technically efficient allocation of resources may in some instances not lead to the achievement of allocative efficiency.
6. Explain why every point on the PPF is considered technically efficient, but only one point on the PPF is considered allocatively efficient.
7. Explain, with reference to an example, why an increase in allocative efficiency might be associated with a decline in inter-temporal efficiency.

Multiple choice review questions

1. Economies around the world all tend to experience relative scarcity because:

a) The population is ageing
b) Needs and wants of consumers are shrinking as people choose to spend on experiences rather than goods
c) The planet is getting smaller
d) Needs and wants are assumed to be infinite but the resources available are finite

2. Resources are used to make goods and services in Australia. Which goods and services are allocated the most resources is based on

a) The buying decisions of consumers in the market
b) Where the government believes they can generate the most value
c) Where the government allows businesses to produce
d) A combination of market forces and government intervention

3. Which of the following statements would be inconsistent with Mankiw's 10 principles of economics?

a) Donald Trump's decision to protect America's steel industry will lead to an increase in living standards around the world
b) When a person decides to purchase a new stereo, she gives up the opportunity to earn interest in the bank
c) A government decision to print more money will usually be associated with an increase in average prices across the economy
d) The Australian economy relies heavily upon the market to determine how scarce resources are allocated

4. When a resource becomes increasingly scarce, it is likely that

a) firms may seek alternative factors of production
b) the price of the resource might increase
c) governments might intervene in the market to reduce consumption of the resource
d) All of the above

5. Which of the following might be considered a microeconomic investigation?

a) The reasons for an increase in the average prices of a large range of goods and services purchased by households
b) The factors that have influenced the government to increase the income tax rates
c) An analysis of the costs associated with producing yellow chairs
d) A world-wide analysis of the economic decisions made by Donald Trump

6. The opportunity cost associated with building the new Ring Road extension so that it links to the Eastern Freeway is:

a) An increase in tax rates
b) An increase in pollution from the additional traffic created
c) The government can no longer fund the building of the East-West link
d) The Government loses the next election

7. The opportunity cost associated with buying a new computer is likely to increase if:
a) The interest rate on bank deposits increase
b) The computer shop has a sale
c) There is a decrease in the price of electricity
d) Facebook adds new addictive features

8. A country may experience a shift of its production possibility frontier to the right if:
a) There is an increase in the number of skilled immigrants entering the country
b) There is a decrease in demand caused by a recession
c) The country experiences a drought for two years
d) A larger proportion of the population start to enter their retirement years

For question 9, 10 and 11, refer to the following production possibilities for a hypothetical economy producing only apples and beef (million units per year).

Production combinations	Production of beef (units per year - million)	Production of apples (units per year - million)
A	1 000	0
B	800	1 000
C	600	1 300
D	300	1 700
E	50	1 900
F	0	2 000

9. If the people of this country value apples half as much as beef, then the optimal allocation of resources is:
a) Combination A
b) Combination B
c) Combination C
d) Combination D

10. If the country decides to increase its production of apples from 1000m units to 1900m units, then the opportunity cost is
a) the production of 750m units of beef
b) the production of 800m units of beef
c) the production of 50m units of beef
d) the production of 1000m units of beef

11. If the country experiences a drought that results in a fall in production to 600m units of beef and 100m apples, then this may create the economic problem of:
a) dynamic inefficiency
b) unemployment
c) technical efficiency
d) environmental degradation

12. Tastes and preferences in an economy change such that people are more concerned about climate change and protecting the natural environment. A country that is dynamically efficient would
a) Continue to produce electricity using coal because it is cheaper
b) Invest in research and development to expedite the delivery of more efficient solar panels
c) Subsidise the cost of fossil fuels such as oil
d) Send manufacturing activities overseas

13. Inter-temporal efficiency may be improved if:
a) There is a tax imposed on sugar
b) There is a tax imposed on vitamin pills
c) There is tax imposed on solar panels
d) There is a tax imposed on apples

14. An increase in technical efficiency may be achieved if:
a) The price of education increases.
b) Artificial intelligence is integrated into the production process
c) New government regulations are introduced to increase compliance costs for business
d) The government provides subsidies to Australian firms who cannot compete with cheaper imports

15. An increase in the number of flexible workplace agreements is likely to
a) Increase inter-temporal efficiency
b) Increase dynamic and technical efficiency
c) Decrease allocative efficiency
d) Increase the use of capital in the production process

16. Which of the following is not one of the assumptions that economists make when constructing their models?
a) Economic agents are rational
b) Consumption of a good is associated with diminishing marginal utility
c) The relationship between two variables can be better determined by holding all other variables constant
d) Reallocating resources from one person to another will result in improved societal outcomes

17. An example of a capital resource on a buffalo farm is:
a) A buffalo
b) The grass needed to feed the buffalo
c) The farmer
d) The tractor

18. The government may cause a reallocation of resources towards the production and consumption of toys if
a) They increase the taxes charged on all toy manufacturers
b) They remove the GST on all books sold
c) Grant all families earning below $80,000 a family tax benefit increase
d) Impose a tax (tariff) on imported toys

19. A study of macroeconomics is likely to include:
a) A theory on the relationship between the price of apples and the demand for bananas
b) The degree to which consumers respond when the price of coffee increases
c) An analysis of the causes of unemployment
d) An evaluation of the effect of governments policy on the sales for cigarettes

20. The PPF for Australia is likely to shift to the left if:
a) There is a decrease in the world supply of beer
b) New technology is integrated into the production process across the economy
c) Immigration targets are reduced
d) The Government provides tax incentives to small businesses if they buy new equipment

Chapter summary

1. Economics is the study of choices; the factors that influence choice and the consequences of these choices for the individual and society.
2. Relative scarcity occurs because the demands on resources are assumed to be infinite but the earth can only provide limited resources to meet our needs and wants.
3. A need is a good or service that is essential for human survival.
4. A want is a good or service that is not necessary for survival, but which adds to the quality of one's life.
5. Economists distinguish between three main types of resources that can be used to produce goods and services to meet the needs and wants of the people on the planet – land or natural resources, labour and capital.
6. Land or natural resources are those inputs used in the production process that are acquired from the natural world and which may be used in a relatively unprocessed state or transformed into more elaborate inputs or products.
7. Labour resources represent the physical and mental effort of humans in the production process.
8. Capital resources combine a variety of natural resources and are developed by humans (labour) so that the production process is more efficient.
9. Microeconomics studies the behaviour of individual economic agents and markets, whereas macroeconomics studies issues that are related to the whole or larger parts of the economy.

10. Economists often disagree on a number of issues with regards to human behaviour and how economies will respond to different events and policies. A summary of the key principles that most economists agree with can be found in 'Mankiw's Principles' (Table 1.1).
11. All economies attempt to answer the three basic economic questions of what to produce, how to produce and for whom to produce.
12. The primary way that resources are allocated (and therefore how we answer the key economic questions) in the Australian economy, is via the market mechanism. This means that resources are used to make the goods and services that are most desirable for the end consumers.
13. Whenever a choice is made there is always a cost. The existence of trade-offs means that there will be an opportunity cost – the value of the next best alternative foregone.
14. A production possibility curve (frontier) is a simple economic diagram that models the choices available to citizens of an economy. It shows the combinations of two particular goods or services that could be produced using the available resources in the most efficient manner.
15. Opportunity cost can be illustrated using a production possibility frontier. Production of more of one of the goods involves the sacrifice of some of the other good because the resources are allocated from one area of production to another.
16. It is impossible for a country to produce at a point outside their PPF in the short term. Over time they may add to their resource pool through discoveries (which provides the nation with more land resources), improvements in the quality of resources, immigration (more labour resources), or find ways to use their resources more productively.
17. Any point inside the PPF represents an inefficient allocation of resources, as some resources will be idle. This will make it im-possible to achieve technical and hence allocative efficiency
18. A country can consume at a point outside its PPF through trade or by borrowing.
19. Allocative efficiency is achieved when resources are directed to those goods and services that provide society with the highest end-use and maximises the benefit to society.
20. Technical efficiency occurs when the society is able to produce the largest volume of goods and services from their given factors of production. Technical efficiency is a prerequisite for allocative efficiency but does not guarantee that it will be achieved.
21. Dynamic efficiency can be improved when factors of production can be reallocated quickly following changing eco-nomic circumstances (such as changes in tastes and preferences)
22. Inter-temporal efficiency focuses on the balance between consumption today and consumption tomorrow. This type of ef-ficiency looks at the impact of current economic activity on resource depletion, pollution and how savings and investment decisions made now affect future living standards and wellbeing. It may also be affected by consumption decisions to-day that can reduce one's quality of life in the future.

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