

# Chapter 1

## Fundamental Economic concepts

### 1.1 What is Economics all about?

Many people in the world have chosen not to study **Economics**. A high percentage of these people, however, may come to realise that they have denied themselves a key area of learning that could have led to a better understanding of how the world works. 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.

#### 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 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. As you progress with your studies, think deeply about the answers to some of these questions and create questions of your own. This is just a sample of some of the questions 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 determines what a person earns?
- 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 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 determination of the price of a new smartphone		
Legalisation of medicinal cannabis		
The very low rate of inflation in Australia		
The high rates of pay for Australian chief executives		
The decrease in Australian income tax rates from 2016-17		
An increase in national income		
A stronger rate of economic growth in Australia		
Uber's impact on the structure of the taxi industry		
The repeal of the carbon tax		
Lower levels of unemployment in 2016		
Shortage of baby formula due to strong Chinese demand		

### 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 2016, the UK people voted in a referendum to leave the European Union, colloquially known as 'Brexit' (British Exit). This was to the surprise of many economists who argued that leaving the EU would be to the detriment of the UK economy. Not surprisingly, there were a number of arguments put forward that suggested that the UK economy would be stronger, and other arguments that suggested the economy would be weaker. Despite the range of conflicting views, the citizens of the country voted to leave. While many predictions were made at the time of Brexit, it is clear that not all of them will be correct.

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. 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 <i>An Inquiry into the Nature and Causes of the Wealth of Nations</i> , 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, keep Mankiw's principles in mind. As you gain a greater understanding of economics, you will be in a better position to question whether Mankiw's principles are accurate or overly simplistic. 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.

Just as you continue to question all of the economic theories presented in this book, you will also need to be 'on-guard' when reading through and listening to the messages conveyed by our politicians. 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.



## 1.2 Relative Scarcity: needs and wants

**Scarcity is the fundamental economic problem**

Most economics courses 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.

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 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 an intrinsic assumption that households seek to meet 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.

Because of relative scarcity, 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 meet their needs and wants. They must make **choices**. Humans cannot have everything they want and usually have a limited income with which 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 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 on the economy as a whole and on 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.
- **Labour** refers to the mental and physical effort by humans in the production process. In Chapter 6 a detailed analysis of the Australian labour force will be undertaken. The Australian labour force only includes those who are employed plus those who are actively seeking employment. This means that some labour resources may not be available for firms to use in 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. A common example of a capital resource is machinery, such as computers and robotics.

### 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.*

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 from above, 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 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), this question is assumed to be answered through the interaction of demand and supply of independent self-interested consumers and producers.

### 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 will lead to changes in the way goods and services are produced. Robots may undertake more and more tasks that have been traditionally performed by humans if the cost associated with doing so is relatively favourable.

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

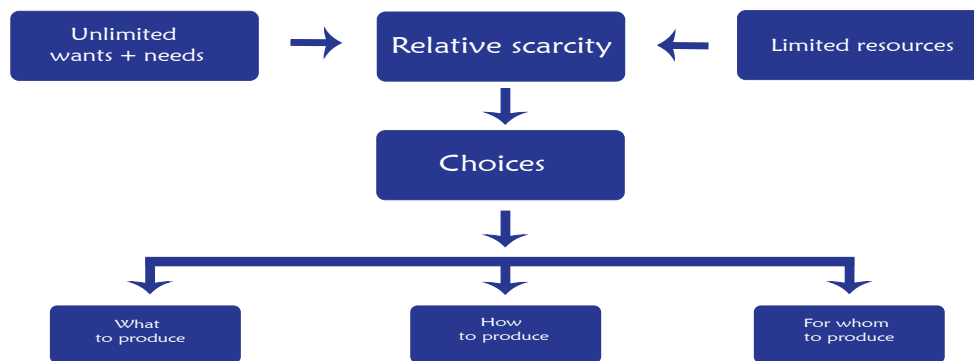
The final key question that all economies must consider is associated with the **distribution** of the benefits derived from production. Once the goods and services have been produced and made available for consumers, how does an economy decide who gets to enjoy them? Should the decision be based on the ability to pay or should need or social standing be a relevant determinant? The approach taken by economies to 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 also choosing to intervene and provide some necessities of life, reg

### Study tip

*In the VCE 3/4 Economics course, we focus on the role of the 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 Case Study/Analysis Task 1b.*

Figure 1.1 highlights the core economic problem faced by all economies, characterised by an imbalance between wants and resources which results in scarcity and the need to make key economic decisions about how resources will be allocated. Box 1.1 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 Case Study/Analysis Task 1b.

Figure 1.1  
Relative scarcity and choices



### Box 1.1 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.

## Activity 1b: How do countries deal with relative scarcity?

We have established there are simply not enough resources available in the world to meet the infinite needs and wants of the human population (and in addition the plants and animals we share the planet with also have needs and wants). Most Australians are able to satisfy their basic needs and therefore the scarcity issue refers more to their inability to satisfy all of their wants.

How does an economy decide what products to produce and who should get these scarce products? There are a number of ways that resources could be allocated. One way would be to allocate an equal amount of goods and services to every person in the country. The government would decide what goods are needed by society and set about using the scarce resources so that needs and wants could be met. Some might see this as a fair approach but others would argue that it is not necessarily fair if some people work harder than others for their rewards.



Alternatively, the economy could rely entirely on market forces. This means that the goods and services that are produced would be a reflection of the types of goods and services that are most wanted by the community. Using this approach to relative scarcity could mean that those who are unable to participate in the production process, either directly or indirectly, would struggle to meet their needs and may find it difficult to survive.

In a country like Australia, the solution to the complex problem created by scarcity is addressed using a combination of the market mechanism and government intervention. For the most part, people are free to purchase those goods and services that best meet their needs and wants. They have to make personal decisions about which goods and services they should buy with their limited income. This highlights that each individual helps to address the problem of scarcity. 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 are some products, however, the government might discourage. They may ban their consumption or add taxes to them 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, and they look to offer monetary incentives to produce them, or government may provide them to the market themselves.

As you progress through the book, take note of how most of the economic problems and decisions that you encounter can be linked back to this fundamental economic problem. All societies will need to make choices based on a lack of resources and therefore each choice will create an **opportunity cost**.

### Questions

1. Explain why all countries face the problem of relative scarcity.
2. Explain how individuals deal with the problem of relative scarcity. Provide meaningful examples to illustrate your answer.
3. Explain why a decision to address the problem of relative scarcity through equal allocation of resources may be seen as unfair by some citizens.
4. Provide two examples of products where the government intervenes in the market to allocate resources away from their production. Explain why this might lead to higher levels of satisfaction for society.
5. Provide two examples of products where the government encourages the production and consumption of the product.

## 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.

## Activity 1c: Which is more scarce - water or oil?

How do we know if a good or service is scarce? How can we tell if resources are running out? From a basic economic framework (which is the focus of Chapter 2), one of the key ways to determine the relative scarcity of a product is to look at its price, especially when this price is compared to other goods and services in the economy.

If one were to rely solely on (isolated) price signals however, he or she might conclude that water is (in some cases) scarcer than oil. Oil is refined into a very useful product called petrol, which in the middle of 2016 was selling for about \$1.20 per litre. In contrast, a bottle of water sold from the same petrol station could retail for as much as \$5.00 per litre. Many people see this as a sign that the world has gone mad. After all, it is possible to fill up a one litre water bottle from home at a marginal cost of less than 1 cent. (Marginal cost refers to the additional cost of the water used). So why does the local petrol station charge so much for something that is 'not that scarce'.



One explanation for the high prices charged by the retailer (which includes all bottled water retailers, not just petrol stations) is the concept of **price blindness**. If the person arrives at the petrol station and is in need of water, they may find that they have one seller from whom to purchase the water. The petrol station owner has probably developed some insight into the optimal price to charge based on the consumers' willingness to pay. The scarcity has been created because, at that point in time, it is the most convenient way for the customer to satisfy his or her thirst. The customer has probably stopped to purchase petrol, so they are less likely to shop around for cheaper water. The relative scarcity is therefore created by the lack of alternatives at the time and the relatively small proportion of income that is sacrificed to purchase the water.

It has been argued, however, that despite the relatively high price of oil (when compared to normal drinking water from the tap), water could, at some stage in the future, become scarcer than oil. 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. When you consider that the price for using an additional litre of water is less than 1 cent in Australia, could it be that humans have designed an economic system that will result in increased scarcity in the future?

### Questions

1. Define the term relative scarcity.
2. Provide one argument that would suggest that oil may be more scarce than water in the world economy.
3. Using scarcity as a basis of your argument, explain why a bottle of Coke costs more per litre than the petrol from the same petrol station (even though the Coke is predominantly made from water).
4. Give one reason why people may not view water as particularly scarce.
5. Choose one other resource and compare its level of scarcity to water and oil.

## 1.4 Choice and opportunity cost

If scarcity is 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. By devoting this minute to writing these words that you will read sometime in the future, the author is intrinsically sacrificing their ability to allocate their time to their second best alternative. While the author sees the writing of this book as their best choice, the costs associated with doing so will always be considered by an economist.

Whenever you are faced with a choice, there may be a myriad of alternatives available to you. Consider your 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 this fascinating subject called Economics. 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 2<sup>nd</sup> 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.

To make this a little clearer, consider your decision to read this chapter, in preparation for your first SAC. 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. Therefore, 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.

### Study tip

*Whenever 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.)*

Opportunity cost could 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 necessarily been 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.

Generally speaking, a production possibility diagram looks at the **trade-off** between producing two particular goods or types of products. For example, we could assume that an economy could devote its resources to the production of goods or services. The model could be simplified further to show the decision to produce computers or milk (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.

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.

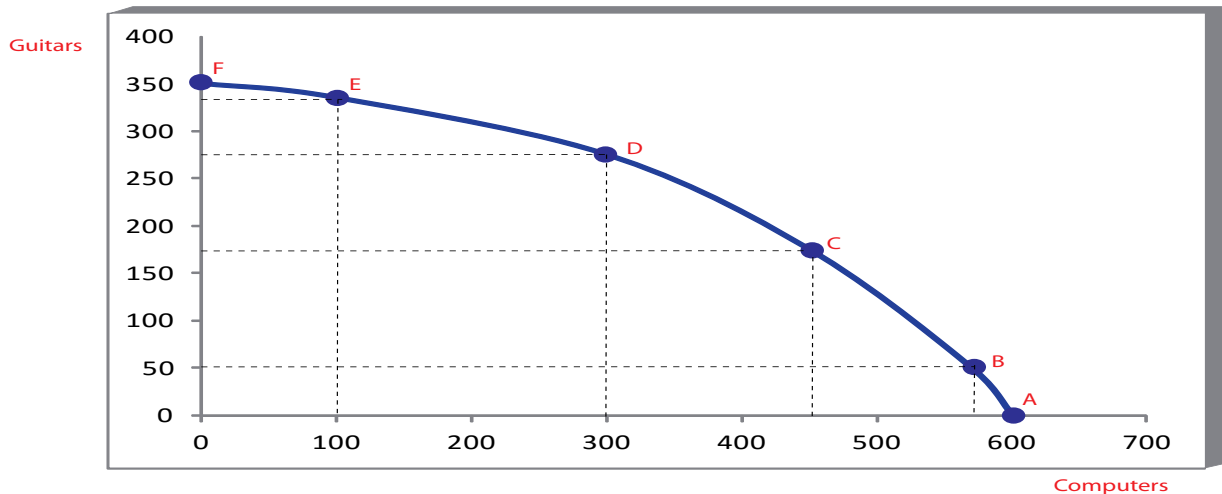
Table 1.2 below illustrates a possible combination of computers and guitars that could be produced using the available resources in the most efficient manner.

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 because the resources have been utilised to get the maximum that can be made with the resources.

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 output was 600 - to 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. 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 ultimately be determined through the interaction of demand and supply and therefore be heavily influenced by the needs and wants of consumers.

Things to note about this PPF:

- A movement along the PPF to the left 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.
- 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 *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 8.
- Over time, a country may expand its **productive capacity** and therefore the PPF will shift 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 6) 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 people will not always work 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.

## 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 emphasis on meeting the needs and wants of current generations come at the expense of future generations? Each of these questions can be viewed through the different definitions of **efficiency** used by economists to measure the success of different economic decisions. 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 infinite number of ways that resources could be allocated in an economy. 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 want the most 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 will reflect the relative levels of scarcity of products and provide the incentives for producers to allocate scarce resources to those products that satisfy the demands of the consumers.

## 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. Because prices are often seen as 'sticky' it takes some time before resources are reallocated to where they are best able to meet the needs and wants of society. Economists would therefore be interested in how quickly and how easily the allocation of resources could change so that new needs and wants can be met 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.

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. This will be covered in more detail in Chapter 13.

### Study tip

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

## 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 actions in the present, could also decrease the earth's ability to facilitate future growth in the economy.

An alternative way to look at inter-temporal efficiency is to look at the balance between the level of consumption and savings at a point in 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.



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 increases the excise on tobacco products		
A bank invests in a new computerised transaction-processing system		
The government reduces the tax paid on interest earned on savings		
Miners at BHP go on strike, reducing their output per hour		
As Australians become wealthier, they increasingly want to spend their money on experiences, and the tourism industry grows significantly		
A reduction in the price of iron ore sees mining companies reallocating their resources quickly to extracting gold		
All OECD nations sign an agreement to stop fishing endangered species		
Reduced tariffs lead to the closing down of the car manufacturing industry		
The government provides tax incentives for businesses to invest in training and development of human resources		
The government more aggressively tackles climate change with policies designed to reduce CO <sub>2</sub> emissions more quickly than other countries		

## Activity 1e: Creating scarcity for profit

As mentioned in Case Study 1b, the scarcity of a product can influence the price that is charged to the consumer. Businesses often seek ways to extract as much revenue as they can from their customers and one of the ways to do this is to create the illusion of scarcity - make the product seem to be scarce. Consider the following examples of strategies that have been implemented in the past to help boost profits by creating a sense of scarcity.



- The car company, Fiat, who are responsible for the production of high performance cars called Ferraris, deliberately limit the number that are available for sale each year. Their desire is to create exclusivity around the brand. The company could easily create and sell more vehicles, but by restricting the amount produced, they are able to create a more profitable vehicle. Is this a case of artificial scarcity?
- Hotel booking sites like to influence the decisions made by those who are seeking accommodation. The sites will display the number of people who are currently browsing the site and the number of rooms that are still available. The perception of scarcity is designed to influence the speed at which the customer makes a decision and may influence their ability to make a rational economic decision.
- Another way to create scarcity is to make an offer available only for a limited time. Many online businesses offer introductory prices that are for a short period of time, after which the price increases to 'full price'. While the product itself is not scarce (the supply of an e-book or online education service could in fact be infinite), by offering it at the lower price for only a short period of time, the offer is 'scarce'.

For each of these examples, it could be argued that there is not really any scarcity, when analysed in terms of our traditional definition. However, if the aim of most businesses is to make a profit and economics is a study of human behaviour, then it makes sense to create a feeling of lack among consumers. This might appeal to a part of their brain that reduces their ability to think rationally and causes them to feel that if they don't act quickly that they may suffer. - It may instill 'FOMO' - fear of missing out!

### Questions

1. Define the term relative scarcity. Explain why an increase in scarcity may be associated with an increase in a resource or product's price.
2. Explain how the perception of scarcity might affect the buying decisions of consumers.
3. Explain one example, not discussed in the case study, where businesses have created the illusion of scarcity to boost their profits.
4. Discuss the opportunity cost associated with the decision by Fiat to limit the number of Ferraris that are produced each year.
5. With reference to one of the above examples, explain how creating the illusion of scarcity, while beneficial for the seller, may not necessarily maximise society's wellbeing (i.e. may undermine the achievement of allocative efficiency).

## Review Questions 1.3

1. Explain what is meant by the phrase 'the government is keen to achieve the most efficient allocation of resources'.
2. Distinguish technical efficiency from allocative efficiency.
3. Distinguish dynamic efficiency from intertemporal 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 might **not** be consistent with 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. Identify the type of efficiency that is most concerned about protecting future resources.

### Activity 1f: [Electricity, choices and allocative efficiency]

As a highly developed nation, Australia has, not surprisingly, developed the need for a constant and growing source of electricity. Approximately 85% of Australia's electricity is generated from fossil fuels, with most of this coming from burning coal. The remaining 15% comes from a mix of renewable sources such as hydropower, wind, bioenergy and rooftop solar.

The decision by Australia (and many other nations) to rely on fossil fuels as their main source of energy is of much interest to economists (and those who study other disciplines as well). The world relies upon coal-fired electricity because it is essentially very cheap. It has been the preferred source of energy because it is abundant and very reliable. While solar power has a low marginal cost (because the sun's rays are essentially provided for free, each unit of power is very free once the system is installed), the set up costs associated with solar are, in some cases, too high for it to be considered a viable alternative. The other problem associated with wind and solar power is that they are intermittent – that means they cannot be relied upon when there is no sun or wind. At this stage, storing the energy generated from these sources is inadequate to cope with the nation's power needs.



The increasing number of people who have chosen to invest in solar panels and/or purchase their electricity from renewable sources, reflects a change in tastes and preferences in the economy. This shift reflects, in part, the response by households and businesses to the scientific research that indicates that the burning of fossil fuels has contributed to climate change and the costs that may be associated with climate change.

The Australian economy has therefore seen a change in its allocation of resources. More resources have, in the last 10 years, been devoted to the production of renewable energy technologies. If this information were to be transferred to a PPF diagram (with fossil fuel energy on one axis and renewable energy on another) then the change in behaviour would be shown as a movement along the curve towards renewables and away from fossil fuels.

Despite the movement towards renewable technologies, Australia still relies heavily on coal – which many see as a source of energy that is polluting and a major contributor to climate change. Former Prime Minister Tony Abbott removed one of the incentives to move towards a low carbon future by repealing the Carbon Tax. He also publicly stated that there would be 'few things more damaging to our future' than leaving the coal in the ground. He is therefore indicating that, given its low relative price and given that it is a significant source of revenue for the country, the costs of coal are low relative to the perceived benefits.

After reading this chapter there are a number of economic concepts that are worth your consideration as you reflect upon this situation. Has the lack of scarcity with respect to coal led to a low price for this source of energy? Has this low price influenced our decision to use this as our principal source of energy, despite there being a high level of consensus about the damage that using this resource causes? Does our current allocation of resources, with regards to our chosen source of energy, maximise society's wellbeing? These questions will, in part, be addressed through the course of the next two chapters, but it is worth formulating your own ideas about them before a more detailed analysis is undertaken.

#### Questions

1. Draw a PPF diagram for Australia showing fossil fuel energy on one axis and renewable energy on the other.
2. Highlight a point on the PPF where you think that the Australian economy is operating with regard to these sources of fuel.
3. Discuss the concept of relative scarcity with regard to the two sources of energy.
4. Explain the opportunity cost that may be associated with a family choosing to purchase solar panels for their home.
5. With reference to allocative efficiency, discuss whether the allocation of resources in the energy industry maximises society's wellbeing.
6. Explain how a movement towards greater reliance on renewable sources of energies may affect the achievement of inter-temporal efficiency.

## Multiple choice review questions

### 1. Economies around the world experience relative scarcity because:

- a) Natural resources are inadequate
- b) Needs and wants of consumers are manipulated by marketing experts
- c) Shortages develop in markets, leading to higher prices
- d) Needs and wants are generally greater than the resources available to meet them

### 2. The Australian economy allocates scarce resources through:

- a) The market mechanism only
- b) Government planning
- c) A combination of the market mechanism and government planning
- d) Assessing the needs of each person

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

- a) China specialises in the production of clothing, and trades this with Australia
- b) In choosing to attend university, a young man gives up the opportunity to earn wages working in a local super market
- c) The government is better able to allocate resources because there wouldn't need to be any advertising
- d) Australia is a rich country because we are able to utilise our resources and increase production levels each year

### 4. A study of microeconomics is unlikely to include:

- a) An analysis of the market for blue shirts in Australia
- b) A prediction about the future of house prices in 2015-16
- c) The role of governments in encouraging safe levels of alcohol consumption
- d) Why the general level of prices in Australia has increased in the last 12 months

### 5. The opportunity cost of building a new sports pavilion at your school is:

- a) The loss of interest that the money could have earned if it were left in the bank
- b) About \$2 million based on current market prices
- c) The loss of students if the pavilion had not been constructed
- d) A decrease in the number of students visiting the library

### 6. A country's production possibility frontier may temporarily shift to the left if:

- a) There is an increase in the number of skilled immigrants entering
- b) There is a decrease in demand caused by a recession
- c) The country experiences a drought for two years
- d) There is an increase in the number of people joining the labour force

For question 7, 8 and 9, 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	2 000
C	600	2 200
D	300	2 700
E	50	2 900
F	0	3 000

### 7. If the people of this country value apples twice as much as beef, then the optimal allocation of resources is:

- a) Combination A
- b) Combination B
- c) Combination C
- d) Combination D

- 8. In 2017, the country consumed 600m units of beef and 2400m apples. If their PPF had not expanded, how could they have reached this new consumption point?**
- a) They specialised in one area and traded with another country
  - b) They made their workers work longer hours
  - c) They discovered new resources
  - d) They had an increase in rainfall that year.
- 9. If the country produces 600m units of beef and 1800m apples then this may create the economic problem of:**
- a) Dynamic inefficiency
  - b) Unemployment
  - c) Incorrect prices
  - d) Inflation
- 10. Tastes and preferences in an economy change such that people are more concerned about climate change and protecting the natural environment. Based on these changes, allocative and inter-temporal efficiency is more likely to be achieved if**
- a) The government provides incentives for households to purchase solar panels
  - b) The government introduces a tax on each unit of pollution
  - c) Subsidies directed towards coal miners are removed
  - d) All of the above

## 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.
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 so that the production process is more efficient.
9. Microeconomics studies the behaviour of individual economic agents whereas macroeconomics studies how the whole economy operates.
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'
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.
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.
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 and immigration 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.
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.
21. Dynamic efficiency can be improved when factors of production can be reallocated quickly following changing economic 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 efficiency 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.