Chapter 3
How markets work in Australia

3.1 What is a market?

Any time goods or services are bought and sold it represents activity that has taken place in a market. A **market** is a place or situation where buyers and sellers of goods or services come together in exchange, namely to exchange a good or a service. In a market, the rate of exchange is the **price** of the good or service that is being sold. For a market to develop, there must be both a willingness to purchase a product (i.e. a **demand** for the product) and a willingness to produce or supply a product (i.e. a **supply** of the product).

Study tip

As high school students, you are likely to be most familiar with being a buyer and you will probably agree that, as a buyer, you would prefer a lower price. If, however, you also have a part-time job, you will probably agree that, as a 'seller' (of your own labour) you would prefer a higher price.

All buyers and sellers will have some idea about the 'value' they place on a product, however the **exchange** will only take place in a market if 'the price is right'. This means that the price must be at a level where both the buyer and seller believe that the exchange makes them better off. This usually involves a compromise along the way because the seller wants to receive the highest price possible and the buyer wants to pay the lowest price. As the selling price falls, the buyer is relatively better off and the seller relatively worse off. Similarly, as the selling price increases, the buyer is relatively worse off and the seller relatively better off. Who gains more from the market transaction will depend upon a number of factors that will be explored shortly. The bottom line is that exchange will not occur (and therefore there will be no market activity) if one of the parties to any possible transaction believes that they will be made worse off by either buying or selling the product.

Some products in markets might be on sale for a substantial period of time without a buyer being prepared to pay the asking price. This will usually occur because the sale price is too high. At this price, potential buyers do not believe they will be better off because the value they place on the product is below the asking price. Accordingly, the exchange will only occur if the seller reduces the price. This situation occurs most frequently in property markets, where houses can be on sale for many months, with the vendors (sellers) and prospective buyers unwilling to compromise.

Study tip

In economics, the term 'products' is often used to describe either a good (a physical, or tangible, product like food or a car) or a service (an intangible product like bus ride or financial advice).

When the residential property market is 'flat' or declining, houses will not be selling as quickly, demonstrated by 'For Sale' signs remaining without a 'SOLD' sticker for several months. When this happens, the vendors (i.e. the sellers) are forced to reduce their expectations and lower their asking price. This highlights the fact that in a 'flat' market it is the seller who is forced to do more of the compromising. It is useful to contrast this with a property market boom, where houses are selling quickly and buyers are forced to do more of the compromising (that is, pay a higher price than they would have liked) in order to purchase a property.

Typically, a market will occur in a physical place where those who demand products (buyers) and those who supply the products (sellers) gather to exchange goods or services at a price. For example, the Queen Victoria and Prahran markets attract sellers who offer their goods for sale and potential buyers physically go to these markets in order to purchase the products for sale. Similarly, with property markets, many sales will take place at the property's location, particularly if the property is auctioned.

There are, however, other markets that do not involve a physical meeting place for buyers and sellers. Instead they rely on communications technology to bring the buyers and sellers together. eBay and other online sites act just like the Victoria, Prahran or South Melbourne markets, providing the means for buyers and sellers of products to come together in exchange but without ever meeting up in person. Similarly, the stock market brings buyers and sellers of shares together in exchange, but there is no physical meeting between the buyer and seller, and the trade usually takes place online.

Anything that has been sold in the economy must have been sold in a market of some sort. There are literally hundreds of different types of markets, such as property markets, labour markets, financial markets, share markets, export markets, currency markets, commodity markets, bond markets, black markets etc. It is also possible for the sale of one product to be considered a transaction that has taken place in more than one market. For example, if a farmers sells one hundred thousand head of cattle to Indonesia, this can be considered activity that has taken place in the 'cattle' market, the 'agricultural' market, the 'commodity' market or even the 'export' market.

Review questions 3.1

1. Define the terms **market** and **product.**
2. Outline when exchange will take place in a market.
3. Discuss why houses in property markets can remain unsold for many months.
4. With respect to buyers and sellers in property markets, discuss which group compromises more during a booming market and who compromises more during a flat or declining market.
5. Provide examples of markets requiring the physical presence of buyers and sellers and list some of the products sold in these markets.
6. Provide examples of markets that do not require the physical presence of buyers and sellers and list some of the products sold in these markets.
7. Compile a list of five separate markets and describe the products being sold in these markets.

Teachers can download the 'Crossword trading game' from the teachers resources section of ***www.ecogroundup.com.au*** It provides a fun way of introducing markets to the class.

Application exercise 3a

1. Compile a list of the five most recent purchases you made and identify the markets in which these transactions occurred.
2. In the table below, match the situation or market characteristic in the right hand column with the type of market in the left hand column:

Market type	Situation or characteristic
1. Financial market	Where unprocessed or primary products are sold, such as wheat, wool or minerals
2. Stockmarket	John Hawkes gets a job at a supermarket part-time while completing his VCE
3. Property market	Ingrid purchases some US dollars for a planned trip to the USA
4. Commodity markets	Aisha invests $1m in Flight Centre shares, therefore becoming a part owner in the company
5. Currency market	Where companies and governments borrow money from investors or lenders
6. Labour market	Jenny receives a loan or credit card from a bank
7. Livestock market	Justin Kay sells a stolen bicycle to Lenny Carlton
8. Black market	Lisa Snookes attends school every day
9. Education market	Simone Allan purchases a house in Caulfield
10. Bond market	Tran, a farmer, sells cattle and sheep to abattoirs

Application Exercise 3b: Black markets

A black market occurs whenever the sale of illegal goods or services takes place or when market transactions occur which are not reported for tax purposes. For example, the sale of illicit drugs and semi-automatic weapons will typically occur in the black market. Similarly, the second hand sale of AFL Grand Final tickets is illegal and occurs in the black market - a practice often referred to as 'scalping'. Black market activity will also occur when employers pay employees 'off the books' and in cash, or when products are sold on a 'cash basis' to avoid tax obligations of the buyer and/or seller. For example, a tradesperson who offers to fix a leaking tap or repair a broken window for cash may be seeking to avoid his or her obligation to pay income tax to the federal government. By not having a record of the transaction such as a cheque or credit card payment through their bank account, they won't need to report the income to the Australian Tax Office. The customer might be tempted to say yes to this cash transaction because they will receive the product (or service) at a lower price, particularly given that they can also avoid paying tax, in the form of the GST. Another example of black market activity relates to the downloading or use of copyright material without a licence. This includes the download of movies, books and music without paying a price, which deprives the copyright owners (those who created or own the material) of receiving the full return on the benefits they provide to users of their material. Estimates put the size of black market activity to be around 15% of all market activity in Australia and the federal government is keen to reduce its size. The government's 'Black Economy Taskforce' notes that black market activity is costly because it undermines trust in the tax system, creates an unfair commercial environment that penalises businesses and individuals doing the right thing, facilitates the exploitation of workers and fosters abuse of the welfare system. In 2019, following the recommendations of the Taskforce, the government considered introducing legislation that would cap cash transactions in the economy at $10,000. This would help to reduce the amount of cash in circulation and make it more difficult for large black market transactions to occur.

Questions:

1. **Define the term black market.**
2. **List three examples of black market activity.**
3. **Provide an example of black market activity where the price being charged is relatively high and explain why the price is likely to be high.**
4. **Provide an example of black market activity where the price being charged is relatively low and explain why the price is likely to be low.**
5. **Discuss two reasons why governments are keen to minimise the extent of black market activity in the economy.**

3.2 The law of demand and the demand curve

The previous section outlined the important characteristics of markets – demand, supply and price. We will now explore each of these characteristics in more detail.

The **demand** for a good or service represents the willingness and ability of buyers or consumers to purchase goods and services. The total demand for a product will depend on a number of factors, with the most obvious factor being the price of the product. As already discussed in Chapter 1 and 2, an important assumption is that economic agents, including buyers, consistently act rationally. A rational consumer will seek to purchase products at the lowest price possible because it maximises the 'value' he or she gets from purchasing and consuming the product. You will recall it was explained in Chapter 2 that economists refer to this as '**utility**.'

Almost without exception, when the price of a product falls, the total demand for the product will rise in response. This occurs because many existing consumers will increase the amount or quantity they purchase given that they can now afford to buy more - this is referred to as the **'income effect'**. In addition, and other consumers may turn away from a rival product and substitute into the existing product because it becomes 'relatively' cheaper - this is referred to as the **'substitution effect'**. For example, if the price of cherries falls from $10 per kilogram to only $5 it is likely to cause some customers to purchase two kilograms instead of one kilogram (income effect) and it will no doubt lead some consumers to substitute away from blackberries and towards cherries (substitution effect). This relationship between the price of the product and the total quantity demanded in the market place is often referred to as the **Law of Demand.**

Law of Demand: as the price of a product increases, the total quantity demanded decreases and as the price decreases the total quantity demanded increases. There is an inverse relationship between between price and quantity demanded.

Teachers can download the **'Auction Activity'** from the teachers resources section of www.ecogroundup.com.au It provides a fun way of demonstrating the law of demand in action

The demand curve

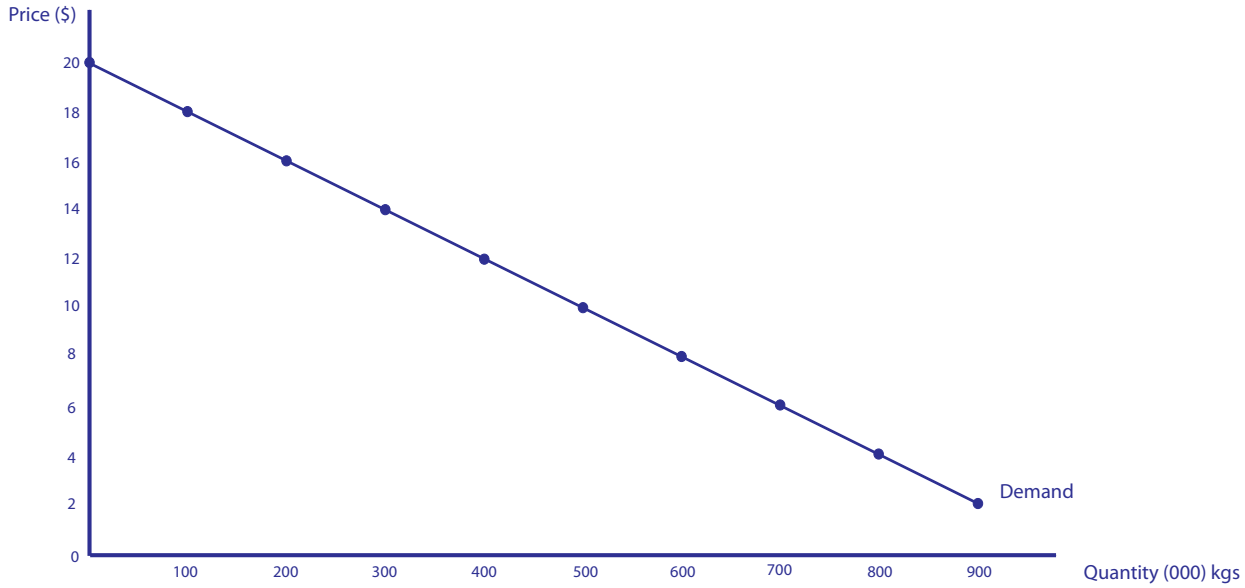
Table 3.1 below depicts the possible relationship between price and the quantity demanded for cherries in Victoria over the month of December each year. As the price falls from $20 per kilogram, the demand for cherries increases from zero kilograms (kgs) when the price is $20 to as high as 900,000kg when the price is as low as $2.

Table 3.1: Demand for cherries (kg)	
Price per kg($)	Demand (000)
20	0
18	100
16	200
14	300
12	400
10	500
8	600
6	700
4	800
2	900

To construct a demand line (often called a demand curve because, in reality, they often take a curved shape), draw a vertical (Y) axis and label the axis with the various prices set out in the table, starting from zero at the origin and progressively moving up to as high as $20. Then draw a horizontal (X) axis and label the various quantities as set out in the table. It is important to get the scale correct for both axis and for total accuracy it is best to use either graph paper or the computer graphing programme, Excel. Then plot the values for demand onto the graph that correspond to each price (in this case a total of ten values should be plotted).

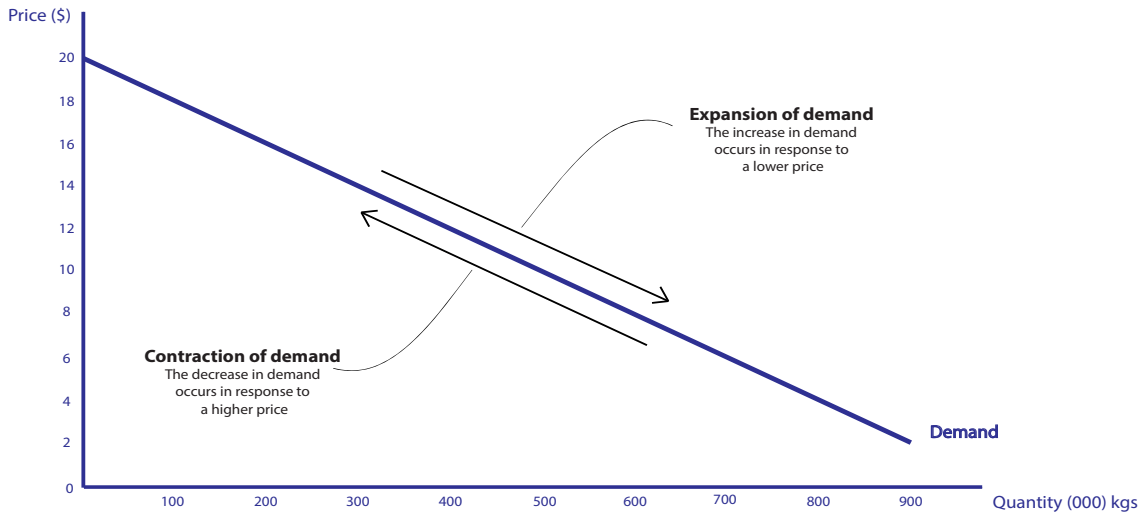
The demand curve should resemble the following:

Figure 3.1:
Demand for cherries



This demand curve captures the Law of Demand, with an inverse relationship between price and the quantity demanded. A movement backwards (or up) along the demand curve is often referred to as a **contraction of demand** and occurs because a higher price causes the total demand for the product in the market place to fall. A movement downwards along the demand curve is often referred to as an **expansion of demand** and occurs because a lower price causes the total demand for the product in the market place to rise. Figure 3.2 illustrates the difference between an expansion and contraction of demand.

Figure 3.2
Expansion and contraction of demand



The slope or steepness of the demand curve is related to a concept called 'the **price elasticity of demand**'. In short, this is defined as the responsiveness of the quantity demanded to a change in the price, with a flatter curve representing a high degree of consumer responsiveness to a change in price (that is a high price elasticity of demand) and a steeper curve the opposite. This concept is explored fully in Unit 3 Economics and warrants no further attention in this course. Nevertheless, it is worth noting that accurate predictions about changes in the quantity demanded in response to a change in price will be affected by the price elasticity of demand.

Review questions 3.2

1. Explain what is meant by 'demand'.
2. Define the Law of Demand.
3. Explain why the demand for a product is inversely related to the price. In your answer, distinguish the 'income effect' from the 'substitution effect'
4. Distinguish a 'contraction of demand' from an 'expansion of demand'.

3.3 Non-price factors affecting the demand for goods and services

In addition to the actual price of the product, there are many other factors that can affect the total quantity demanded for any product. A change in any one of these **demand factors** will cause demand to either increase or decrease. To illustrate, if the price of cherries remained at $10kg, there are a range of factors that could cause the demand for cherries to change. For example, the price of blackberries could fall, resulting in consumers demanding fewer cherries and more blackberries. Alternatively, the average incomes of consumers might have increased, leading to an increase in demand for cherries (as well as many other products).

With the exception of a change in the price a particular product, there are a host of other factors that could lead to a change in the demand for that product. These include:

Disposable income

Study tip

Disposable income is only one of many types of income. Other income types are explored more fully in Chapter 6.

As discussed in Chapter 1, incomes are primarily earned by households for their contribution to production, the bulk of which occurs in the form of wages and salaries. However, not all of this income is available for spending because of the legal obligation to pay income tax to the government. The federal government imposes this tax to raise money that can be used to pay for most of the government services that we all use every day, including the provision of roads, hospitals, schools, parks, and so on. When income taxes increase, it will reduce the income available to households 'after tax', called **disposable income**, and when these taxes fall it will lead to an increase in disposable income.

Disposable incomes will therefore be affected by both the amount of income earned by households and the burden imposed by personal income taxes. Higher incomes and/or lower income taxes will, **ceteris paribus**, increase purchasing power and raise the demand for many products. In contrast, lower incomes and/or higher income taxes will, ceteris paribus, decrease purchasing power and reduce the demand for many products.

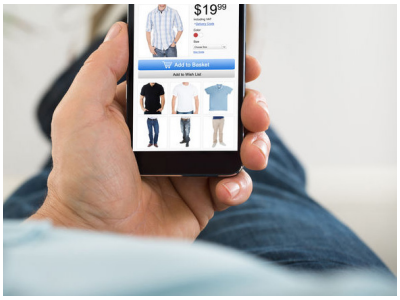
The price of substitutes

In many markets, the goods or services are very similar, or even the same in terms of the benefits provided to consumers. We refer to this as the products being somewhat **homogenous.** For example, margarine and butter are reasonably close substitutes and Caltex petrol is a very close substitute for Shell petrol. If there was a decrease in the price of **substitute products** in the market place, the demand for products offered by the established businesses should fall. This is because some consumers will switch to the new substitutes which are now relatively cheaper. For example, cheaper fuel offered at Caltex service stations will typically entice consumers to buy fuel from Caltex rather than Shell or other petroleum companies.

The price of complements

When two products are typically consumed together, they are likely to be complements and considered '**complementary products**'. For example, commonly sugar is a complement for coffee and margarine is a complement for bread. If there is an increase in the price of a product such as coffee, we should expect a fall in the demand for a complementary product, such as sugar. This is because the higher price of coffee reduces the demand for coffee, and as fewer people drink coffee, the demand for sugar falls because it is normally consumed with coffee. Similarly, if the price of a product falls (e.g. bread) we should expect the demand for a complementary product (e.g. margarine) to rise. In this case, this is because, as the price of bread falls, demand for bread rises, and as a consequence there is an increase in demand for the product that is complementary to bread – margarine.

Preferences and tastes



Many products offered for sale in markets will come into or go out of fashion. This particularly relates to clothing and footwear markets, where consumer preferences for specific items of clothing or footwear will change due to marketing or other factors. For example, if **consumer tastes** changed from a preference for tailored trousers or skirts to a preference for ripped jeans, we would expect the demand for ripped jeans to rise and the demand for tailored trousers /skirts to fall.

Australian household preferences for services (as opposed to goods) has increased in line with our growth in average (disposable) incomes. These services include 'luxuries' such as holidays and leisure activities, as well as domestic household services such as cleaning and home maintenance. The increased preference for services has also been faciliated by advances in technology. For example, the increasing consumer preference for online shopping has not only increased the demand for online (and foreign) products, it has also created an increased demand for services provided by couriers and Australia Post, as goods purchased online require delivery around Australia.

In addition, the preferences and tastes for Australian goods and services by foreigners (i.e. Australian **exports**) will also change in response to factors such as fashions and trends that emerge overseas, or even the state of **economic development** in other countries [Economic development is covered in Chapter 7.] For example, the increasing incomes (and wealth) enjoyed by Chinese households in response to decades of strong economic growth has resulted in huge demand for premium Australian meat (e.g. beef and lamb) over the course of 2018-19.

Consumer preferences and tastes are heavily influenced by the marketing and promotion of their products by businesses. Effective marketing, part of which is advertising, serves to change consumer preferences and increase the demand for particular products. For example, Apple products are extremely popular for a range of reasons, an important one being the amount of marketing expenditure undertaken by Apple, which focuses on promoting the uniqueness of their products. As mentioned in Chapter 2, business attention to the field of **behavioural economics** has significant implications for nature and effectiveness of marketing efforts by businesses.

Interest rates

The **cost of borrowing** is usually measured by the level of interest rates attached to various forms of credit, such as credit card rates or even home loan rates. When interest rates increase it will lead to many households experiencing a fall in how much cash they have available for spending (also referred to as **discretionary income**). This is because their existing loans will usually cost more to repay - unless the interest rates are fixed on all their loans. As a consequence, households will tend to demand fewer goods and services across the board. In addition, the higher interest rates will reduce the demand for loans (as they are now more expensive) and therefore reduce the

Study tip

Over the course of 2018-19, 'buy now pay later services' such as 'Zip Pay' and 'Afterpay' have become extremely popular. They effectively operate like a loan or line of credit, enabling consumers to purchase products now and pay later. While there is no interest charged for the service, consumers stand to pay 'late fees' which can compound over time. The increased popularity of these payment methods has helped to increase the demand for goods and services in general

demand for many products. Rising interest rates will have a particular effect on demand for those larger items that are often purchased using credit (either credit cards or loans), such as property, cars, televisions, fridges, freezers, holidays etc.

Changes in population

A larger population size will necessarily increase the demand for a wide range of goods and services that are needed to support the increasing number of individuals or households. For example, Melbourne has recently had the fastest growing population of Australian capital cities, closely followed by Sydney. Given that the new entrants into these cities require housing (and other household services), **population growth** is one of the major factors contributing to the continuing high demand for residential properties in both cities.

The changing **demographics** of the population will also have major implications for the demand for particular kinds of goods and services. For example, if the increase in Australia's population has occurred - in part - because of the success of the **baby bonus** offered in the past, then this will mean that the demand for goods and services related to child rearing will increase. This includes food and clothing goods for babies as well as child care services. Alternatively, if a larger population occurs because of a commitment to immigration (including refugee re-settlement), then this will have implications for the demand for a different range of goods and services, including housing and household products and specific foods that are popular with the newly arrived migrants.

Consumer sentiment

Consumer spending levels are always heavily influenced by consumer perceptions about future income levels or job prospects. During times when households are more pessimistic about their future income or wealth levels, **consumer sentiment** in the economy is low and the demand for most goods and services is likely to fall. This particularly applies to the demand for non-essential items (or luxuries) like restaurant meals, entertainment items (e.g. concert tickets) and new cars.

Government intervention

In Unit 2 we will examine the need for government intervention in the macroeconomy, such as the use of government policies to achieve economic sustainability and those to achieve economic stability (e.g. strong rates of economic growth with low inflation). At this stage we will concentrate on the effect that government intervention can have on the demand for products.

Study tip

In your study of Economics, it is extremely important to understand demand factors. Be careful not to confuse demand and supply factors with each other. It may be helpful to always keep in mind that demand factors influence the consumer's (or buyer's) decision making, while supply factors (to be discussed later) influence the decision making of the producer or seller.

There are a host of ways governments intervene to affect demand for goods and services, with the overriding objective of governments being to shift demand from one product to another. In other words, to change the allocation of resources from the production of some goods and services to others.

Laws that prohibit smoking in enclosed spaces are an example of a law that intentionally reduces the demand for a particular product, namely cigarettes. Alternatively, there are other laws that prohibit the consumption of certain products, such as underage drinking laws that effectively reduce the demand for alcohol, and laws preventing individuals from carrying knives in public.

In addition to laws that attempt to change consumer behaviour, the government use **taxes and/or subsidies** to either discourage or support certain types of consumption. Indirect taxes on certain products will ultimately lead to a higher price because the tax raises the costs of production for producers. [In this respect, the indirect tax becomes a supply factor that will be discussed in Section 3.6]. Consumers will then notice the higher (relative) price for the relevant good or service and choose to **substitute** into the consumption of another good or service. These taxes will therefore affect the demand for products through their ability to impact on the price of substitutes and complements (covered earlier). Common examples include the excise taxes on cigarettes and alcohol that are ultimately designed to encourage consumption away from cigarettes and alcohol and towards other (substitute) products. Another example relates to the possible implementation of a 'sugar tax' (or tax on sugar sweetened softdrinks) to tackle obesity rates in Australia following its implementation in Britain during 2016. This example was discussed in more detail in Chapter 2.

Government subsidy support to producers (again a supply factor that will be discussed later) will also affect the price for the relevant good or service and impact on the demand for substitutes and complements. For example, government subsidies to renewable energy producers resulted in a lower price for products like solar panels. This caused the demand

for the substitute product (i.e. electricity off the grid) to fall. Similarly, governments offer **rebates** (a return of part of the money outlaid on the purchase of a particular product) or other forms of assistance in order to increase demand for specific goods and services. Examples include rebates that have been offered on the purchase of solar hot water systems, water tanks, and child care services.

Review questions 3.3

1. Outline how five of the following **factors** can affect the demand for particular products:
   - Disposable income
   - The price of substitutes
   - The price of complements
   - Preferences and tastes
   - Interest rates
   - Changes in population
   - Consumer sentiment
   - Government intervention

Application Exercise 3c: Changes in demand

For each of the situations below, outline what is likely to happen to the demand (D) for the relevant product and explain why this is likely to occur. You should draw up a table like that illustrated below. The first one has been done for you.

Demand for	Situation	D increases or decreases	Why D is likely to increase or decrease
Building materials	**There is an increase in the size of the population**	**Increase**	**Because homes need to be built for the increased number of households**
Child care services	The government offers a cash rebate for spending on child care expenses		
Apples	The price of pears drops significantly		
Butter	The price of margarine decreases to very low levels		
Luxury cars	Average income levels of consumers in Australia rise to record levels		
Home extensions	Consumers are expecting higher interest rates in the economy		
Motor vehicles	There is a fall in consumer sentiment		
Electric cars	The price of oil and petrol falls		
Postal services	There is an increase in online shopping		
Coffee	The price of sugar increases by over 1000%		
Cigarettes	The government introduces plain packaging laws		
Solar panels	The government reduces a rebate for households installing solar panels		
Bottled water	The government decides to introduce a tax on sugary drinks		
Uber ride sharing service	Ola and DiDi enter the ride sharing market		
Guns	The government further tightens gun laws		

3.4 Movements along the demand curve versus shifts of the demand curve

In Section 3.2 we explored the relationship between the price of a product and the demand for that product, where the law of demand determined the slope of the demand curve. Figure 3.2 illustrated that a higher price would result in a lower quantity demanded, and this was referred to as a contraction of demand. Conversely, a lower price would result a higher quantity of demand. These changes in demand (contraction or expansion) are commonly referred to as movements along the demand curve with a **higher or lower price** of the product itself being the only factor causing a change in quantity demanded.

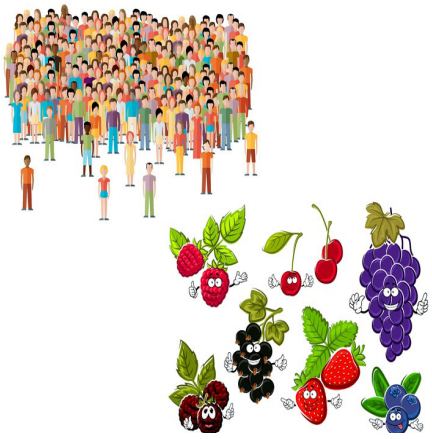
In Section 3.3 we then examined a number of non-price factors that would cause a change in the demand for goods and services. Each of these factors will also cause a change in quantity demanded *independent* of price and will therefore result in the demand curve shifting its position, either to the left or the right. An increase in the quantity demanded will result in the demand curve shifting to the right and a decrease in the quantity demanded will result in the demand curve shifting to the left.

A higher quantity demanded

The difference between movements along the demand curve and shifts of the demand curve will be illustrated with reference to the earlier example of cherries. Let's assume the demand for cherries has increased for a reason that is unrelated to the price of cherries, such as a larger population or a higher price of substitute products, such as strawberries or raspberries. Table 3.2 shows the original demand for cherries (D1) as well as the hypothetical new demand (D2).

Table 3.2: Demand for cherries (kg) increases at every price

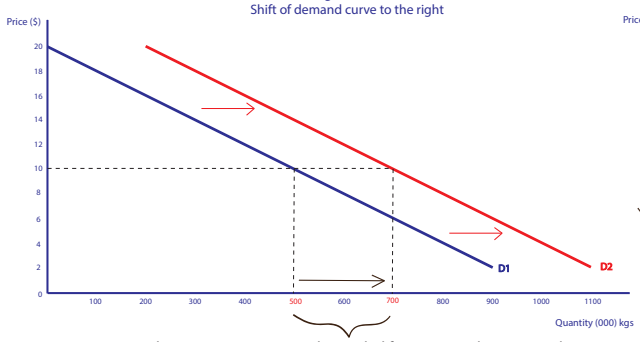
Price per kg($)	D1 (000)	D2 (000)
20	0	200
18	100	300
16	200	400
14	300	500
12	400	600
10	500	700
8	600	800
6	700	900
4	800	1000
2	900	1100



It is assumed that demand for cherries has increased by 200,000kg irrespective of price. This translates into an additonal 200,000kg of cherries being demanded at every possible price level. When these new values for demand are plotted, we arrive at a new demand curve, D2, that sits to the right of the previous demand curve, D1. This shift to the right of the demand curve is illustrated in Figure 3.3.

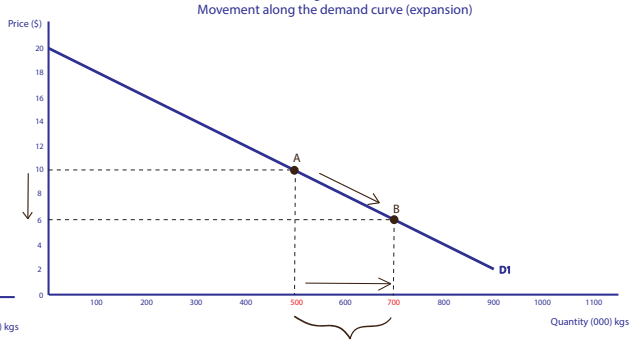
The higher quantity demanded that has occurred because of a non-price factor is contrasted with a higher quantity demanded that occurs because of a fall in price. This is illustrated in Figure 3.4. Referring now to the original demand curve (D1), a price fall from $10kg to $6kg causes the quantity demanded to increase from 500,000kg to 700,000kg.

Figure 3.3:
Shift of demand curve to the right



The increase in quantity demanded from 500,000kg to 700,00kg has occurred with the price remaining unchanged at $10kg. This 200,000kg increase in demand will occur at every price level. Hence, the increase in demand has occurred irrespective of price which means that demand has increased because of a 'non-price' factor.

Figure 3.4:
Movement along the demand curve (expansion)



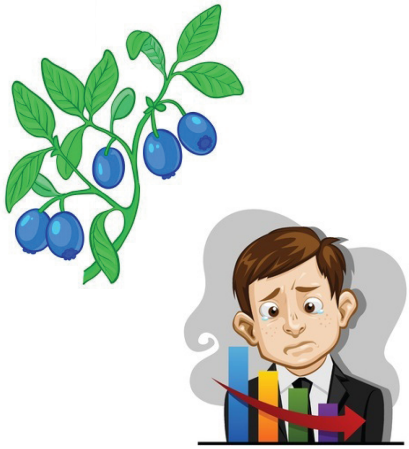
The increase in quantity demanded from 500,000kg to 700,00kg has occurred because the price has fallen from $10kg to $6kg. Demand has therefore increased (expanded) along the demand curve from point A to B because of a lower price.

A lower quantity demanded

Let's now assume the demand for cherries has decreased for a reason that is unrelated to the price of cherries, such as lower average disposable incomes or a change in tastes away from cherries to other fruits. Table 3.3 shows the original demand for cherries (D1) as well as the hypothetical new demand (D2).

Table 3.3: Demand for cherries (kg) decreases at every price

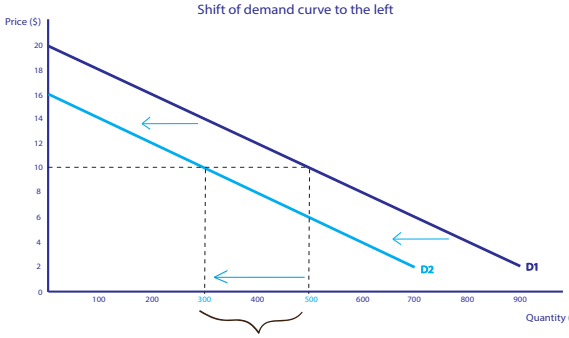
Price per kg($)	D1 (000)	D2 (000)
20	0	0
18	100	0
16	200	0
14	300	100
12	400	200
10	500	300
8	600	400
6	700	500
4	800	600
2	900	700



It is assumed that demand for cherries has now decreased by 200,000kg irrespective of price. This translates into 200,000kg fewer cherries being demanded at every possible price level. When these new values for demand are plotted, we arrive at a new demand curve, D2, that sits to the left of the previous demand curve, D1. This shift to the left of the demand curve is illustrated in Figure 3.5.

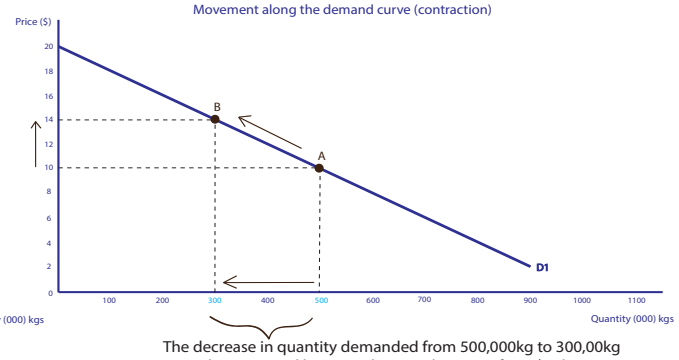
The lower quantity demanded that has occurred because of a non-price factor is contrasted with a lower quantity demanded that occurs because of a higher price. This is illustrated in Figure 3.6. Referring now to the original demand curve (D1), a price rise from $10kg to $14kg causes the quantity demanded to decrease from 500,000kg to 300,000kg.

Figure 3.5:
Shift of demand curve to the left



The decrease in quantity demanded from 500,000kg to 300,00kg has occurred with the price remaining unchanged at $10kg. This 200,000kg fall in demand will occur at every price level. Hence, the fall in demand has occurred irrespective of price which means that demand has decreased because of a 'non-price' factor.

Figure 3.6:
Movement along the demand curve (contraction)



The decrease in quantity demanded from 500,000kg to 300,00kg has occurred because the price has risen from $10kg to $14kg. Demand has therefore fallen (contracted) along the demand curve from point A to B because of a higher price.

Remembering the key differences between a shift of the demand curve and a movement along the demand curve is crucial to understanding the way markets operate to adjust prices and quantities. This will become more apparent when we analyse the effects of changes in demand and supply on **equilibrium** prices and quantities in Section 3.8.

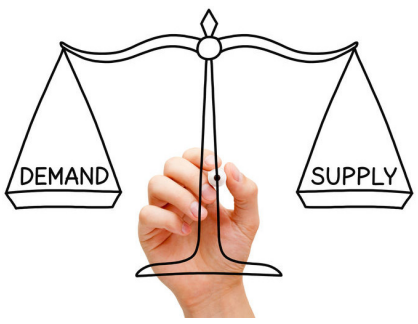
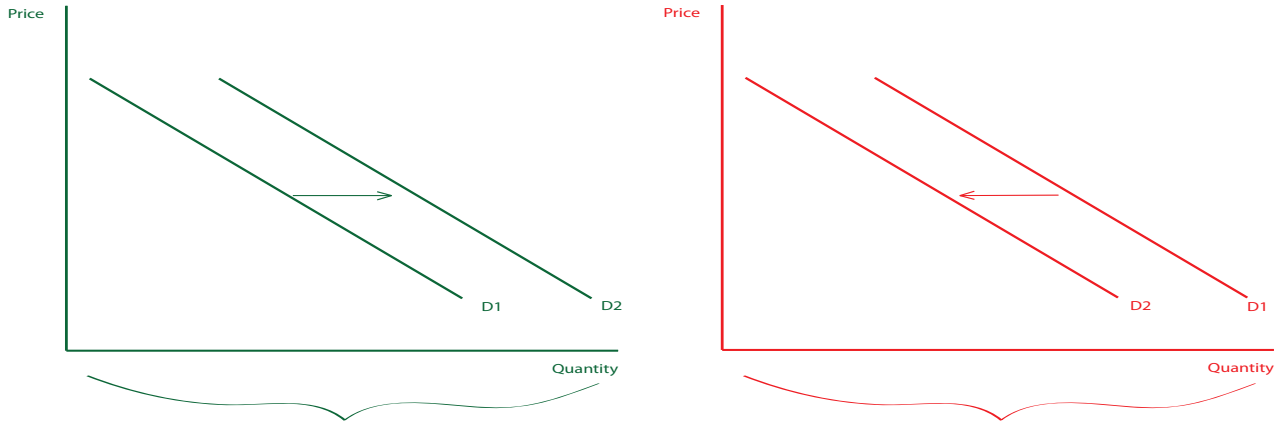


Figure 3.7 provides a summary of how each of the non-price factors listed in section 3.3 can either shift the demand curve to the left (i.e. decrease demand) or shift the demand curve to the right (i.e. increase demand).

Figure 3.7
How non-price factors shift the demand curve



POSITIVE DEMAND SIDE FACTORS

An increase in disposable income
An increase in the price of a substitute product
A decrease in the price of a complementary product
Favourable changes in preferences/tastes
A decrease in interest rates
An increase in the size of the population
Favourable changes in population demographics
An increase in consumer sentiment
Favourable changes made by governments
{e.g. more consumer rebates or a tax on substitutes}

NEGATIVE DEMAND SIDE FACTORS

A decrease in disposable income
A decrease in the price of a substitute product
An increase in the price of a complementary product
Unfavourable changes in preferences/tastes
An increase in interest rates
A decrease in the size of the population
Unfavourable changes in population demographics
A decrease in consumer sentiment
Unfavourable changes made by governments
{e.g. fewer consumer rebates or a tax on complements}

Review questions 3.4

1. Identify three factors that will cause the demand curve for a product to shift to the right.
2. Identify three separate factors that will cause the demand curve for a product to shift to the left.
3. Referring to figures 3.3 and 3.4, describe two reasons to explain why the demand for cherries increased from 500,000kg to 700,000kg. In your answer, distinguish a shift of the demand curve from a movement along the demand curve.
4. Referring to figures 3.5 and 3.6, describe two reasons to explain why the demand for cherries decreased from 500,000kg to 300,000kg. In your answer, distinguish a shift of the demand curve from a movement along the demand curve.
5. Explain how each of the following are expected to shift the demand curve for a product.
   - An increase in disposable income
   - A fall in the price of a substitute product
   - A rise in the price of a complementary product
   - Favourable changes in preferences/tastes towards the product in question
   - Higher interest rates
   - A fall in the size of the population
   - Favourable changes in population demographics
   - A fall in consumer sentiment
   - An increase in consumer rebates for the purchase of a product
   - The removal of a tax on substitutes
   - The implementation of a tax on complements
   - Government attempts to discourage consumption, such as the legal requirement to have warning labels on the product

3.5 The law of supply and the supply curve

The **supply** of a good or service represents the willingness or ability of suppliers or producers to produce and/or sell goods and services. The most obvious factor determining the quantity of supply for particular products in markets is the price of the product. If suppliers expect to receive a relatively high price for their product, then they are likely to be more willing to supply this product to the market because they expect to make a bigger **profit** (i.e. sales revenue minus costs). Conversely, if the price is expected to be low then they are likely to be willing to supply less of this product to the market because a smaller profit profit per item is expected is expected. This relationship between the price of a product and the willingness to supply is often referred to as the **Law of Supply.**

Law of Supply: as the price of a product increases, the supply increases, and when the price decreases the supply decreases. There is a positive relationship between price and quantity supplied.

The supply curve

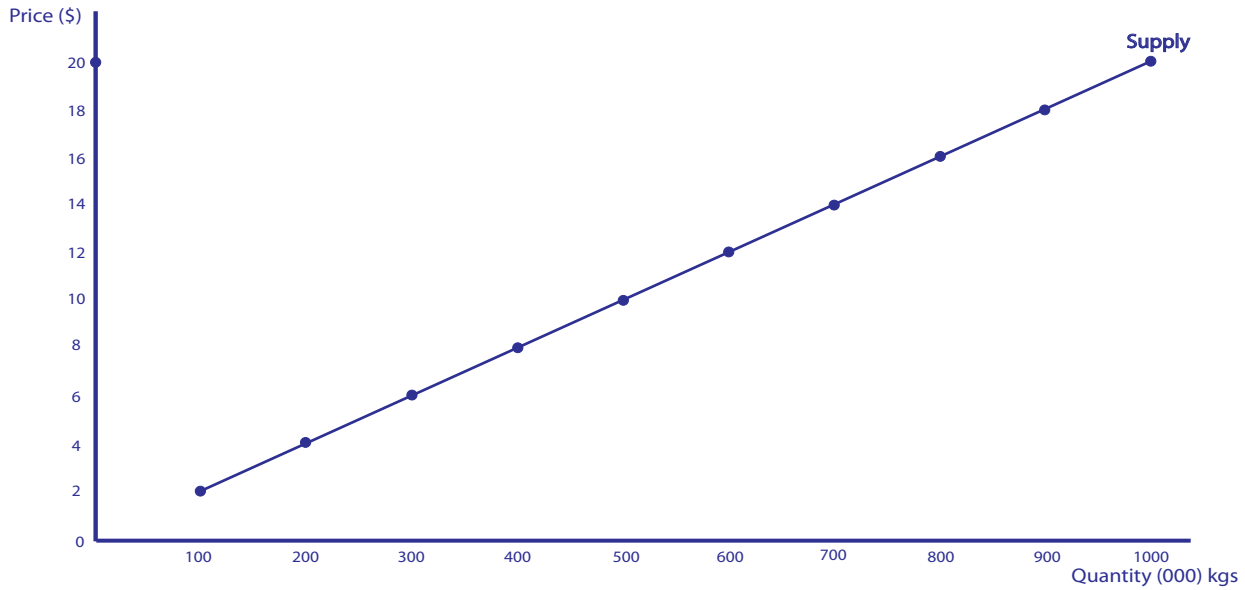
Table 3.4 depicts the possible relationship between price and the quantity supplied for cherries in Victoria over the month of December each year. As the price rises from $2 per kilogram, the supply of cherries increases from 100,000 kg to as high as 1,000,000kg when the price is as high as $20kg.

Table 3.4: Supply of cherries (kg)

Price per kg($)	Supply (000)
20	1000
18	900
16	800
14	700
12	600
10	500
8	400
6	300
4	200
2	100

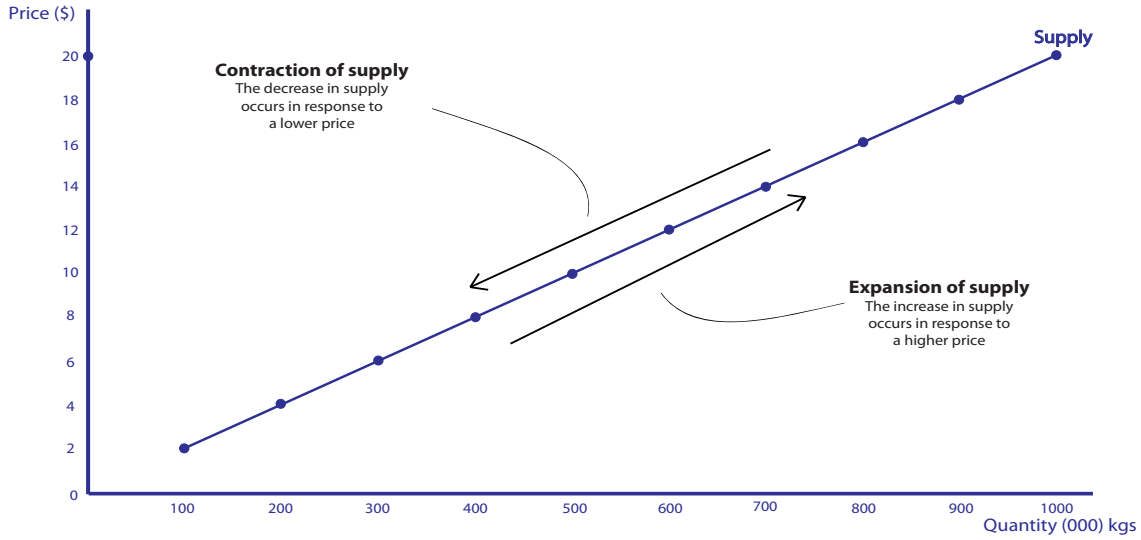
Using the same scale that was used for the demand curve for cherries (or even the same graph), plot the values for supply onto the graph that correspond to each price. As was the case for the demand curve, we should plot a total of 10 values. The supply curve should resemble the following:

Figure 3.8
Supply of cherries



This supply curve captures the Law of Supply, with a positive relationship between price and the quantity supplied. A movement back down along the supply curve is often referred to as a **contraction of supply** and occurs because a lower price discourages producers and causes them to decrease supply to the market over time. A movement up along the supply curve is often referred to as an **expansion of supply** and occurs because a higher price encourages producers and causes them to increase supply to the market over time. Figure 3.9 illustrates both an expansion and contraction of supply.

Figure 3.9
Expansion and contraction of supply



The slope or steepness of the supply curve is related to a concept called 'the **price elasticity of supply**'. In short, this is defined as the responsiveness of the quantity supplied to a change in the price, with a flatter curve representing a high degree of responsiveness to a change in price (that is a high price elasticity of supply) and a steeper curve the opposite. [Once again, while a knowledge of this concept is useful at this stage, it is not required for the purposes of Unit 1 Economics as it is explored fully in Unit 3.]

Review questions 3.5

1. Explain what is meant by '**supply**'.
2. Define the Law of Supply.
3. Explain why the supply of a product is positively related to the price, making reference to 'profit' in your explanation.

3.6 Non-price factors affecting the supply of goods and services

In addition to price, there are numerous other **factors** that can change the relative profitability of certain products and therefore affect supply. A change in any one of these factors can cause an increase or decrease in the **costs of production,** which are the costs associated with the making of a product. More specifically, these factors are likely to influence the costs of production for suppliers and therefore change their willingness to supply the product at any given price.

When costs of production for a producers increase, the profit to be made per unit of product(s) decreases and they will be less willing to supply as much of that product to the market. Instead, they might prefer to supply more of another product whose production costs are now 'relatively' lower. This decision is related to the concept of **opportunity cost** discussed in Chapter 1, because if the cost of producing a specific product increases, the opportunity cost of continuing to supply the same amount of that product to the market also increases. The producer will therefore look for ways to minimise the opportunity cost by either:

- reducing supply to the market and supplying more of another product instead; and/or
- supplying the same amount to the market but increasing the price to protect their profit margin. **Profit margin** is, in simple terms, the difference between price and cost.

To illustrate how this works, we will use the example of a large landholder that uses 50% of her land for wine production and the other 50% for apple growing. If the costs of producing wine increase (for example, due to the introduction of a new tax on wine), but the costs of apple growing remained the same, the producer is, ceteris paribus, likely to devote less of her land to wine production and more to apple growing. This is because the relative profitability of apple growing is going to be higher when compared to wine production (and therefore the opportunity costs of wine production will

be higher) leading the producer to supply less wine to the market. Alternatively, the producer might initially respond to the new tax by raising the price of wine to cover the higher costs. Given that the higher price is likely to reduce demand for wine (remember the Law of Demand?), the end result is very similar - with the wine producer supplying less wine to the market and devoting less land to wine production. Of course, the reverse will apply if the wine producer experiences a fall in the costs of wine production or if there is a rise in the costs of apple production.

The following **factors** will also work to change the willingness of producers to supply products to the market. You will notice that they are all factors that affect either the cost of production or the availability or quality of inputs.

Specific costs of production

While all of the factors listed below will ultimately impact on the **costs of production**, it is worth making specific mention of how some of the major business costs impact on the supply decisions of businesses.

- If the **costs of labour** (such as wages) were to increase, it means that it costs more to employ a given workforce, leading to higher production costs. Producers would be willing to supply fewer products to the market at any existing price.
- Just like the costs of labour, most businesses will employ capital, such as machinery, vehicles, robotics, computers and equipment. A rise in the **cost of capital** will also lead to a reduction of supply to the market.
- The **materials** are effectively parts of the 'unfinished product', such as steel and plastics used in the production of a motor vehicle, or seeds and fertilizers for apple production. When the costs of materials increase it will also lead to a reduction of supply to the market.

Study tip

It is useful to remember that materials are inputs in the production process, but not factors of production, like labour and capital. All materials, raw and semi-processed, are designed to become part of the product, whereas labour and capital are examples of resources that are needed to convert all materials into a finished product.

Technological change

Advances in **technology** over recent years has resulted in a change in the way we purchase goods and services. For example, advances in communications technologies have facilitated the rapid expansion in digital or online purchases of goods and services which makes it easier for businesses to supply products to the market. Many businesses no longer require a physical 'shop-front' or retail presence and can effectively market their products through websites, apps or social media platforms.

Advances in technology have not only resulted in a change in the way we purchase goods and services but also the way these goods and services are made. The development of new products (such as ride sharing services) and improvements to existing products (such as advanced robotics helping to produce goods with greater speed and accuracy) has real benefits for producers. Ultimately, technological change has resulted in productivity growth that has helped to reduce costs of production and encouraged an increase in supply of various goods and services to Australian markets.

Productivity growth

Productivity refers to the efficiency of the business in terms of its ability to convert inputs into actual products. Productivity is technically defined as the ratio of output to inputs used in the production process, or the total output per unit of input. The output is simply the total volume of goods and services produced and inputs include both the physical inputs (such as materials) but also the factors of production (such as capital and labour) used to convert these physical inputs into goods and services. Productivity is often measured by the total volume of production for an enterprise (or even an economy) divided by the number of hours worked (**labour productivity**) or the total volume of production divided by a combination of inputs, such as labour and capital (**multifactor productivity**).

An increase in productivity (i.e. **productivity growth**) improves supply conditions for businesses because it effectively reduces the average costs of production as a greater volume of output can be produced with the same or fewer inputs. This will once again encourage an increase in supply of various goods and services to Australian markets.

Climatic conditions

The supply of a product in the market place can also be affected by the ability (rather than willingness) to supply the product. Changes in the ability to supply products is most common in commodity markets, such as agriculture and mining, where total amounts produced will largely depend on climatic factors and/or specific weather events. Natural disasters or unseasonal events, such as the droughts and floods affecting eastern Australia over recent years, negatively impacted on supply levels in a range of agricultural markets, such as restrictions to the supply of bananas and potatoes is some states. In addition, mining supply was negatively affected by the floods which not only made it more difficult to extract ore from the ground, but hampered efforts to transport the minerals to railway or port facilities.

The longer term negative impact of climate change will also have significant implications for supply of goods and services to various markets. In addition to the increased incidence of natural disasters referred to above, climate change is expected to contribute to longer droughts as well as the destruction of vital tourism assets such as the Great Barrier Reef. This will clearly disrupt the ability of producers to supply agricultural goods and tourism services in the future.

Government intervention

In Unit 2 we will examine the need for government intervention in a more macroeconomic sense, such as the use of government aggregate supply policies to boost productive capacity achieve stronger and sustainable rates of economic growth. At this stage we will concentrate on how government intervention more generally can influence producers and affect supply in various markets.

Taxes

Suppliers are forced to pay direct income taxes (such as the **company tax**) as well as a host of other taxes. Examples of federal taxes affecting businesses include fuel, tobacco and alcohol excises, fringe benefits tax, customs duties and the luxury car tax. Examples of state government taxes include payroll taxes, land taxes, as well as stamp duties and gambling taxes. If these taxes are lowered on all or any products, we should see an increase in the willingness to supply. And, the reverse should also occur if taxes increase.

Costs of complying with government laws and regulations

Laws and regulations impacting on the behaviour of producers are invariably implemented to achieve a better outcome for society. Examples include laws relating to Occupational Health and Safety, Workcover, Equal Opportunity, Anti-Discrimination, insider trading, product safety and standards, and competition laws more generally. The implentation of these laws is designed to achieve a more efficient allocation of resources or better overall living standards for Australians, but they do come at a cost for business. As the laws become more complex and difficult to comply with, the costs for business rise and the willingness to supply will necessarily fall.

Government subsidies

Subsidies are cash or other benefits given by governments to businesses in order to help them produce a particular product. For example, the motor vehicle industry received subsidies for many years to ensure that Australia continued to produce motor cars. The eventual removal of most of these subsidies over time resulted in motor vehicle producers reducing their supply of Australian-made cars to the market and was a factor behind the major motor vehicle producers (i.e. Ford and Holden) deciding to cease operations in Australia from 2017.

Review questions 3.6

1. Explain why an increase in the costs of production is likely to reduce the supply of a product. In your answer make reference to profitability and opportunity costs.
2. Outline how five of the following **factors** can affect the supply of particular products:
   - A change in labour costs
   - A change in costs of capital
   - A change in the costs of materials
   - Changes in technology
   - Changes in productivity
   - Changes to the climate
   - Changes to tax laws
   - Changes to the costs of complying with government laws and regulations
   - Government subsidies

Application Exercise 3d: changes in supply

For each of the situations below, outline what is likely to happen to the supply (S) for the relevant product and explain why this is likely to occur. You should draw up a table like that illustrated below. The first one has been done for you.

Market for	Situation	S increases or decreases	Why S is likely to increase or decrease
Cars	**The government decreases the subsidy given to motor vehicle manufacturers**	**decrease**	**The average costs of production for the manufacturers will rise because more money is required to pay for operating costs**
Bananas	A cyclone destroys banana plantations in Queensland		
iPads	Productivity or efficiency of workers at the manufacturing plant has fallen		
Solar power panels	The government provides businesses with subsidies or tax concessions if they invest money in this technology		
Minerals	The government introduces a new mining tax		
Taxi service	The government introduces regulations to ensure that taxi drivers receive appropriate training and skill development		
Cattle	The government increases regulations in the cattle industry in light of allegations of cruelty to cattle		
Luxury cars	The government increases the luxury car tax		
Education	All teachers are awarded large pay rises		
Electricity	The government repeals a tax on the emission of carbon (i.e. a carbon tax).		
Tourism	The effects of climate change become apparent		
Minerals	Technological advances lead to the use of driverless trains and trucks		
Uber X ride sharing services	The government eases regulations applying to the taxi and hire car industry		
Cigarettes	The government once again increases the excise on tobacco products		
Softdrinks	The government decides to introduce a tax on sugary drinks		
Grapes	A major drought and water shortages affect the health and productivity of vineyards		

3.7 Movements along the supply curve versus shifts of the supply curve

In Section 3.5 we explored the relationship between the price of a product and the supply of a product, where the law of supply accounted for the upward sloping supply curve. Figure 3.9 illustrated that a higher price would result in a higher quantity supplied which was referred to as an expansion of supply. Conversely, a lower price would result a lower quantity supplied. These changes in supply (expansion or contraction) are commonly referred to as movements along the supply curve, with a **higher or lower price** being the only factor causing a change in the supply of a good or service.

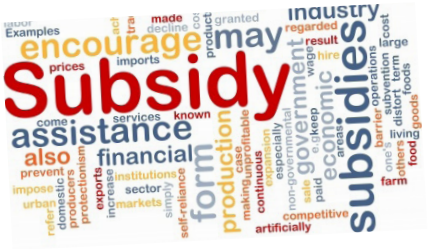
In Section 3.6 we then examined a number of non-price factors that would cause a change in the supply of goods and services. Each of these factors will also cause a change in quantity supplied independent of price and will therefore result in the supply curve shifting its position, either to the left or the right. An increase in the quantity supplied (for reasons other than a change in price) will result in the supply curve shifting to the right, while a decrease in the quantity supplied (for reasons other than a change in price) will result in the supply curve shifting to the left.

A higher quantity supplied

The difference between **movements** along the supply curve and **shifts** of the supply curve will be illustrated with reference to the earlier example of cherries. Let's assume the supply for cherries has increased for a reason that is unrelated to the price of cherries, such as the provision of a government subsidy to cherry growers or technological advances that resulted in growth in productivity on the farm. Table 3.5 shows the original supply of cherries (S1) as well as the hypothetical new supply (S2).

Table 3.5: Supply of cherries (kg) increases at every price

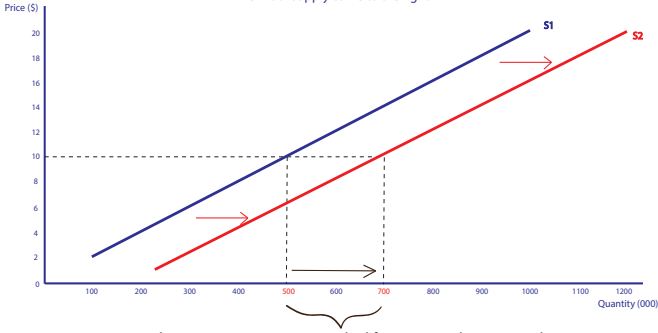
Price per kg($)	S1 (000)	S2 (000)
20	1000	1200
18	900	1100
16	800	1000
14	700	900
12	600	800
10	500	700
8	400	600
6	300	500
4	200	400
2	100	300



It is assumed that supply of cherries has increased by 200,000kg irrespective of price. This translates into an additonal 200,000kg of cherries that producers are willing to supply at every possible price level. When these new values for supply are plotted, we arrive at a new supply curve, S2, that sits to the right of the previous supply curve, S1. This shift to the right of the supply curve is illustrated in Figure 3.10.

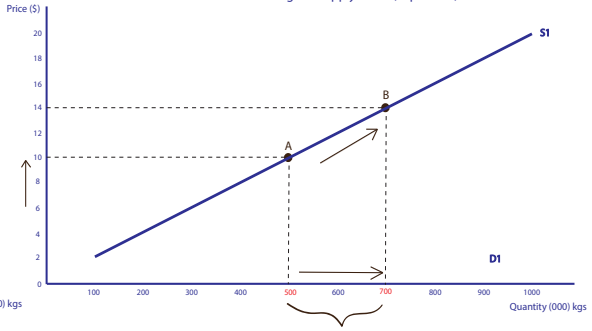
The higher quantity supplied that occurs because of a non-price factor is contrasted with a higher quantity supplied that occurs in response to a higher price. This is illustrated in Figure 3.11. Referring now to the original supply curve (S1), a price rise from $10kg to $14kg causes the quantity that producers are willing to supply to increase from 500,000kg to 700,000kg.

Figure 3.10:
Shift of supply curve to the right



The increase in quantity supplied from 500,000kg to 700,00kg has occurred with the price remaining unchanged at $10kg. This 200,000kg increase in supply will occur at every price level. Hence, the increase in supply has occurred irrespective of price which means that supply has increased because of a 'non-price' factor.

Figure 3.11
Movement along the supply curve (expansion)



The increase in quantity supplied from 500,000kg to 700,00kg has occurred because the price has risen from $10kg to $14kg. Supply has therefore increased (expanded) along the supply curve from point A to B because of a higher price.

A lower quantity supplied

Let's now assume the supply of cherries has decreased for a reason that is unrelated to the price of cherries, such as a natural disaster that wipes out cherry plantations or new government regulations that add costs to cherry industry producers. Table 3.6 shows the original supply for cherries (S1) as well as the hypothetical new supply (S2).

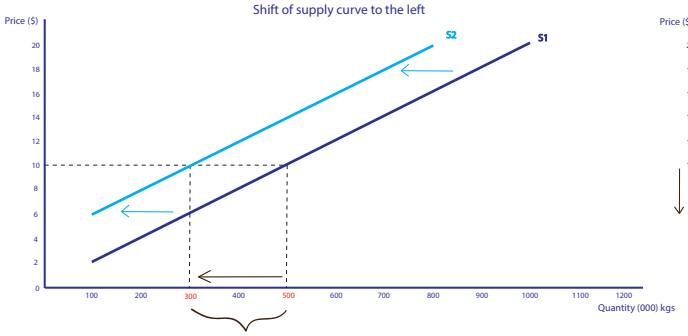
Table 3.6: Supply of cherries (kg) decreases at every price

Price per kg($)	S1 (000)	S2 (000)
20	1000	800
18	900	700
16	800	600
14	700	500
12	600	400
10	500	300
8	400	200
6	300	100
4	200	0
2	100	0

It is assumed that producers are now willing and/or able to supply 200,000kg fewer cherries irrespective of price. They will now be unwilling to supply any cherries to the market unless the price was $6kg. When these new values for supply are plotted, we arrive at a new supply curve, S2, that sits to the left of the previous supply curve, S1. This shift to the left of the supply curve is illustrated in Figure 3.12.

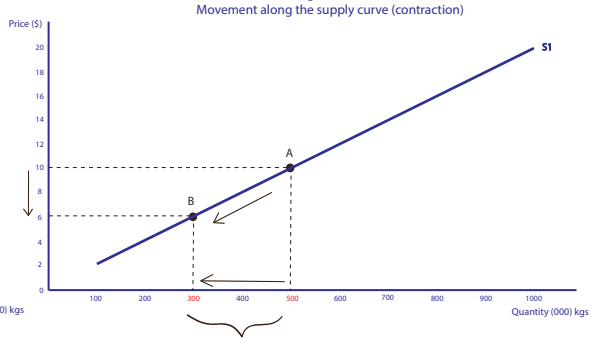
The lower quantity supplied that has occurred because of a non-price factor is contrasted with a lower quantity supplied that occurs because of a lower price. This is illustrated in Figure 3.13. Referring now to the original supply curve (S1), a price fall from $10kg to $6kg causes the quantity supplied to decrease from 500,000kg to 300,000kg.

Figure 3.12
Shift of supply curve to the left



The decrease in quantity supplied from 500,000kg to 300,00kg has occurred with the price remaining unchanged at $10kg. This 200,000kg fall in supply will occur at every price level. Hence, the decrease in supply has occurred irrespective of price which means that supply has decreased in response to a 'non-price' factor.

Figure 3.13
Movement along the supply curve (contraction)

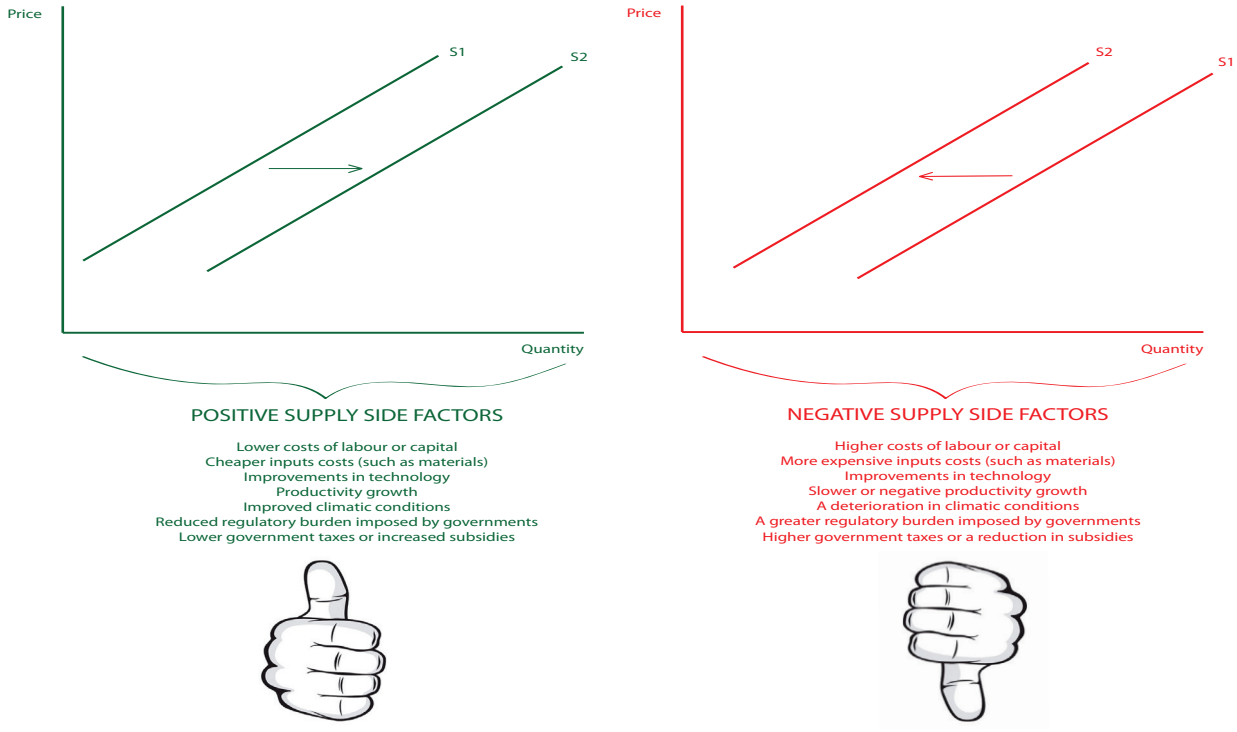


The decrease in quantity supplied from 500,000kg to 300,00kg has occurred because the price has fallen from $10kg to $6kg. Supply has therefore decreased (contracted) along the supply curve from point A to B because of a lower price.

Remembering the key differences between a shift of the supply curve and a movement along the supply curve is crucial to understanding the way markets operate to adjust prices and quantities. This will become more apparent when we analyse the effects of changes in demand and supply on equilibrium prices and quantities in Section 3.8.

Figure 3.14 provides a summary of how each of the non-price factors listed in Section 3.6 can either shift the supply curve to the right (i.e. increase supply) or shift the supply curve to the left (i.e. decrease supply).

Figure 3.14
How non-price factors shift the supply curve



Review questions 3.7

1. Identify three factors that will cause the supply curve for a product to shift to the right.
2. Identify three separate factors that will cause the supply curve for a product to shift to the left.
3. Referring to figures 3.10 and 3.11, describe two reasons to explain why the supply of cherries increased from 500,000kg to 700,000kg. In your answer, distinguish a shift of the supply curve from a movement along the supply curve.
4. Referring to figures 3.12 and 3.13, describe two reasons to explain why the supply of cherries decreased from 500,000kg to 300,000kg. In your answer, distinguish a shift of the supply curve from a movement along the supply curve.
5. Explain how each of the following are expected to shift the supply curve for a product.
   - Lower costs of labour
   - An increased cost of machinery and equipment
   - An increase in the price of raw materials used in production
   - Improvements in technology
   - A reduction in productivity
   - A natural disaster disrupting the business
   - More regulations introduced by governments
   - Lower government taxes
   - Fewer subsidies provided to the producer

3.8 Effects of changes in demand and supply on equilibrium prices and quantities

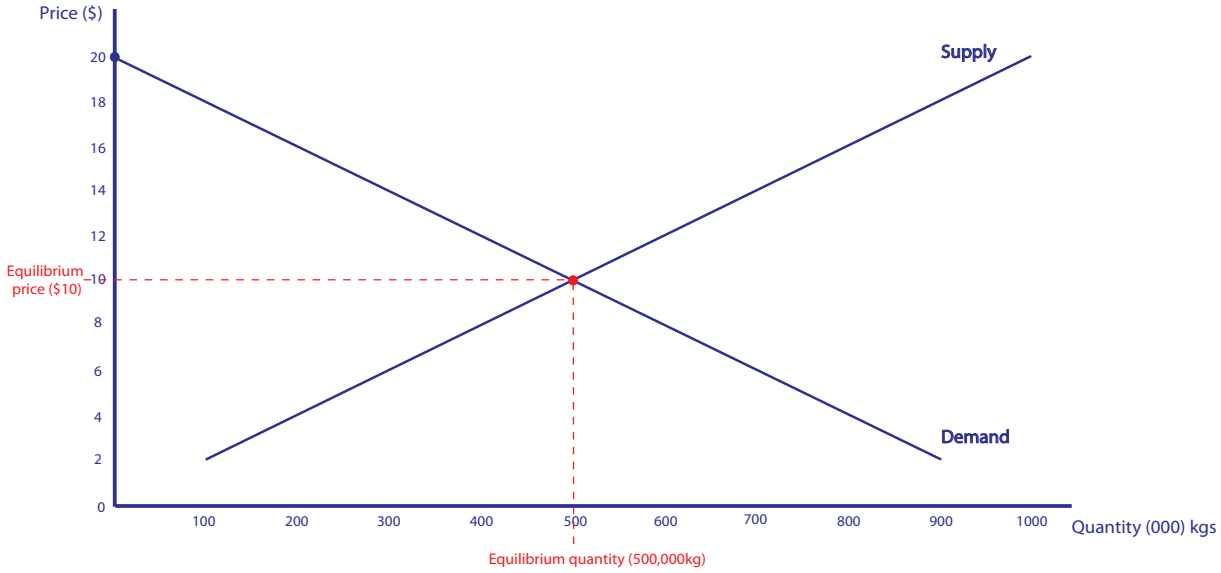
So far we have focused primarily on the demand and supply of goods and services on their own. The price, which is the rate of exchange or monetary value of a good or service, will depend on the relative strengths of demand and supply. In simple terms, when demand is high compared to supply, we would expect the price to be relatively high or increasing. Conversely, when demand is low compared to supply, we would expect the price to be relatively low or decreasing. The exact price and quantity sold in any market will therefore be determined by interaction of demand and supply.

Using the example of cherries to illustrate, Table 3.7 below summarises the original demand and supply of cherries that was presented earlier. The respective demand and supply curves are also included in Figure 3.15

Table 3.7: Demand and supply of cherries (kg)

Price per kg($)	Demand (000)	Supply (000)
20	0	1000
18	100	900
16	200	800
14	300	700
12	400	600
10	500	500
8	600	400
6	700	300
4	800	200
2	900	100

Figure 3.15
Market for cherries



Equilibrium price and quantity

In this market for cherries, there is only one price where the total quantity demanded is equal to the total quantity supplied. In Economics, this price is referred to as the **'equilibrium price'**. It is the price where there is neither too much demand relative to supply (excess demand or shortage) nor too much supply relative to demand (excess supply or surplus). When the price of a product is at this equilibrium level, there is no pressure for price to change.

Equilibrium price: the price which leads to the total quantity demanded being equal to the total quantity supplied. There will be no shortage or surplus of the product at this price and the market is in a state of rest.

The **equilibrium quantity** is simply the volume or amount of goods and services that are sold in the market when the price is at its equilibrium level.

When the price of a product is not at equilibrium it will mean that the quantity demanded is not equal to the quantity supplied. This will result in a convergence towards equilibrium over time as markets adjust and price naturally moves towards its equilibrium level.

Disequilibrium in markets - price too low

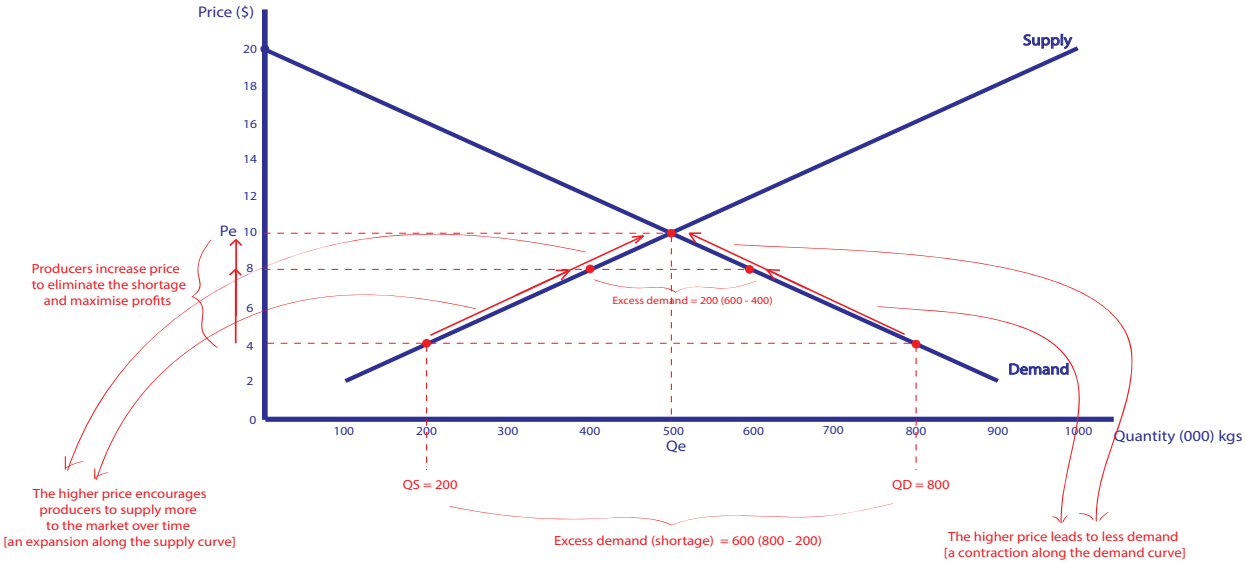
If the price is temporarily below the equilibrium price it will mean that demand will exceed supply (**excess demand**) which results in a **shortage** of the product. This shortage sends a clear signal to producers that the price is too low and that larger profits could be made by increasing the price.

Excess demand = shortage = demand > supply

In fruit markets around many cities, such as the Queen Victoria Market, it is possible that a vendor might start to increase the price of their produce in the middle of the day if it is clear that they are experiencing excess demand, where their produce sells very quickly and there is a real likelihood that they will run out of stock before the close of business. In other markets, it will usually take a longer period of time before the shortages become evident and the price increase will steadily occur over time.

Accordingly, when any market is in a position of excess demand, it means that demand for the product is excessive relative to the supply of the product and we should expect the price to rise over time. In the case of the cherry market, if producers set the price at $4kg, it would clearly represent disequilibrium, with the price being too low. This can be seen in Figure 3.16 below.

Figure 3.16
Disequilibrium: price too low



Disequilibrium to equilibrium
A sequence of events in the case of excess demand

1. Shortages (excess demand) becomes apparent (e.g. 600,000kg of cherries)
2. Producers increase the price (e.g. from $4 to $8)
3. Demand falls (contraction) and supply increases (expansion)
4. Shortage decreases (e.g. from 600,000kg to 200,000kg)
5. Producers continue to raise price (e.g. from $8 to $10)
6. Demand falls again (contraction) and supply increases again (expansion)
7. Shortage no longer exists = equilibrium where a price of $10 is consistent with QD = QS = 500,000

At a price of $4kg, the demand for cherries would be 800,000kg and the supply in markets would only be 200,000kg. An excess demand (or shortage) of 600,000kg of cherries would become evident. In response, producers would raise the price above $4kg, to perhaps $8kg. [It is important to note that producers do not know the exact equilibrium price and will simply be guided by the size and length of the shortage in determining how big the price increase should be.] This increase in price will cause a contraction along the demand curve (as consumers demand less cherries in accordance with the law of demand) and an expansion along the supply curve (as producers are motivated by higher prices and are willing to supply more cherries to the market place over time). However, even at $8kg an excess demand for cherries will persist in the market and producers will eventually raise price further until the shortage is eliminated at a price of $10kg, where the quantity demanded will equal the quantity supplied of 500,000kg of cherries.

In the event of a shortage such as that depicted for the cherry market, it is entirely possible for producers to inadvertently increase the price above the equilibrium price. In this case, the adjustment to equilibrium will be in the opposite direction, as detailed on the next page.

Disequilibrium in markets - price too high

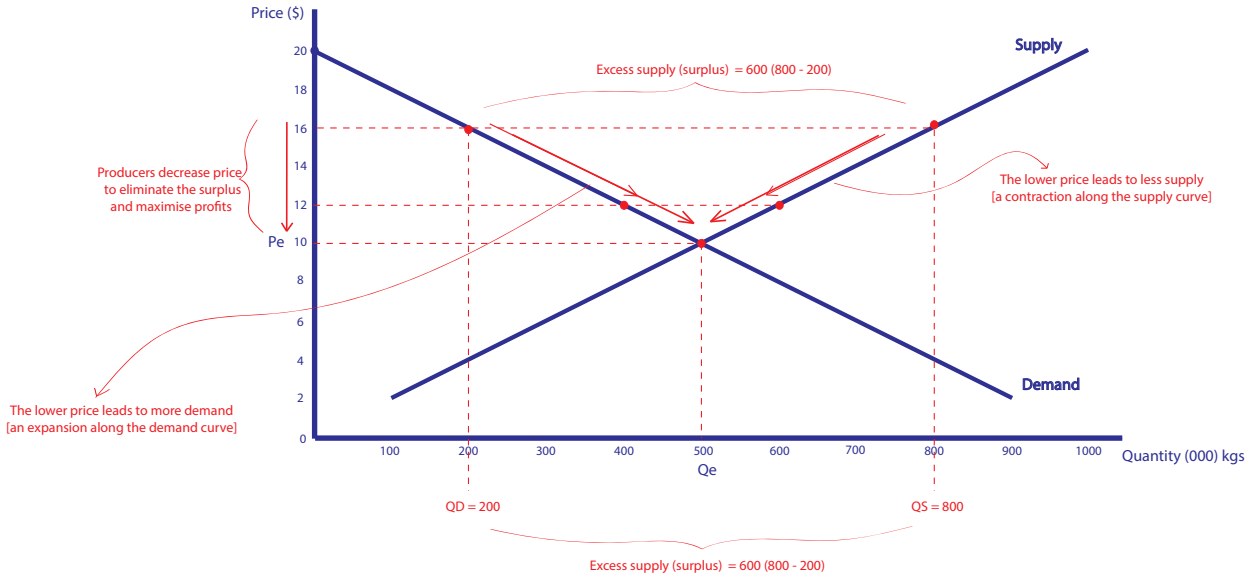
If the price is temporarily above the equilibrium price it will mean that supply will exceed demand (**excess supply**) which results in a **surplus** of the product. This surplus sends a clear signal to producers that the price is too high and that larger profits could be made by decreasing the price in order to eliminate surplus stocks.

Excess supply = surplus = demand < supply

To return to the example of the Queen Victoria Market, it is likely vendors will start to decrease the price of their produce towards the end of the day if it is clear that they are experiencing excess supply, as indicated by their produce not selling quickly enough. This is why some shoppers will attend markets late in the afternoon, in order to take advantage of heavy discounting by sellers keen to avoid holding excess stock.

Accordingly, when any market is in a position of excess supply, it means that demand for the product is too low relative to the supply of the product and we should expect the price to fall over time. In the case of the cherry market, if producers set the price at $16kg, it would clearly represent disequilibrium, with the price being too high. This can be seen in Figure 3.17 below.

Figure 3.17
Disequilibrium: price too high



Disequilibrium to equilibrium
A sequence events in the case of excess supply

1. Surplus (excess supply) becomes apparent (e.g. 600,000kg of cherries)
2. Producers decrease the price (e.g. from $16 to $12)
3. Demand increases (expansion) and supply decreases (contraction)
4. Surplus decreases (e.g. from 600,000kg to 200,000kg) when price is $12
5. Producers continue to reduce price (e.g. from $12 to $10)
6. Demand increases again (expansion) and supply decreases again (contraction)
7. Shortage no longer exists = equilibrium where a price of $10 is consistent with QD = QS = 500,000

At a price of $16kg, the demand for cherries would be 200,000kg and the supply in markets would be 800,000kg. An excess supply (or surplus) of 600,000kg of cherries would become evident. In response, producers would reduce the price below $16kg in order to eliminate the surplus. This decrease in price will cause an expansion along the demand curve (as consumers demand more cherries in accordance with the law of demand) and a contraction along the supply curve (as producers are discouraged by lower prices and will supply fewer cherries to the market place over time). The producers will continue to reduce the price until the shortage is eliminated at a price of $10kg, where the quantity demanded will equal the quantity supplied of 500,000kg of cherries. As before, it is possible for producers to inadvertently decrease the price below the equilibrium price. In this case, the adjustment to equilibrium will be in the opposite direction until equilibrium is achieved at a price of $10kg.

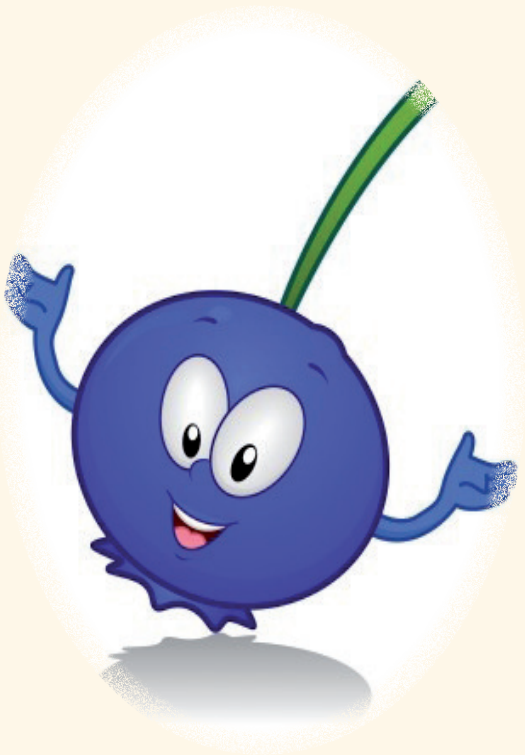
We have already seen that when market prices are not at equilibrium levels, **shortages** (excess demand) or **surpluses** (excess supply) will occur and prices will then adjust over time in order to 'clear' markets. In other words, prices will increase until shortages are eliminated or prices will fall until surpluses no longer exist. We call this '**convergence**' to equilibrium. The actual speed of any convergence to equilibrium will depend on the particulars of each market, and the size of any price adjustment will depend on the size of the shortage or surplus.

So once a market is at a state of rest (i.e. in equilibrium), what will cause the market to move into disequilibrium? This will occur when any one or more of the many 'non-price factors' affecting demand or supply cause the demand or supply curves to shift.

Application Exercise 3e: Demand and supply

Assume that Charlotte Gray is a farmer in Victoria who is currently devoting 250 acres of her land to blueberry crops, 150 acres to kiwi fruit crops and 100 acres to an olive grove. She has just had a good season and is making plans for the future. Based on recent figures she estimates that the Victorian blueberry market will have the following demand and supply schedules for the coming year.

Blueberry market		
Price per kg ($)	Demand(000)	Supply (000)
4.80	2500	8000
4.50	3000	7500
4.20	3500	7000
3.90	4000	6500
3.60	4500	6000
3.30	5000	5500
3.00	5500	5000
2.70	6000	4500
2.40	6500	4000
2.10	7000	3500
1.80	7500	3000
1.50	8000	2500
1.20	8500	2000
0.90	9000	1500
0.60	9500	1000
0.30	10000	500



Questions/tasks:

1. **Using the Excel programme or in your workbooks, plot the above figures onto a demand and supply graph/ diagram. Ensure that you label the vertical and horizontal axis and the scale is accurate (i.e. ensure that the price and quantity intervals are the same distance apart)**
2. **Determine the likely equilibrium price and quantity and indicate this on the diagram with Pe and Qe.**
3. **Explain why the blueberry market is in disequilibrium if the price is set at $4.20 per kg and highlight the surplus or shortage on the diagram.**
4. **Use the diagram to illustrate how the market returns to equilibrium over time, from the disequilibrium in question 3, highlighting the movements along the curves (contraction/expansion) when the price changes.**
5. **Explain why the blueberry market is in disequilibrium if the price is set at $1.50 per kg and highlight the surplus or shortage on the diagram.**
6. **Use the diagram to illustrate how the market returns to equilibrium over time from the disequilibrium in question 5, highlighting the movements along the curves (contraction/expansion) when the price changes.**

Note: Application exercise 3f will also use the data presented in this scenario. You should leave approximately one page for the completion of additional activities/questions related to Charlotte's farm.

Disequilibrium caused by a shift of the demand curve to the right (an increase in demand)

In Section 3.3 we examined a range of non-price factors that would stimulate demand and shift the demand curve to the right. These factors are summarised below:

- An increase in disposable income
- An increase in the price of a substitute product
- A decrease in the price of a complementary product
- Favourable changes in preferences/tastes
- A decrease in interest rates
- An increase in the size of the population
- Favourable changes in population demographics
- An improvement in consumer sentiment
- Favourable changes made by governments (e.g. more consumer rebates or a tax on substitutes)

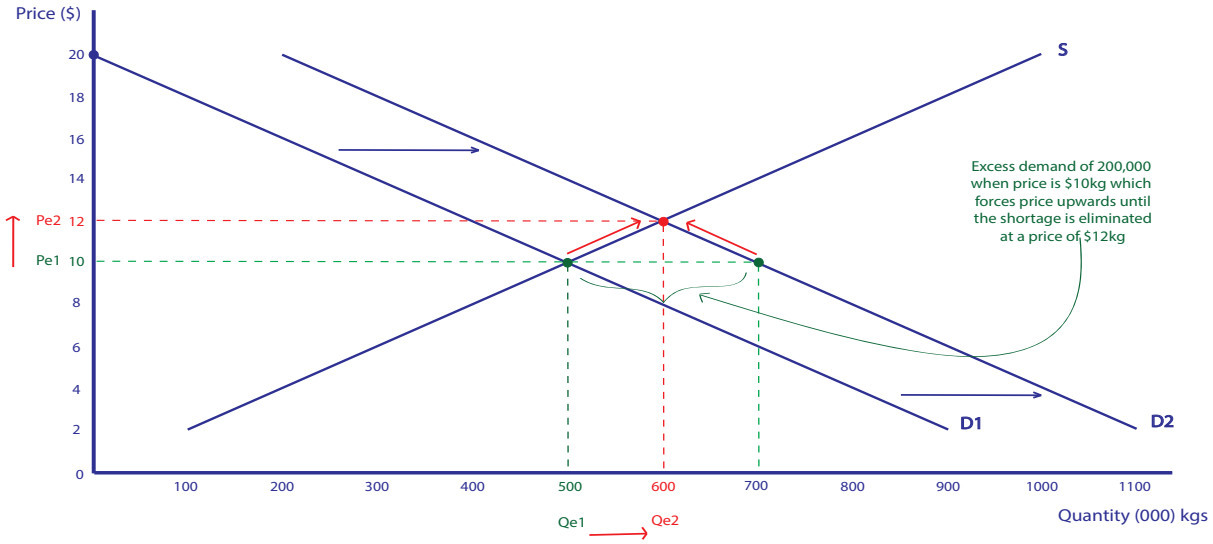
In the case of the cherry market, it was assumed in Section 3.4 that demand increased (by 200,000kg at every price) because of a larger population or a higher price of substitute products, such as strawberries or raspberries. The new demand conditions are repeated in Table 3.8 alongside the original figures for quantity supplied (S1).

Table 3.8: Demand for cherries (kg) increase at every price)

Price per kg($)	D2 (000)	S1 (000)	
20	200	1000	
18	300	900	
16	400	800	
14	500	700	
12	600	600	New equilibrium
10	700	500	Excess demand (shortage) of 200,000kg
8	800	400	
6	900	300	
4	1000	200	
2	1100	100	

The increase in demand (from D1 to D2) will initally cause the market to be in disequilibrium. A price of $10kg will now be too low and the demand for cherries (700,000kg) will exceed supply (500,000kg) resulting in a shortage of 200,000kg (700,000kg less 500,000kg). As discussed earlier, this excess demand for the product will result in an increase in price (to $12kg), which in turn results in a contraction of demand (from 700,000kg to 600,000kg) and an expansion of supply from (500,000kg to 600,000kg). The overall impact that an increase in demand will have on equilibrium price and quantity is summarised in Figure 3.18.

Figure 3.18
Demand shifting to the right and impact on equilibrium price and quantity



An increase in demand from D1 to D2 results in a higher equilibrium price and quantity

Disequilibrium caused by a shift of the demand curve to the left (a decrease in demand)

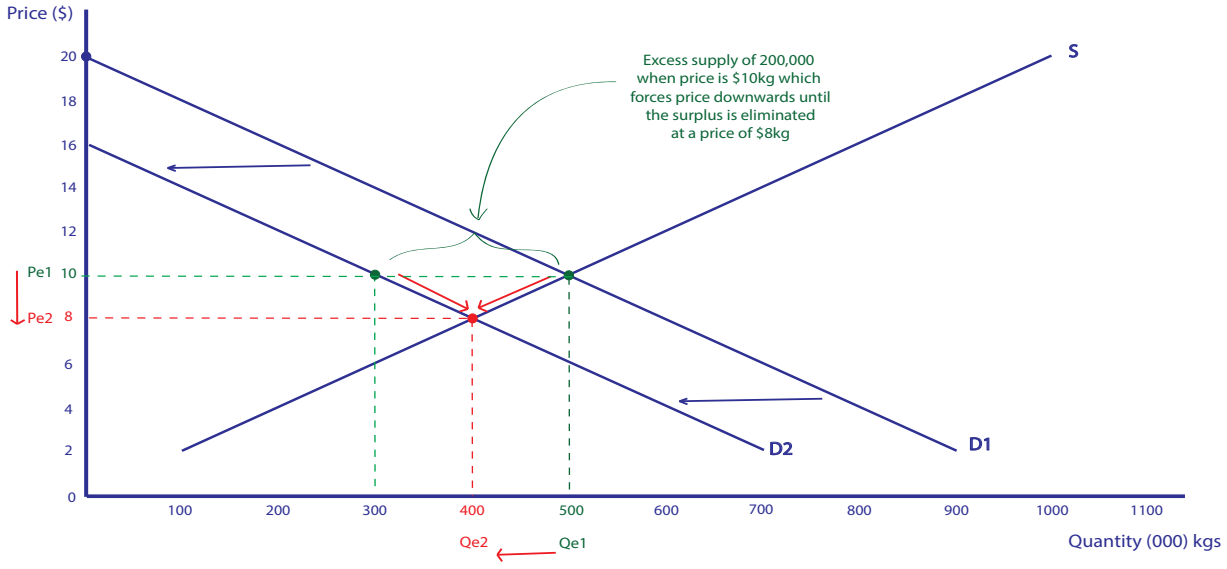
If the demand for cherries decreased because of non-price factors, such as lower average disposable incomes or a change in tastes away from cherries to other fruits, the impact on the market will be the opposite to that shown in Figure 3.18. The new demand conditions are repeated in Table 3.9 alongside the original figures for quantity supplied (S1).

Table 3.9: Demand for cherries (kg) decrease at every price)

Price per kg($)	D2 (000)	S1 (000)	
20	0	1000	
18	0	900	
16	0	800	
14	100	700	
12	200	600	
10	300	500	Excess supply (surplus) of 200,000kg
8	400	400	New equilibrium
6	500	300	
4	600	200	
2	700	100	

The decrease in demand (from D1 to D2) will initally cause the market to be in disequilibrium. A price of $10kg will now be too high and the demand for cherries (300,000kg) will be below the supply (500,000kg) resulting in a surplus of 200,000kg (500,000kg less 300,000kg). This excess supply of the product will result in a decrease in price (to $8kg), which in turn results in an expansion of demand (from 300,000kg to 400,000kg) and a contraction of supply from (500,000kg to 400,000kg). The overall impact on equilibrium price and quantity is summarised in Figure 3.19.

Figure 3.19
Demand shifting to the left and impact on equilibrium price and quantity



A decrease in demand from D1 to D2 results in a lower price and quantity

Disequilibrium caused by a shift of the supply curve to the right (an increase in supply)

In Section 3.6 we examined a range of non-price factors that would stimulate supply and shift the supply curve to the right. These factors are summarised below:

- Lower costs of labour or capital
- Less expensive inputs costs (such as materials)
- Improvements in technology
- Higher productivity growth
- An improvement in climatic conditions
- A lower regulatory burden imposed by governments
- Lower government taxes or a reduction in subsidies

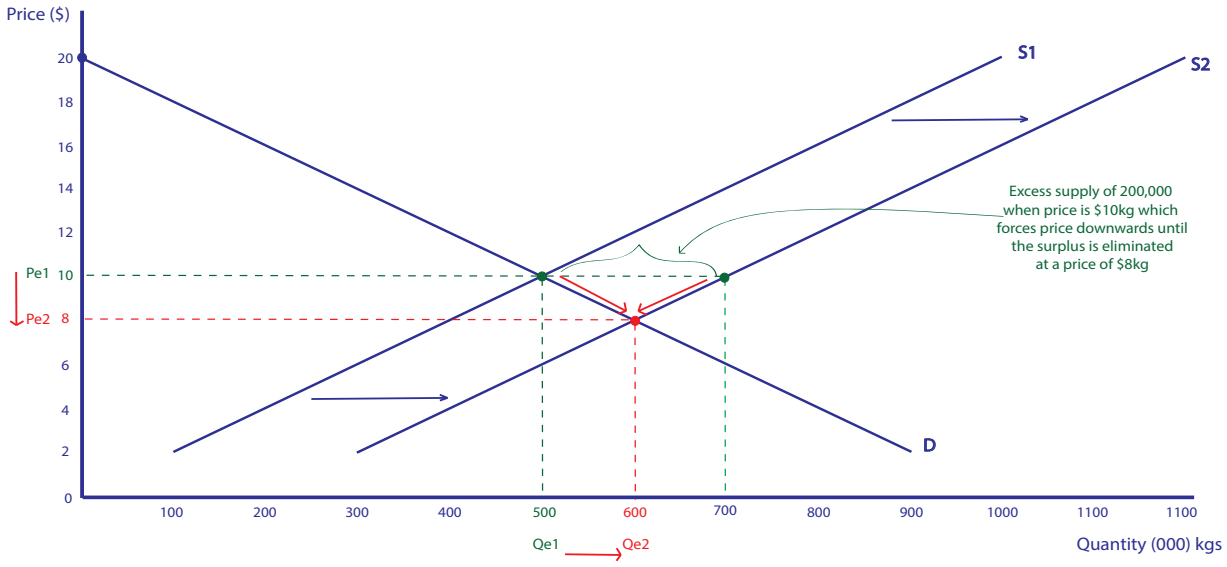
In the case of the cherry market, it was assumed in Section 3.7 that supply increased (by 200,000kg at every price) because of a government subsidy to cherry growers or technological advances that resulted in growth in productivity on the farm. The new supply conditions are repeated in Table 3.10 alongside the original figures for quantity demand (D1).

Table 3.10: Supply of cherries (kg) increase at every price

Price per kg($)	D1 (000)	S2 (000)	
20	0	1200	
18	100	1100	
16	200	1000	
14	300	900	
12	400	800	
10	500	700	Excess supply (surplus) of 200,000kg
8	600	600	New equilibrium
6	700	500	
4	800	400	
2	900	300	

The increase in supply (from S1 to S2) will initally cause the market to be in disequilibrium. A price of $10kg will now be too high and the supply of cherries (700,000kg) will be above the demand (500,000kg) resulting in a surplus of 200,000kg (700,000kg less 500,000kg). This excess supply of the product (or surplus) will result in a decrease in price (to $8kg), which in turn results in an expansion of demand (from 500,000kg to 600,000kg) and a contraction of supply from (700,000kg to 600,000kg). The overall impact that an increase in supply will have on equilibrium price and quantity is summarised in Figure 3.20.

Figure 3.20
Supply shifting to the right and impact on equilibrium price and quantity



An increase in supply from S1 to S2 results in a lower price and higher quantity

Disequilibrium caused by a shift of the supply curve to the left (a decrease in supply)

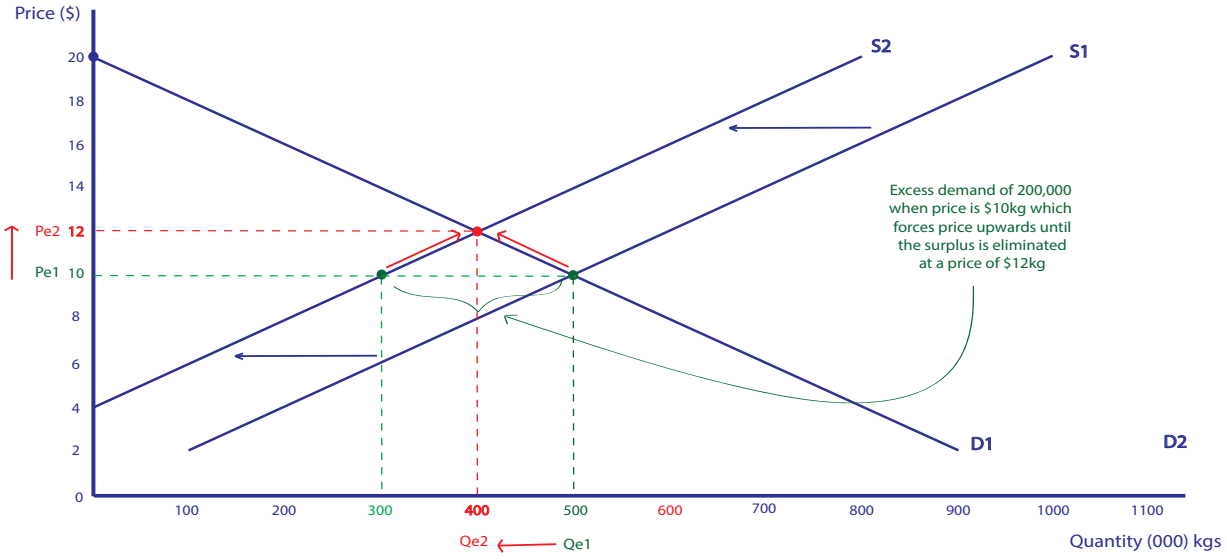
If the supply of cherries decreased because of non-price factors, such as a natural disaster or more costly government regulations, the impact on the market will be the opposite to that shown in Figure 3.20. The new supply conditions are repeated in Table 3.11 alongside the original figures for quantity demanded (D1).

Table 3.11: Supply of cherries (kg) decrease at every price

Price per kg($)	D1 (000)	S2 (000)	
20	0	800	
18	100	700	
16	200	600	
14	300	500	
12	400	400	New equilibrium
10	500	300	Excess demand (shortage) of 200,000kg
8	600	200	
6	700	100	
4	800	0	
2	900	0	

The decrease in supply (from S1 to S2) will initally cause the market to be in disequilibrium. A price of $10kg will now be too low and the supply of cherries (300,000kg) will be below the demand (500,000kg) resulting in a shortage of 200,000kg (500,000kg less 300,000kg). This excess demand of the product will result in an increase in price (to $12kg), which in turn results in a contraction of demand (from 500,000kg to 400,000kg) and an expansion of supply from (300,000kg to 400,000kg). The overall impact that a decrease in supply will have on equilibrium price and quantity is summarised in Figure 3.21.

Figure 3.21
Supply shifting to the left and impact on equilibrium price and quantity



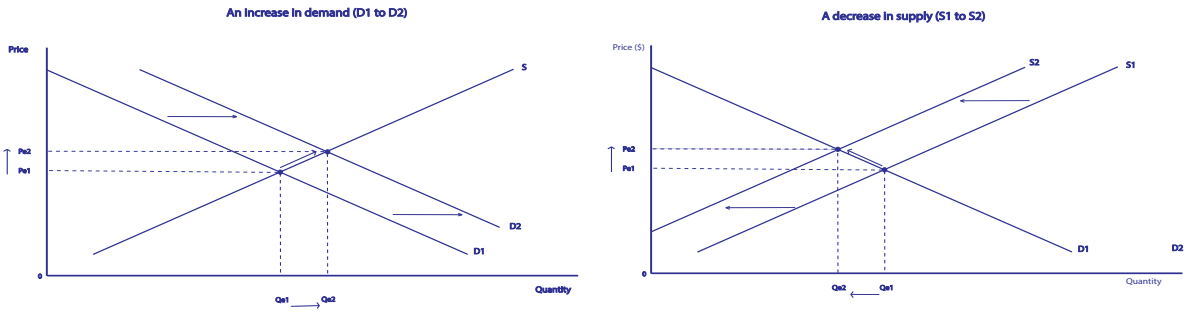
A decrease in supply from S1 to S2 results in a higher price and lower quantity

You should notice that shifts of the demand or supply curves push markets into disequilibrium that is either characterised by an **excess demand (shortages)** or an **excess supply (surpluses)**. It is this imbalance between the demand and supply that creates pressure for prices to converge towards equilibrium. Overall, markets at any time will either be in a state of equilibrium or disequilibrium, where disequilibrium will have been caused by a shift to the left or right of the demand or supply curves (loosely speaking, increases or decreases of demand or supply). In each case, the market starts in equilibrium, then the market is disturbed by a change (or shift) in demand or supply, which then results in the existing price (Pe1) being either too low or too high. The market is then no longer in equilibrium as a price that is too high reflects an excess supply (i.e. a surplus) and a price that is too low reflects an excess demand (i.e. a shortage).

When an excess supply develops, normal market forces will force the price downwards until the price eventually rests at its new equilibrium price of Pe2. Similarly, when an excess demand develops, normal market forces will force the price upwards until the price eventually rests at Pe2 once more.

Figures 3.22 and 3.23 summarise how shifts of the demand or supply curve will impact on equilibrium price and quantity in markets.

Figure 3.22
Shifts of curves causing price to rise

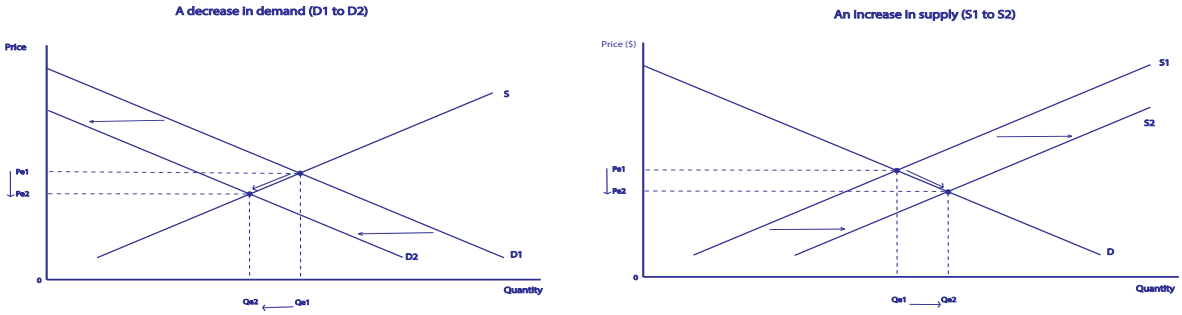


[An increase in demand from D1 to D2 results in a higher equilibrium price and quantity]

[A decrease in supply from S1 to S2 results in a higher price and lower quantity]

In these two examples, the shift of the demand/supply curves push the market into disequilibrium where the original price (Pe1) is too low and excess demand (shortages) develops. Price automatically adjusts (i.e. increases) over time until equilibrium is restored at Pe2.

Figure 3.23
Shifts of curves causing price to fall



[A decrease in demand from D1 to D2 results in a lower price and quantity]

[An increase in supply from S1 to S2 results in a lower price and higher quantity]

In these two examples, the shift of the demand/supply curves push the market into disequilibrium where the original price (Pe1) is too high and excess supply (surplus) develops. Price automatically adjusts (i.e. decreases) over time until equilibrium is restored at Pe2.

Review questions 3.8

1. Define 'equilibrium price' and 'equilibrium quantity'.
2. Distinguish equilibrium from disequilibrium.
3. Distinguish excess demand (or shortage) from excess supply (or surplus).
4. Identify whether prices will increase or decrease if a market is in a state of excess demand.
5. Identify whether prices will increase or decrease if a market is in a state of excess supply.
6. Explain how the market returns to equilibrium over time if price is too high and there is excess supply.
7. Explain how the market returns to equilibrium over time if price is too low and there is excess demand. Use a demand and supply diagram to illustrate.
8. Explain what is meant by 'convergence' to equilibrium.
9. Describe how a shift to the right of the demand curve will impact on equilibrium price and quantity. Use a demand/supply diagram to illustrate.
10. Describe how a shift to the left of the demand curve will impact on equilibrium price and quantity. Use a demand/supply diagram to illustrate.
11. Describe how a shift to the right of the supply curve will impact on equilibrium price and quantity. Use a demand/supply diagram to illustrate.
12. Describe how a shift to the left of the supply curve will impact on equilibrium price and quantity. Use a demand/supply diagram to illustrate.

Application Exercise 3f: Shifts of demand and supply curves

Since the release of a favourable government report about the health giving properties of blueberries, there has been a surge in demand by 100%. It is estimated that the new demand schedule will resemble the one shown below, where Demand 2 reflects the new demand, following the release of the report. The blueberry growing industry has also been buoyed by the development of new fertilisers and insecticides that boost the productivity of the land by 50%, helping to reduce costs of production per unit. Charlotte now anticipates a bumper crop in the year ahead. It is estimated that the supply schedule will resemble the following, where Supply 2 reflects the new supply, following the changes.

Blueberry market				
Price per kg ($)	Demand 1 (000)	Demand 2 (000)	Supply 1 (000)	Supply 2 (000)
4.80	2500	5000	8000	12000
4.50	3000	6000	7500	11250
4.20	3500	7000	7000	10500
3.90	4000	8000	6500	9750
3.60	4500	9000	6000	9000
3.30	5000	10000	5500	8250
3.00	5500	11000	5000	7500
2.70	6000	12000	4500	6750
2.40	6500	13000	4000	6000
2.10	7000	14000	3500	5250
1.80	7500	15000	3000	4500
1.50	8000	16000	2500	3750
1.20	8500	17000	2000	3000
0.90	9000	18000	1500	2250
0.60	9500	19000	1000	1500
0.30	10000	20000	500	750

Questions/tasks:

1. Plot the new demand curve onto the demand and supply graph/diagram prepared in Application exercise 3e. Alternatively, draw up a new D/S diagram plotting both demand curves (D1 and D2) and the supply curve (S1) for blueberries.
2. Determine the new equilibrium price and quantity for blueberries following the increase in demand from D1 to D2.
3. Outline two other factors that could cause the demand for blueberries to increase from D1 to D2.
4. Explain what would happen in the blueberry market if the price was slow to rise from its initial equilibrium level of $3.15 per kg and outline how the normal operation of the market will resolve this problem over time.
5. Plot the new supply curve (S2) onto the demand and supply graph/diagram and determine the equilibrium price and quantity. [You should be using D2 and S2]
6. Explain how the blueberry market adjusts from its old equilibrium where D2 intersects with S1 to its new equilibrium where D2 = S2. Refer to excess demand (shortage) or excess supply (surplus).
7. Outline whether the blueberry market will experience more demand following the improvement in productivity on blueberry farms. Use the D/S diagram to support your argument.
8. Explain what would happen in blueberry markets if the price was slow to fall from its previous equilibrium level of $4.20 per kg and outline how normal market pressures will resolve this problem over time.
9. Outline two factors that could cause the supply curve for blueberries to shift to the left in the future.
10. Discuss how Charlotte's blueberry production might be affected in the future if the prices for olives in export markets increased by 200%.

Application Exercise 3g

Choose between 5 and 10 of the situations below. For each situation, describe what is likely to happen to the equilibrium price of petrol-powered motor cars. In each answer, ensure that you accurately describe how the factor causes the market to be in disequilibrium and then how the market converges (moves) to its new equilibrium price. The first one has been completed for you.

Factor	How it changes demand or supply	How it results in disequilibrium	How the market returns to equilibrium
Disposable income of most households increase	Overall, there will be an increase in the demand for motor cars because household purchasing power increases	Over time, there will be an excess demand for motor cars at the original price	Producers will eventually raise the price of motor cars until the shortage is eliminated
Motor vehicle manufacturers are forced to pay higher prices for robotics used on the assembly line			
Consumer preferences switch away from petrol-powered cars and towards less polluting forms of transport			
There are significant improvements in battery technology that enables electric cars to run without recharge for longer periods of time			
The price of a ticket on public transport falls to very low levels			
The price of petrol increases from $1.10 to $5.00 per litre			
The cost of materials, such as plastics and steel, increase to high levels			
Consumer confidence falls to low levels			
The price of electric cars fall significantly			
Australia enters a period of climatic change where the number of wet days falls by 100%			
Government regulations change to prevent young people getting a driving licence until they are 21			
The costs of labour increase for manufacturers			
Interest rates increase to very high levels, impacting on the discretionary income of households			
The government reduces income taxes to low levels			
Productivity at the manufacturing plants increases due to advances in technology at car manufacturing plants			
State governments reduce payroll taxes			
Increases in the costs of complying with government laws and regulations			
The federal government reduces subsidy support to motor vehicle manufacturers			

An alternative way of illustrating the impact of changes in the costs of production

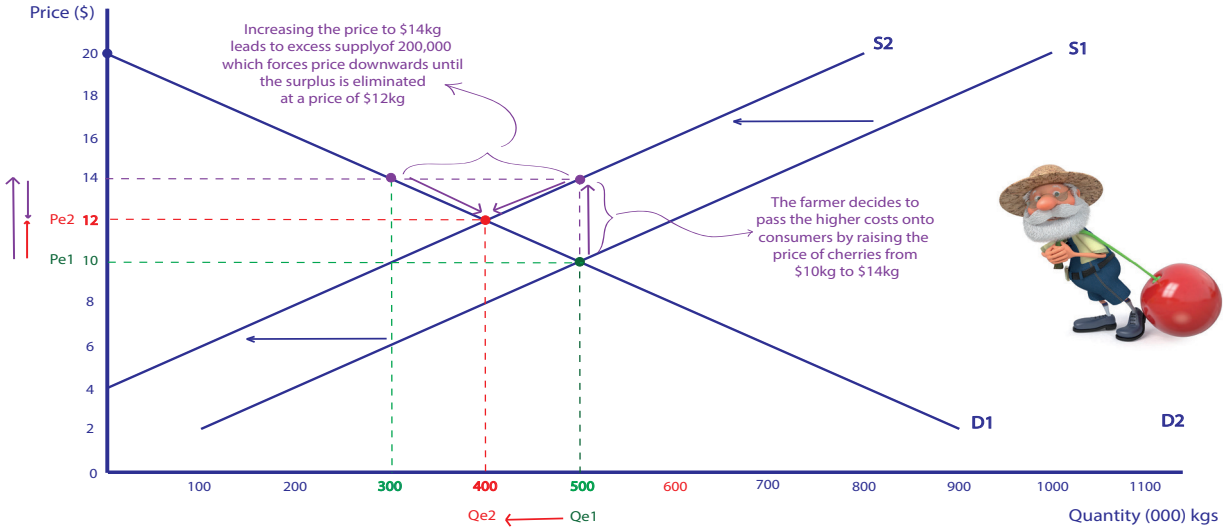
Figures 3.20 and 3.21 illustrated how the market adjusts after a shift of supply to the right and the left. For example, a shift to the left of the supply curve (caused by a natural disaster or more burdensome government regulations) results in the pre-existing price being too low to clear the market. As a consequence, excess demand (a shortage) develops over time and price rises until the shortage is eliminated at the new higher equilibrium price.

Study tip

In an assessment task or exam, the use of either approach to illustrate an increase in the costs of production (and shift of the supply curve to the left) should be acceptable.

However, in some situations, producers who are faced with higher costs of production won't necessarily respond by reducing supply to the market in the first instance. Instead, faced with higher costs (e.g. higher labour costs or an increase in indirect taxes imposed by the government), producers will typically increase the price of the product in order to protect their profit margin (the difference between the price of a product and its cost). The higher price will then result in market disequilibrium characterised by excess supply – because the higher price causes consumers to demand less (a contraction of demand) while producers have not yet responded by reducing supply. This can be seen with reference to Figure 3.24 below.

Figure 3.24
Higher costs of production (e.g. indirect tax) and impact on equilibrium price and quantity



The higher costs of production ultimately shifts the supply curve from S1 to S2, resulting in a higher equilibrium price and lower equilibrium quantity

Study tip

While it is not required knowledge for the VCE Economics course it is interesting to learn that the extent of the final increase in price that occurs in response to an increase in production costs depends on the price elasticity of demand (i.e. how responsive consumers are to a change in price). For example, a very low price elasticity of demand (reflected in a very steep demand curve) will mean that the final price increases by approximately the same amount as the increase in production costs. This results in consumers being forced to pay (close to) the entire increase in production costs. The reverse is true if the price elasticity of demand is high (i.e. the demand curve very flat).

At the initial equilibrium price of $10 per kg, assume that the costs of labour and capital for cherry producers increases by $4 per kg. Instead of reducing supply to the market immediately, the farmers decide to pass the higher costs onto consumers by raising the price of cherries from $10kg to $14kg. At this new higher price, an excess supply of 200,000kg of cherries will develop because consumers reduce their demand (contraction) from 500,000kg to 300,000kg, while farmers continue to supply 500,000kg (as they wait to see how consumers respond to the higher price). Over time, this surplus will be eliminated as the farmers reduce the price of cherries to clear the market. The lower price leads to an expansion of demand (consumers are motivated by lower prices) and a contraction of supply (producers are less motivated to supply to the market at lower prices). The price will continue to fall until equilibrium is restored at a price of $12kg.

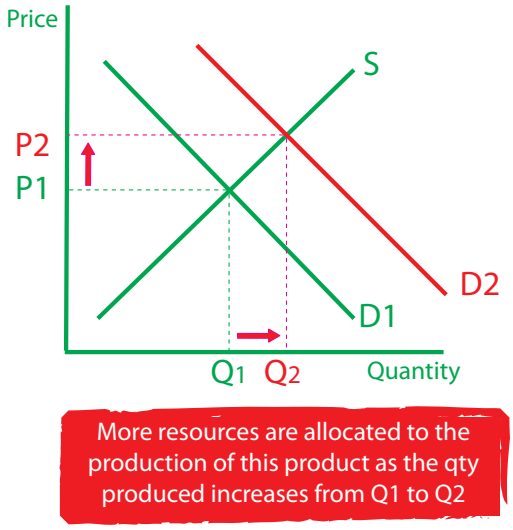
Overall, the higher costs of production have resulted in a higher equilibrium price and lower equilibrium quantity, which is reflected in a shift of the supply curve to the left. Ultimately we end up with the same result as that depicted in Figure 3.21, except the dynamics of adjustment from one equilibrium to another are different.

3.9 The role of relative prices in the allocation of resources

The process of changes in relative prices and its impact on how resources are used in the economy is referred to as the **market mechanism** or **price mechanism.**

The price mechanism describes how the forces of demand and supply influence relative prices of goods and services which then ultimately determines the way productive resources (such as labour and capital) are allocated in the economy.

Whenever prices change in markets, it sends powerful signals to economic agents – in particular producers and consumers. Producers are motivated by higher **relative prices** and consumers by lower relative prices. Movements in these relative prices will then result in changes to production in the economy and a reallocation of resources, such as labour, capital and entrepreneurial skill.



A higher relative price of a product in the market place might reflect an increase in demand. This higher price will then send a signal to suppliers that increased profit opportunities might exist if they devote some of their resources into those areas experiencing higher demand. For example, a shift to the right of the demand curve for a product is highlighted on the D/S diagram to the right. As you can see, an increase in demand leads to an increase in the price of the product (relative to other products). This then leads to an increase in resources allocated to production of the product as the quantity produced increases from Q1 to Q2.

Notice that reference has been made to relative prices and not merely prices. This is an important distinction in economics because it is changes in relative prices that provide the key to why consumers and producers will change their buying and selling decisions. Assume that a business can supply kites and flags. A higher market price of kites might attract a larger supply of kites to the market by the business. However, a higher price of kites might simply be occurring because of inflation, with many (or all) products experiencing similar price rises. If we assume that all other prices increased by the same amount, then the price of kites has indeed risen, but the relative price of kites (the price of kites relative to other products) has remained the same. There will be no incentives for producers or entrepreneurs to allocate more resources to kite production and away from producing other products.

It is even possible for the relative price of kites to fall when its price increases - providing other prices rise by a greater amount. In this case, resources are likely to be allocated away from kite production (despite its higher price) because it is relatively less attractive when compared to the prices received for other products. To illustrate, Table 3.12 below compares the price changes that are experienced in the market for both kites and flags. Three separate scenarios are explored and in each scenario, the price of kites has risen by the same amount of $10, suggesting that it might be a more profitable pursuit for the business that can supply both products.

Table 3.12

Scenario	Increase in the Price of kites ($)	Increase in the Price of flags ($)	Increase in the Relative price of kites/flags	Increase in the Relative price of flags/kites
Scenario 1	10	5	10/5 = 2	5/10 = 0.5
Scenario 2	10	10	10/10 = 1	10/10 = 1
Scenario 3	10	20	10/20 = 0.5	20/10 = 2

However, it is only in Scenario 1 where producers are more likely to allocate resources to kite production – because it is the only scenario where the **relative price** of kites has increased. In Scenario 2, the relative price of kites has remained unchanged because the price of flags also increased by $10. However, in Scenario 3, the relative price of kites has fallen because the price of flags has increased by twice as much. This means that the relative price of flags has increased and resources are likely to be allocated away from kite production and towards flag production.

Consumers are also motivated by changes to relative prices and these changes in relative prices lead to changes in consumption, production and the allocation of resources. Assume that the relative price of kites increased not because of an increase in demand, but instead as a result of an increase in the costs of production for kite producers. Consumers

will see that the relative price of a substitute product (perhaps a flag) has fallen and some consumers might demand flags instead of kites. This therefore results in a reallocation of resources from kite production to flag production.

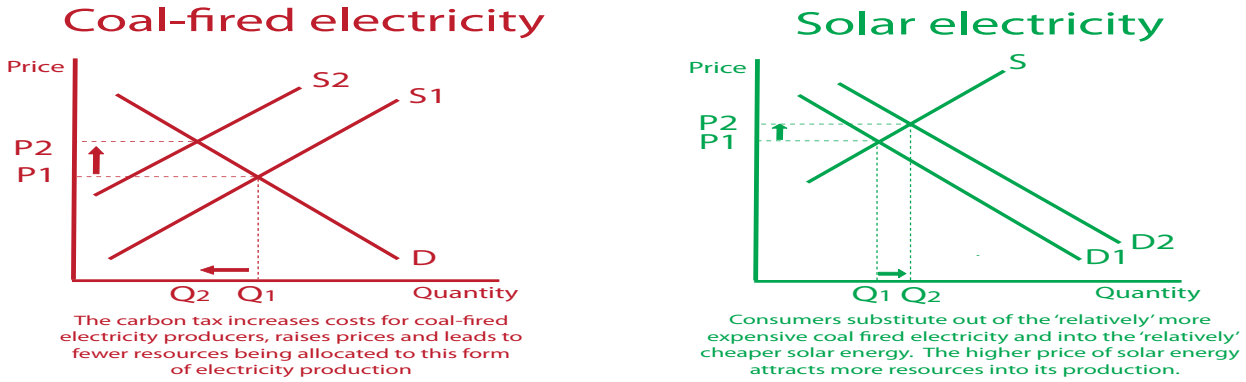
The obvious question is whether a higher relative price for a product leads to more or less resources being allocated to it. The answer is that it all depends on what has caused the relative price to increase. If it has been caused by higher demand then more resources will be allocated to it. If it has been caused by less favourable supply conditions then fewer resources are likely to be allocated to it. The point to note is that the price change sends a signal to producers, who will then investigate the cause of the price change and allocate resources accordingly.

Common examples of the power of relative prices in action relate to movements in agricultural prices. For example, a farmer producing guavas and bananas will see a higher price of bananas as a signal to dedicate fewer of his resources (such as land, machinery and labour) to the production of guavas and more to bananas. Alternatively, the farmer may notice that the price of guavas has fallen significantly. This means that the **relative price** of bananas has increased, again providing a signal to the farmer that more resources should be allocated to banana production.

We now know how the market converges to its new equilibrium price and quantity, and the end result is simply a higher price and quantity sold on the market. The increased quantity leads to more production which ultimately requires more labour, land, capital and/or entrepreneurial resources to be allocated to the production of this good in the market. However, the equally interesting question is: where do the resources come from?

The answer depends on a host of factors, such as the state of the economy and/or the reason for the increased demand in the first place. For example, the increased demand for the product may be occurring because the economy is recovering from a downturn, such that the demand for most products is increasing across the board. In this case, the resources flowing into the production of all of these products may have been previously unemployed or underemployed, such as unemployed labour and/or idle capital. Alternatively, the increased demand might be coming from a substitute product (e.g. because its price has risen), which results in resources moving from one market to another. In some cases, resources will come from a totally different industry altogether.

When using demand and supply diagrams to demonstrate the operation of the market mechanism and relative prices, it is useful to place two D/S diagrams side by side. This is done below for coal-fired electricity and solar electricity markets, following the introduction of the carbon tax that caused a change in relative prices in 2012.



NOTE: Despite the price of solar electricity increasing, its relative price has still fallen. It is this lower relative price of solar electricity that has effectively triggered the re-allocation of resources from 'dirty' energy production to clean energy production.

At their original (pre-carbon tax) prices, the relative price of coal-fired electricity was fairly low and the relative price of solar fairly high. The government wanted to reduce the consumption and production of energy from 'dirty' sources (i.e. coal) and increase the production and consumption of energy from 'greener' sources (i.e. solar electricity). The carbon tax was designed to achieve this by changing relative prices.

The tax increased the costs of production for coal-fired electricity producers which pushes their supply curve to the left, raising the price, reducing the demand and lowering production volumes. The fall in demand occurs because consumers restrict their use of electricity and also substitute into greener forms of energy due to the fact that its 'relative price' is now lower (i.e. relative to the price of dirty, coal-fired energy!). Accordingly, the demand curve for solar energy shifts to the right, exerting upward pressure on the price of solar, and providing producers with greater incentive to invest in greener energy production. Resources are therefore allocated away from coal-fired electricity and towards solar energy.

The repeal of the carbon tax in 2014 resulted in a reversal of the above process, with the relative price of 'dirty energy'

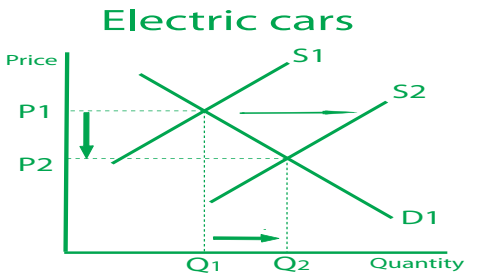
falling and resources flowing back into the industry. This is a contemporary example of the price mechanism in action and an illustration of how changes to relative prices determine the allocation of resources. In summary:

- a higher relative price of coal-fired electricity discourages consumption and production of this product;
- a lower relative price of solar (relative to coal-fired electricity) attracts demand; and
- a higher demand for solar increases the relative price (relative to other products) which attracts greater production over time.

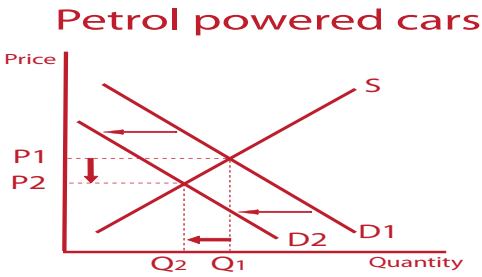
Changes to relative prices occur on a daily basis in all market capitalist economies around the world and governments use their power to levy indirect taxes (and provide business subsidies) to influence relative prices and achieve a more efficient allocation of resources. Common examples include excise duties on fuel, tobacco and alcohol as well as the alcopops tax and luxury car tax. The use of demand and supply curves helps us to analyse the dynamics of markets and assists in the accuracy of predictions about the way markets are likely to respond to various changes in the economy.

A more recent example of how changes to relative prices impact on the allocation of resources relates to the development of electric vehicles. At the time of writing, there were approximately 19.5 million petrol (or diesel) powered vehicles registered in Australia, accounting for about 97% of the total vehicle fleet. The remaining 3% was accounted for by LPG, dual fuel or electric vehicles. While the proportion of electric cars on Australian roads is small, sales growth is accelerating at a rapid pace (e.g. electric car sales doubled between 2018 and 2019, compared to a 8% fall in petrol car sales) in line with advances in technology that have helped to reduce the price of electric cars relative to other cars in the market place. This includes the huge developments that have occurred in the lithium-ion battery sector, where a car battery can store increasing volumes of energy/electricity and make it possible to travel longer distances without the need to attend a re-charging station .

These advances in technology improve supply side conditions for producers (shifting the supply curve to right) and enables them to reduce the price of electric cars. This lower relative price sends a signal to consumers that an alternative (more environmentally friendly) mode of transport is a more viable substitute than before. They therefore increase their demand for electric cars (expansion along demand curve) and reduce their demand for petrol powered cars (shifting the demand curve for these cars to the left). Manufacturers of petrol powered cars will respond to the lower demand and price by diverting resources away from their production, such as closing down some production facilities, making labour redundant and/or reallocating some of their resources to the research/development and production of electric cars. This is precisely what has occurred globally, with the major MV manufacturers devoting part of their production efforts to electric cars. The change in relative prices and the impact on resource allocation within the motor vehicle sector are highlighted in the diagram below.



Advances in technology result in lower costs of electric car production, reduces prices and leads to more resources being allocated to the production of electric cars as consumers substitute into this 'relatively cheaper' form of motor vehicle



Consumers substitute out of the 'relatively more expensive' petrol power cars and into the relatively cheaper electric alternative. The lower price of petrol cars encourages resources to flow out of their production

NOTE: Despite the price of petrol powered cars decreasing, its relative price has risen when compared to electric cars. [In other words, the price of electric cars has fallen by more than the price of petrol powered cars.] It is this higher relative price of petrol powered cars (i.e. the lower relative price of electric cars) that has effectively triggered the re-allocation of resources to the production of a more environmentally friendly motor vehicles.

Review questions 3.9

1. Define the terms 'price mechanism' and 'relative prices'.
2. Assume that the price of a product increases. Explain how its relative price can still fall.
3. Discuss how an increase in relative prices might change the allocation of resources in an economy.
4. Explain how a higher relative price of a product might actually lead to (or reflect) fewer resources being allocated to its production. Use demand and supply diagrams to illustrate your response.
5. Explain how the carbon tax (now repealed) may have led to more resources being allocated to the production of solar panels. Use demand and supply diagrams to illustrate your response.
6. Explain how advances in technology in the production of electric cars have changed the allocation of resources.
7. Describe how the government can use its control of indirect taxes and subsidies to influence the allocation of resources in Australia's market based economy. Use demand and supply diagrams to illustrate your response.

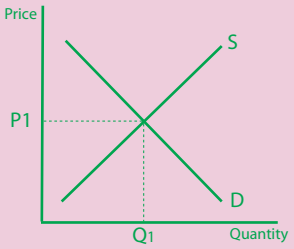
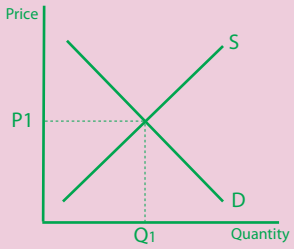
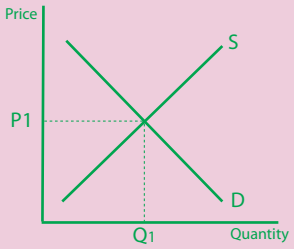
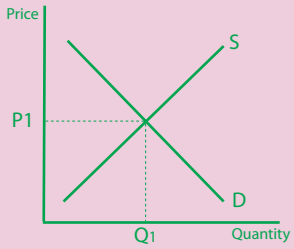
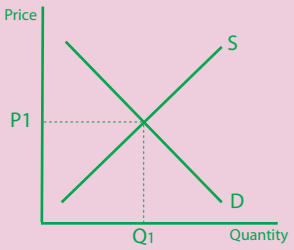
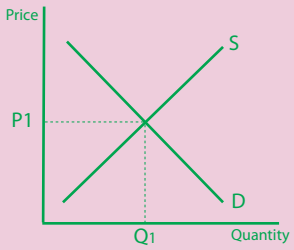
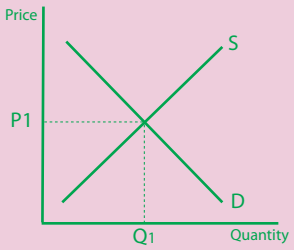
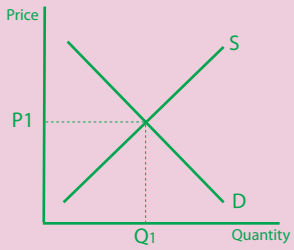
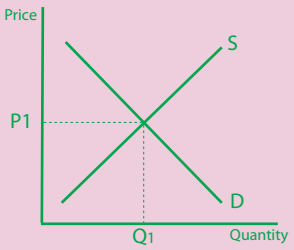
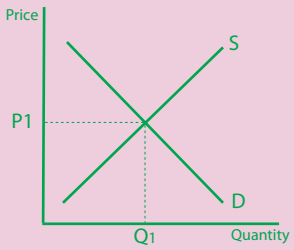
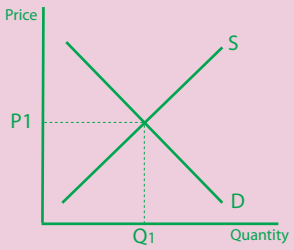
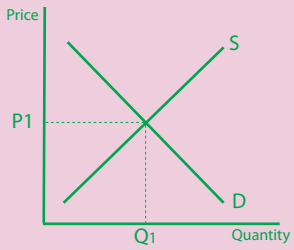
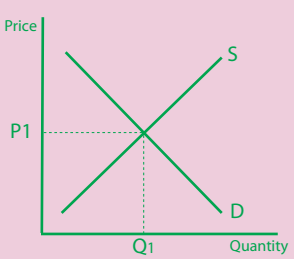
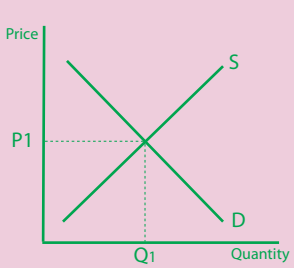
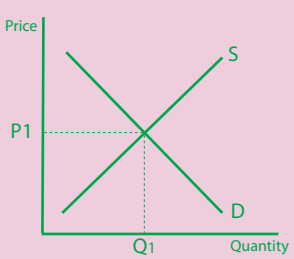
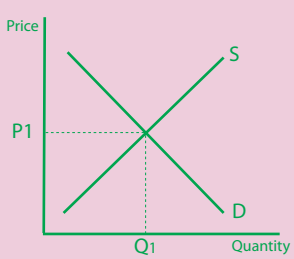
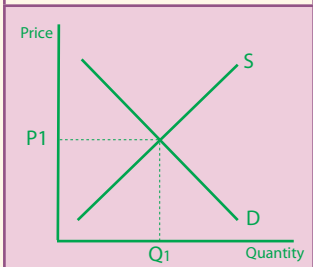
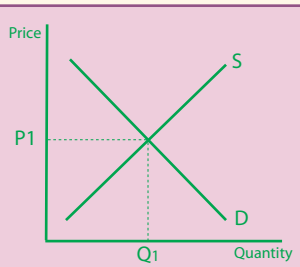
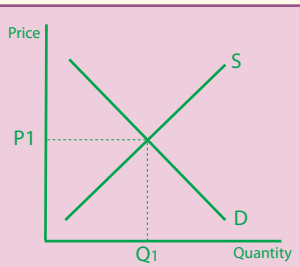
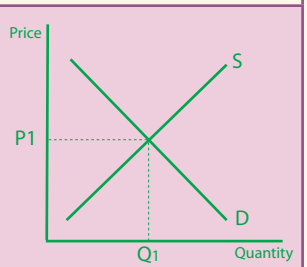
Application Exercise 3h

In your exercise books or on your laptop, set up a table across the page (landscape) with the same headings as those in the table below. For each of the situations, outline what is likely to happen to the relative price of each product and discuss how the resources (such as labour and capital) are likely to be affected (i.e. re-allocated) in response to the changed market conditions. The first one has been completed for you.

Market for	Situation	Change in relative price	Movement of resources such as labour and capital
Cigarettes	The government bans branding on cigarette packets	Decrease	Decrease in demand for cigarettes leads to decrease in price. Resources move out of the tobacco manufacturing industry because producers will seek to take advantage of the higher 'relative price' of other products
Coca Cola	The price of Pepsi decreases by a huge amount (e.g. by 50%) due to higher productivity at Pepsi and lower production costs		
Bananas	A cyclone wipes out several banana plantations in Northern Queensland		
Fast food	A government report condemning fatty foods is released and reported in the mainstream press		
Petrol	There has been a major oil spill in the Gulf of Mexico, reducing global oil supply		
Housing	There is a large increase in immigration to Australia		
Beer	A report is released that claims excessive beer consumption destroys brain cells		
iPads	There are reports that Apple exploits workers in its manufacturing facilities overseas		
Illicit drugs	The government increases the penalties for those in possession of illicit drugs		
Wine	Europe develops a real taste for Australian wines		
Motor vehicles	Volkswagen and Mitsubishi are found guilty of cheating emissions testing on a range of vehicles		

Application Exercise 3i

Indicate how the market will change (i.e. movements in price and quantity) for each scenario below and provide an indication of how resources are likely to be 'reallocated' in each scenario.

			
Water tanks a $500 rebate given to households installing water tanks	**Rental cars** Rental car companies are found guilty of misleading consumers	**Wine** there is an excellent growing season for grapes	**Butter** the price of margarine falls
			
Guns the government makes it illegal to own some types of guns	**Bicycles** productivity falls at the manufacturing facility	**Houses** the cost of timber increases	**Luxury cars** the government increases the luxury car tax
			
Marijuana marijuana is legalised for medicinal purposes	**Softdrinks** a 'sugar tax' is introduced	**Motor vehicles** the cost of petrol falls to relatively low levels	**Pepsi Cola** the price of Coke decreases and a price war commences
			
Baby formula Chinese consumers develop a preference for Australian produced baby formula	**Hotel rooms** Airbnb enters the market allowing people to list their own rooms/houses for rent	**Cappuccinos** the cost of coffee beans increases	**Hot chocolates** the cost of coffee beans increases
			
Normal Potatoes Sweet potato crops are wiped out in floods	**Digital televisions** the Federal Government cuts off the analogue signal	**Bananas** a massive storm wipes out banana plantations	**Coffee** the price of sugar increases by 1000%

3.10 Multiple choice review questions

1. **Which of the following best describes the 'Law of Supply'**
   a) price and quantity supplied are unrelated
   b) price and quantity supplied move together
   c) increases in supply are caused by a price fall
   d) supply will decrease until market equilibrium is reached

2. **An excess demand for a product indicates that**
   a) the price for sale in the market is too low
   b) inappropriate technology was applied causing over production
   c) resources are being wasted or used inefficiently
   d) poor marketing and promotion has left a shortfall in demand

3. **If market equilibrium is $1.40 per litre for petrol, any attempt by government to fix the price at $1.50 cents per litre will cause**
   a) supply to increase, demand to fall, price to rise and excess supply
   b) supply to fall, demand to increase, price to rise and excess supply
   c) supply to fall, demand to fall, price to fall and excess supply
   d) supply to increase, demand to fall, price to fall and excess demand

4. **Which of the following situations is most likely to reflect black market activity?**
   a) Bill purchases an AFL Grand Final ticket
   b) Jack provides plumbing services for cash, without charging GST
   c) Henry purchases a house from a gangster through a real estate agent
   d) Bill the farmer sells cattle to an Indonesian abattoir

5. **When the price of a product is above equilibrium**
   a) it means that there is excess supply and price will fall
   b) it means that there is excess demand and price will fall
   c) it means that there is excess supply and price will rise
   d) it means that there is excess demand and price will rise

6. **With respect to the market for oranges, which of the following statements is correct?**
   a) The price will rise when the supply increases
   b) The price will fall when the demand increases
   c) The price will fall when the demand for orange juice increases
   d) The price will rise when the price of mandarins (a substitute) increases

7. **Which of the following is likely to cause an increase in the demand for books printed in Australia?**
   a) an increase in the sale of e-books (electronic book readers)
   b) the introduction of GST on books bought online from overseas
   c) an increase in the cost of production
   d) the closure of major retail book stores

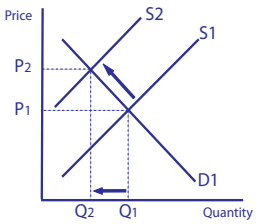
8. **The price of haircuts would probably increase if:**
   a) interest rates were increased
   b) consumer confidence decreased
   c) there was a shortage of skilled hairdressers
   d) the savings rate for households increased to high levels

9. **Which of the following is a factor affecting the supply of products to markets rather than the demand?**
   a) The number or price of substitutes
   b) Advertising and/or promotion of the product
   c) Income levels of consumers
   d) Productivity

10. **Which of the following is <u>not</u> regarded as a factor affecting the willingness to supply motor cars?**
    a) A change in labour costs
    b) Consumer confidence
    c) Changes to the costs of complying with government laws and regulations
    d) Government subsidies to motor car manufacturers

11. **Which of the following events would result in an increase in the equilibrium price and a decrease in the quantity traded for chocolate?**
    a) an increase in the price of a substitute for chocolate
    b) an increase in the world price of cocoa (an input in chocolate production)
    c) a successful advertising campaign by Cadbury Schweppes
    d) an increase in the size of the Australian population

12. With respect to the adjacent demand and supply diagram in the market for apples, which statement is incorrect?



a) Supply has decreased in the apple market
b) Demand for apples is lower
c) Resources are likely to shift out of apple production
d) Excess supply caused the price of apples to rise

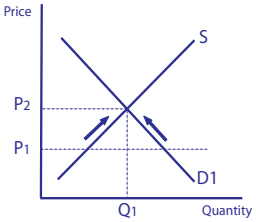
13. The discovery of a major new oil deposit would result in

a) Reduced prices of oil and higher quantities sold
b) Reduced prices of oil and lower quantities sold
c) Higher prices of oil and higher quantities sold
d) Higher prices of oil and lower quantities sold

14. A greater number of substitute products in a market should lead to all of the following, except

a) An increase in production volumes
b) a decrease in average profits earned
c) an increase in productivity or efficiency
d) an increase in prices

15. Which of the following best describes what is happening in the market as depicted in the adjacent D/S diagram?

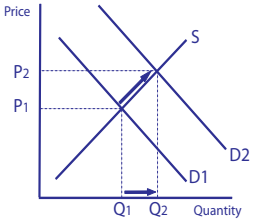


a) Excess supply with price too low and the price is increasing towards equilibrium.
b) Excess demand with price too high and the price is falling towards equilibrium.
c) Excess demand with price too low and the price is rising towards equilibrium.
d) Excess supply with price too high and the price is falling towards equilibrium.

16. In the market for potatoes, which of the following would be most likely to cause a higher price and lower quantity sold in the market?

a) a reduction in government subsidies to potato farmers
b) a reduction in transport and freight charges
c) a decrease in the cost of fertilisers
d) a decrease in the price of the potatoes

17. Which of the following is most likely to cause the new equilibrium in the market for wine as depicted in the adjacent D/S diagram?



a) A decrease in the price of wine.
b) A bumper wine growing season.
c) A decrease in the wine tax .
d) A decrease in rates of personal income tax.

18. The Medical Journal of Australia reported in 2011 that, following the introduction of the alcopops tax, there was a 30% reduction in the sale of pre-mixed alcoholic drinks and a 10%-15% increase in the sale of other spirits. Which of the following statements is incorrect?

a) More resources will be allocated to the production of 'other spirits'.
b) Alcopops and 'other spirits' are perfect substitutes.
c) The price of 'other spirits' will have risen.
d) The relative price of 'other spirits' has fallen.

19. Which of the following is most likely to result in a higher relative price of iron ore?

a) A higher price of iron ore
b) A higher price of iron ore with all other prices in the economy increasing by the same amount
c) A lower price of iron ore with all other prices in the economy decreasing by a larger amount
d) A higher price of iron ore with all other prices in the economy increasing by a larger amount

20. Which of the following provides the best definition of the price mechanism?

a) How the forces of demand and supply influence prices, which then determines the way goods and services are allocated in the economy.
b) How the forces of demand and supply influence relative prices, which then determines the way resources are allocated in the economy.
c) How market forces influence the prices of goods and services, which then determines the way resources are allocated in the economy.
d) How the forces of demand and supply influence consumers and producers, which then determines the way resources are allocated in the economy.

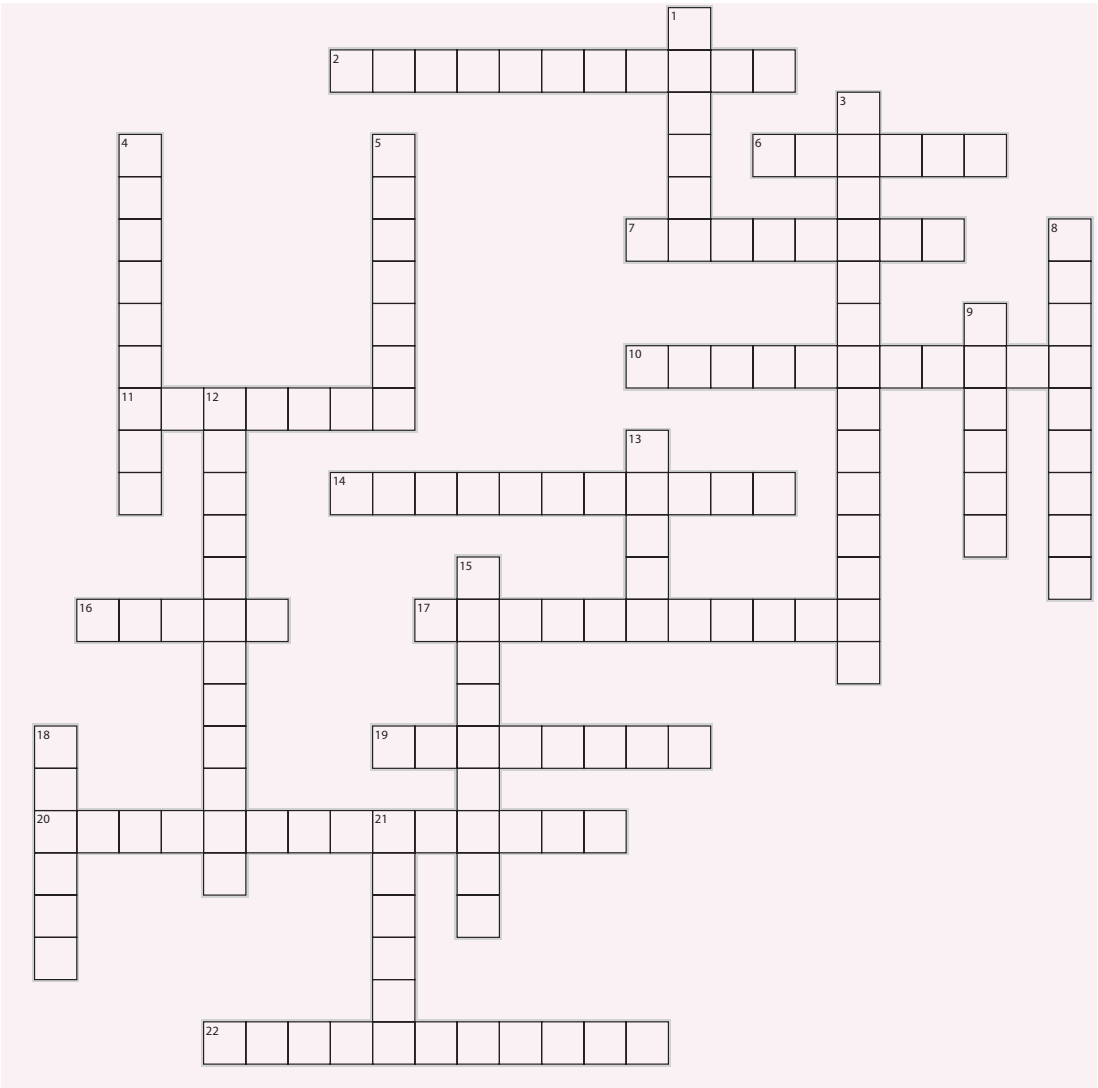
3.11 Chapter crossword puzzle

Across

2. As the price of a product increases, the total quantity demanded decreases, as the price increases the total quantity demanded decreases (3 words)
6. A place or situation where buyers and sellers of goods or services come together in exchange
7. Goods or services are also referred to as these. Beginning with P
10. An increase in these will reduce disposable income (2 words)
11. This market involves the purchase of goods and services from foreign sellers
14. When the market is in a state of rest, with neither excess demand nor excess supply
16. The market where illegal goods and services are bought and sold
17. Bread and butter are examples of these
19. When there is excess demand in the market
20. The price of one product relative to other product(s) (2 words)
22. Coffee and tea are examples of these

Down

1. This market involves the demand for and supply of workers
3. How the forces of demand and supply influence relative prices of goods and services which then ultimately determines the way productive resources (such as labour and capital) are allocated in the economy (2 words)
4. Borrowing and lending of money takes place in this market
5. When there is excess supply in the market
8. Cash or other benefits given by governments to businesses in order to help it produce a particular product
9. This market involves the sale of goods and services to foreign buyers
12. When this increases, it will tend to reduce business costs and drive the price down
13. This is determined by the interaction of demand and supply
15. Minerals and agricultural products are sold in these markets
18. This tax that was introduced in 2012 caused a reallocation of resources to the production of cleaner energy alternatives. [Its repeal in 2014 caused the reverse to occur.]
21. Businesses are motivated by this



3.12 Chapter summary

1. A market is a place or situation where buyers and sellers of goods or services come together in exchange, namely to exchange a good or a service. The rate of exchange is the price of the good or service.
2. Typically, a market will occur in a physical place where those who demand products (buyers) and those who supply the products (sellers) gather to exchange goods or services at a price. There are, however, other markets that do not involve a physical meeting place for buyers and sellers. Instead they rely on communications technology to bring the buyers and sellers together.
3. The demand for a good or service represents the willingness and ability of buyers or consumers to purchase goods and services.
4. Law of Demand refers to the inverse relationship between quantity demanded and price. As the price of a product increases, the total quantity demanded decreases and as the price decreases the total quantity demanded increases.
5. A demand curve describes the relationship between price and the quantity demanded, with a downward slope reflecting the law of demand.
6. In addition to a change in the price of a product, there are many other non-price factors that can affect the total quantity demanded for any product. These include disposable income, the price of substitutes and complements, preferences and tastes, interest rates, changes in population, consumer sentiment and government intervention.
7. When demand changes as a result of a price change this causes a movement along the demand curve. A lower price causes an expansion along the demand curve and a higher price causes a contraction along the demand curve. In contrast, an increase in demand due to non-price factors will cause the demand curve to shift to the right and a decrease in demand due to non-price factors will cause the demand curve to shift to the left.
8. The supply of a good or service represents the willingness or ability of suppliers or producers to produce and/or sell goods and services.
9. The Law of Supply describes the positive relationship between quantity supplied and price. As the price of a product increases, the supply increases, and when the price decreases the supply decreases.
10. A supply curve describes the relationship between price and the quantity supplied, with an upward slope reflecting the law of supply.
11. In addition to a change in the price of a product, there are many non-price factors that could lead to a change in the supply of a product. These include a change in the costs of production (including the costs of labour, materials and capital), technological change, productivity growth, climatic factors and government intervention (such as the imposition of taxes, subsidies and regulations).
12. When supply changes as a result of a price change this causes a movement along the supply curve. A higher price causes an expansion along the supply curve and a lower price causes a contraction along the supply curve. In contrast, an increase in supply due to non-price factors will cause the supply curve to shift to the right and a decrease in supply due to non-price factors will cause the supply curve to shift to the left.
13. The price of a product will be determined by the relative strengths of demand and supply.
14. Excess demand for a product (a shortage) means that the price is too low and demand is greater than supply.
15. Excess supply of a product (surplus) means that price is too high and demand is less than supply.
16. The equilibrium price is the price where there is neither excess demand nor excess supply of a product. When the price of a product is at this equilibrium level, there is no pressure for price to change, unless another factor causes demand or supply to change.
17. The equilibrium quantity level is the number of goods and services that are sold in the market when the price is at its equilibrium level.
18. When market prices are not at equilibrium levels (also called disequilibrium), shortages or surpluses develop and prices will then adjust over time in order to 'clear' markets. Prices will increase until shortages are eliminated or prices will fall until surpluses no longer exist. We call this 'convergence' to equilibrium.
19. Increases in demand that occur for any reason other than a price change (i.e. due to demand factors) will result in a higher equilibrium price and quantity.
20. Decreases in demand that occur for any reason other than a price change will result in a lower equilibrium price and quantity.
21. Increases in supply that occur for any reason other than a price change (i.e. due to supply factors) will result in a lower equilibrium price and higher quantity.
22. Decreases in supply that occur for any reason other than a price change will result in a higher equilibrium price and lower quantity.
23. The price (or market) mechanism describes how the forces of demand and supply influence relative prices of goods and services which then ultimately determines the way productive resources (such as labour and capital) are allocated in the economy.
24. The relative price is the price of one product when compared to another.
25. Producers are motivated by higher relative prices and consumers by lower relative prices.
26. Movements in these relative prices will then result in changes to production in the economy and a reallocation of resources, such as labour and capital, from the production of some goods and services to the production of others
27. Whether a higher relative price for a product leads to more or less resources being allocated to it depends on what has caused the relative price to increase. If it has been caused by higher demand then more resources will be allocated to it. If it has been caused by less favourable supply conditions then fewer resources are likely to be allocated to it.